Periodical Report 18 Months of project implementation





New and Innovative Courses for Precision Agriculture



Sh. Ualikhanov Kokshetau State University

Anargul Belgibayeva



1.1. ACTIVITIES IMPLEMENTED THAT ARE NOT MENTIONED IN REPORT 12M (From November 2019 till May 2020)

In accordance with the work plan, the University carried out the following activities:

WP2: Within the framework of two educational programs (EP): "Agronomy" and "Agricultural engineering and technology" (bachelor's and master's degrees), 12 courses have been modernized and 3 courses have been developed.

WP3: The modernized and developed courses will undergo an accreditation procedure in accordance with the current university rules at the end of August before the start of the academic year. Received Peer revie from non-consortium lecturers

WP4: Carried out 3 dissemination events

WP5: An online meeting is held monthly on the project with EU and CA partner universities, a monthly meeting with CA universities, a meeting with KSU project partners is held once every 2 weeks.

In accordance with the requirements of the Bologna Process and new developments, the current curricula and educational programs in precision agriculture (bachelor's and master's degrees) were updated.



| Table 1.2.1. UPDATED COURSES | | | | | |
|------------------------------|--|----------|--|---|--|
| Course № | Title of the existing course to update (Bachelor, Master) | ECTS | Name of the person(s) responsible for update + email | Estimate the percentage of the course development | |
| Course 1 | Modernization of the existing course "The system of fertilizer" (Bachelor's degree, 4th year, Educational program "Agronomy"). The training material from the proposed course will be used: «Global Navigation Satellite Systems (NAVSTAR, GLONASS, GALILEO, etc.)» | 1 | Khusainov A.T. | 75 | |
| Course 2 | Modernization of an existing course «Integrated plant protection» (Bachelor's degree, 3 course, Educational program "Agronomy"). The training material from the proposed course will be used: «Remote Sensing and Application of Earth and Environment related PA» | I | Ismailova A.A., aigul kok@mail.r u | 75 | |
| Course 3 | Modernization of the existing course "Agrometeorology" (Bachelor's degree, 2nd year, Educational program "Agronomy"). The training material from the proposed course will be used: «Remote Sensing and Application of Earth and Environment related PA» | | Gabdulina A.E., aksanat g@mail.r u | 75 ALIKHA | |

| | Table 1.2.1. UPDATED COL | URSES | | |
|-------------|---|-------|--|---|
| Course № | Title of the existing course to update (Bachelor, Master) | ECTS | Name of the person(s) responsible for update + email | Estimate the percentage of the course development |
| Course 4 | Modernization of the existing course "Mechanization of agriculture" (bachelor's degree, 2 course, Educational program "Agronomy"). The training material from the proposed course will be used: «Yield sensors for Precision Agriculture» | 1 | Narbaev E.Sh. | 75 |
| Course 5 | Modernization of the existing course "Teoretic basics of land organization" (Bachelor's degree, 2nd year, Educational program "Agronomy"). The training material from the proposed course will be used: «Web technologies (Agro SDI, Geo-portals, Geo-services, Geo-analytical systems)» | | Bekimova G.B., bgbask@inbox.ru | 75 |
| Course 6 | Modernization of the existing course "Practical training" (Bachelor's degree, 2nd year, Educational program "Agronomy"). The training material from the proposed course will be used: «Intensive course to leverage acceptance of the new technologies "in-field"» | 1 | Auzhanova M.A., auzhanovam@bk.ru | 80 |
| | | | | niversity |

| | Table 1.2.1. UPDATED CO | URSES | | |
|--------|---|-------|--------------------------|--------------------|
| Course | Title of the existing course to update (Bachelor, Master) | ECTS | Name of the person(s) | Estimate the |
| № | | | responsible for update + | percentage of the |
| | | | email | course development |
| Course | Modernization of the existing course "Agrolandscape farming | | | |
| 7 | system" (Master's degree, 1 course, Educational program | | | |
| | "Agronomy"). | 1 | Khusainov A.T. | 75 |
| | The training material from the proposed course will be | 1 | Kiiusailiov A.1. | /3 |
| | used: «Remote Sensing and Application of Earth and Environment | | | |
| | related PA» | | | |
| Course | Modernization of an existing course | | | |
| 8 | "Machine use" (bachelor's degree, 4th year, educational program | | | |
| | "Agricultural engineering and technology"). | 2 | Odintsov V.D. | 75 |
| | The training material from the proposed course will be | 2 | Odintsov V.D. | 13 |
| | used: «Basics of the Precision agriculture - characteristics, | | | |
| | technologies, economic efficiency, optimal use of resources» | | | |
| Course | Modernization of the existing course "Mechanized technologies of | | | |
| 9 | agricultural processes" (bachelor's degree, 4th year, Educational | | | |
| | program "Agricultural machinery and technology"). | 1 | Odintsov V.D. | 75 |
| | The training material from the proposed course will be used: | | | ALIKHANOV |
| | «Application of Precision Agriculture for crops growing» | | | nivorcity |

| | Table 1.2.1. UPDATED COURSES | | | | |
|--------|--|------|-----------------------|--------------------|--|
| Course | Title of the existing course to update (Bachelor, Master) | ECTS | Name of the | Estimate the | |
| № | | | person(s) responsible | percentage of the | |
| | | | for update + email | course development | |
| Course | Modernization of the existing course "Technology of production of agricultural | | | | |
| 10 | products" (Bachelor's degree, 3 course, Educational program "Agricultural | | | | |
| | machinery and technology"). | 2 | Odintsova O.Y. | 80 | |
| | The training material from the proposed course will be used: «Soil physical | | | | |
| | properties and its measurement» | | | | |
| Course | Modernization of an existing course | | | | |
| 11 | "Agrotechnological machines" (bachelor's degree, 3rd year, educational program | | | | |
| | "Agricultural engineering and technology"). | 2 | Narbaev E.Sh. | 75 | |
| | The training material from the proposed course will be used: «Yield sensors | | | | |
| | for Precision Agriculture» | | | | |
| Course | Modernization of the existing course "Information technology in the | | | | |
| 12 | engineering service" (Master's degree, 1st year, Educational program "Agricultural | | | | |
| | Engineering and Technology"). | | | | |
| | The training material from the offered courses will be used: «Using of | 3 | Eszhanov G.S. | 75 | |
| | SENTINEL 1-2-3 imagery for agricultural field monitoring; «Global Navigation | | | , 0 | |
| | Satellite Systems (NAVSTAR, GLONASS, GALILEO, etc.); «Startup initiatives | | | T | |
| | for future engineers» | | | ALIKHANOV | |
| | <u> </u> | | | niversity | |

| 1.2.2. NEW COURSES | | | | | | |
|--------------------|--|------|--|---|--|--|
| Course № | Title of the existing course to update (Bachelor, Master) | ECTS | Name of the person(s) responsible for update + email | Estimate the percentage of the course development | | |
| Course 1 | «Soil physical properties and its measurement» (Bachelor's degree, 2 course, Educational program "Agronomy") | 6 | Auzhanova M.A., auzhanovam@bk.ru | 60 | | |
| Course 2 | «Management and Decision Making in Precision Agriculture» (Master's degree, 1 course, Educational program "Agronomy") | 5 | A.S.Belgibaeva, anargul.belgibayeva@ mail.ru | 60 | | |
| Course 3 | «Global Navigation Satellite Systems (NAVSTAR, GLONASS, GALILEO, etc.)» (Master's degree, 1 course, Educational program "Agricultural machinery and technology") | 6 | N.A.Kakabayev nurbol.ka@mail.ru | 60 ALIKHANO | | |

Table 1.2.3. ACCREDITATION PROCESS

Both <u>the educational program</u> (A) and each <u>academic discipline</u> (B) undergo the accreditation (certification) procedure at KSU.

- A) The procedure for accreditation (certification) of <u>an educational program</u> at the institutional level (at the university level) includes several stages:
- Stage 1. November-December 2019 discussion of educational programs for the modernization of existing and development of new educational programs with the participation of the educational and methodological committee under the Academic Council of the University.
- Stage 2. December 2019 January 2020 meeting of the educational and methodological committee at the Academic Council of the University for the approval and examination of educational programs.

In case of a positive decision of the committee, the educational program is allowed to be defended at a meeting of the Academic Council of the University. In case of a negative decision of the committee, the educational program is returned for revision.



Table 1.2.3. ACCREDITATION PROCESS

Stage 3. 3rd decade of January 2020 - defense of educational programs by the leaders of the training areas (deans of faculties) at a meeting of the Academic Council of the University.

At the meeting of the Academic Council of the University, Acts of examination of educational programs from employers who were present at the discussion of educational programs in November-December 2019 should be presented.

The Academic Council decides whether or not to include educational programs in the register of educational programs.



Table 1.2.3. ACCREDITATION PROCESS

Stage 4. Since February 2020, educational programs that have received a positive decision from the Academic Council are included in the Register of educational programs for an independent external examination by experts from the Center for the Bologna Process of the Ministry of Education and Science of the Republic of Kazakhstan.

On the website UMSHE (Unified Management System for Higher Education) it will be possible to observe the change in the status of the educational program: under consideration; is under revision; approved.

In case of a positive opinion of the expert, the educational program will be approved and included in the register of educational programs.

In case of any comments, the educational program will be returned for revision.

Stage 5. Also, since February 2020, the preparation of educational and methodological complexes (EMCD) of all disciplines of the first year of study (syllabuses, lecture abstracts, control and measuring materials, etc.) is underway. These EMCDs must be developed before the start of the school year.



Table 1.2.3. ACCREDITATION PROCESS

- B) The procedure for accreditation (certification) of academic disciplines at the institutional level (at the university level) includes several stages:
- Stage 1. Consideration and discussion at a meeting of the syllabus department of the academic discipline, the educational-methodological complex of the discipline and other educational materials (August 25, 2020).
- Stage 2. Approval of the educational material by the decision of the educational and methodological commission of the faculty (August 26, 2020).
 - Stage 3. Approval of the educational material by the decision of the faculty council (August 27, 2020).

The accreditation process is carried out in accordance with ESG 2015 (Standards and Guidelines for Quality Assurance in the European Higher Education Area), since all universities in Kazakhstan have been studying under the Bologna Process since March 2010



| | | 1.3. TE | ACHING MATERIALS | |
|---|--|--|--|--|
| № | Title of the materials | Type (manuals/text books/methodological recommendations) | Short description | Estimated date of the development of the digital versions- drafts |
| 1 | Modernized course «The system of fertilizer» | Educational-methodical complex of the discipline | Educational material including: syllabus, short course of lectures, methodological instructions for performing practical tasks and SIW, list of necessary literature | 25.08.2020 |
| 2 | Modernized course «Integrated plant protection» | Educational-methodical complex of the discipline | Educational material including: syllabus, short course of lectures, methodological instructions for performing practical tasks and SIW, list of necessary literature | 25.08.2020 |
| 3 | Modernized course «Agrometeorology» | Educational-methodical complex of the discipline | Educational material including: syllabus, short course of lectures, methodological instructions for performing practical tasks and SIW, list of necessary literature | 25.08.2020 |

| | 1.3. 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) | | | |
| 4 | Modernized course «Mechanization of agriculture» | Educational-methodical complex of the discipline | Educational material including: syllabus, short course of lectures, methodological instructions for performing practical tasks and SIW, list of necessary literature | 25.08.2020 | | | |
| 5 | Modernized course «Teoretic basics of land organization» | Educational-methodical complex of the discipline | Educational material including: syllabus, short course of lectures, methodological instructions for performing practical tasks and SIW, list of necessary literature | 25.08.2020 | | | |
| 6 | Modernized course "Practical training" | Guidelines | Methodical instructions for passing practice | May 2020 | | | |

| № | Title of the materials | Type (manuals/text books/methodological recommendations) | Short description | Estimated date of the development of the digital versions-drafts |
|---|---|--|--|--|
| 7 | Modernized course «Agrolandscape farming system» | Educational-methodical complex of the discipline | Educational material including: syllabus, short course of lectures, methodological instructions for performing practical tasks and SIW, list of necessary literature | 25.08.2020 |
| 8 | Modernized course "Machine use" | Educational-methodical complex of the discipline | Educational material including: syllabus, short course of lectures, methodological instructions for performing practical tasks and SIW, list of necessary literature | 25.08.2020 |
| 9 | Modernized course "Mechanized technologies of agricultural processes" | Educational-methodical complex of the discipline | Educational material including: syllabus, short course of lectures, methodological instructions for performing practical tasks and SIW, list of necessary literature | 25.08.2020 |

| | 1.3. TEACHING MATERIALS | | | | | | |
|----|---|--|--|--|--|--|--|
| № | Title of the materials | Type (manuals/text books/methodological recommendations) | Short description | Estimated date of the development of the digital versions-drafts | | | |
| 10 | Modernized course "Technology of production of agricultural products" | Educational-methodical complex of the discipline | Educational material including: syllabus, short course of lectures, methodological instructions for performing practical tasks and SIW, list of necessary literature | 25.08.2020 | | | |
| 11 | Modernized course "Agrotechnological machines" | Educational-methodical complex of the discipline | Educational material including: syllabus, short course of lectures, methodological instructions for performing practical tasks and SIW, list of necessary literature | 25.08.2020 | | | |
| 12 | Modernized course "Information technology in engineering service" | Educational-methodical complex of the discipline | Educational material including: syllabus, short course of lectures, methodological instructions for performing practical tasks and SIW, list of necessary literature | 25.08.2020 ALIKHANO | | | |

| | 1.3. TEACHING MATERIALS | | | | | | |
|----|--|--|--|--|--|--|--|
| № | Title of the materials | Type (manuals/text books/methodological recommendations) | Short description | Estimated date of the development of the digital versions-drafts | | | |
| 13 | «Soil physical properties and its measurement» | Tutorial | Educational material including: syllabus, short course of lectures, methodological instructions for performing practical tasks and SIW, list of necessary literature | January 2021 | | | |
| 14 | «Management and Decision Making in Precision Agriculture» | Tutorial | The manual includes theses of lectures, practical tasks and tasks of the SIW, test material, list of references | January 2021 | | | |
| 15 | «Global Navigation Satellite Systems (NAVSTAR, GLONASS, GALILEO, etc.)» | Educational-methodical complex of the discipline | Educational material including: syllabus, short course of lectures, methodological instructions for performing practical tasks and SIW, list of necessary literature | 25.08.2020 | | | |
| | ALIKHANOV | | | | | | |

IMPACT AND SUSTAINABILITY

DISSEMINATION EVENTS-1
(THAT ARE NOT MENTIONED IN REPORT 12M/ FROM NOVEMBER 2019 TILL MAY 2020)



| № | Dissemination activities | Term of |
|---|---|------------------------|
| | | realization |
| 1 | November 29, 2019 at Sh. Ualikhanov KSU held a conference dedicated to the 40th anniversary of the agrarian and economic Institute.S. Sadvakasova. Maria Auzhanova and Nurbol Kalkabayev made a report on the topic "New innovative courses on precision agriculture" at the breakout session (www.kgu.kz/en/node/2769; http://www.kgu.kz/sites/default/files/Documents/nauka/konf/Sbornik%2040-Letiye.pdf) | November 2019 |
| 2 | International scientific and practical conference "Modern achievements in ecology, soil science and agriculture", Kokshetau, Sh.Ualikhanov KSU, December 20, 2019 (https://www.kgu.kz/sites/default/files/Documents/nauka/konf/Husainov_konf.pdf) | December 2019 |
| 3 | On May 15, 2020, Sh. Ualikhanov Kokshetau State University held the International Scientific and Practical | May, |
| | Conference "Шоқан оқулары-24", dedicated to the 185th anniversary of Shokan Ualikhanov. Maria | 2020 |
| | Auzhanova, Nurbol Kalkabayev and Anargul Belgibayeva made a report on the topic at the breakout session | |
| | (http://www.kgu.kz/en/node/3249) | |
| 4 | An article in the regional newspaper "Stepnoy Mayak" is planned for August-September 2020 | August-September, 2020 |



A conference dedicated to the 40th anniversary of the agrarian and economic Institute S. Sadvakasova

November 29, 2019 at Sh. Ualikhanov KSU held a conference dedicated to the 40th anniversary of the agrarian and economic Institute.S. Sadvakasova. Maria Auzhanova and Nurbol Kalkabayev made a report on the topic "New innovative courses on precision agriculture" at the breakout session (www.kgu.kz/en/node/2769; http://www.kgu.kz/sites/default/files/Documents/nauka/konf/Sbornik%2040-Letiye.pdf)



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НОВЫЕ ИННОВАЦИОННЫЕ КУРСЫ ПО ТОЧНОМУ ЗЕМЛЕДЕЛИЮ

Аужанова М.А к.с-х наук, ст.преп. Белгибаева А.С. к.э.н., доцент Какабаев Н.А. доктор PhD

Кокшетауский государственный университет им. Ш. Уалиханова,г. Кокшетау

В послании главы государства народу Казахстана «Конструктивный общественный диалог — основа стабильности и процветания Казахстана» отмечалось о роли повышения качества высшего образования и внедрения цифровых технологий в АПК[1].

- На сегодняшний день с появлением на рынке Казахстана современной зарубежной сельскохозяйственной техники, инновационной технологии и изменились требования будущим специалистам. Необходимо обновление и модернизация образовательных программ по сельскохозяйственным специальностям для повышения компетенции выпускников данного
- В связи с этим, КГУ им. Ш.Улиханова участвует международном moekre Erasmus+ Project «New and Innovative Courses for Precision Agriculture NICOPA «Новые и инновационные курсы для точного сельского хозяйства». Основной целью научного проекта NICOPA по точному сельскому хозяйству нацелена на модернизацию учебных планов с использованием новых технологий совершенствование и внедрение образовательных





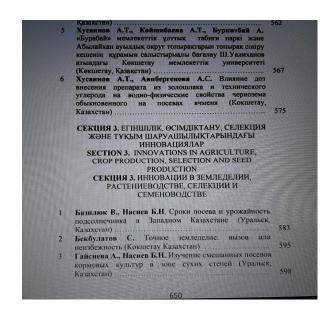


The International Scientific and Practical Conference "Modern Achievements in Ecology, Soil Science and Agriculture", KSU

On December 20, 2019, the member of the project working group Bekbulatov Sayakhat made a presentation on the topic "Precision farming: a challenge or inevitability" at the International Scientific and Practical Conference "Modern Achievements in Ecology, Soil Science and Agriculture", KSU (http://www.kgu.kz/node/2819

https://www.kgu.kz/sites/default/files/Documents/nauka/konf/Husainov_konf.pdf)



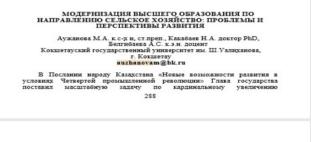




International Scientific and Practical Conference "Шоқан оқулары-24»

On May 15, 2020, Sh. Ualikhanov Kokshetau State University held the International Scientific and Practical Conference "Шоқан оқулары-24", dedicated to the 185th anniversary of Shokan Ualikhanov. Maria Auzhanova, Nurbol Kalkabayev and Anargul Belgibayeva made a report on the topic at the breakout session (http://www.kgu.kz/en/node/3249;





производительности труда в аграриом секторе экономики за счет «уминку

производительность ту — технологий» [1].

В целях реализации данной задачи в настоящее время принимаются в инфромизацию сельского коляйства. комкретные меры, направленные на цифровизацию сельского козяйства, вес этого выполниты поручение Превидента стримы по увеличению в течемие 5 лет производительности груда в АПК как минимум в 2,5 раза.

В Казахстане научно-методическим центром по цифровизации АПК и внедрению технологии точного вемледелия в оскоявам зериосеомих региомах Центрального в Северного Казахстана заплется КАТУ им Севериния. Совместно с ним КГУ им ШУ записанова и исверо-Казахстанский государственный университет им. М. Козыбаева выполняет проект по обновлению существующих и разработка новых учебных планов по проекту NICOPA.

Основной пальм изменения менения менения произ по совмертного проекту NICOPA. В Казахстане научно-методическим центром по цифровизации АПК и

Основной целью научного проекта NICOPA «Новые и инновационные курсы для точного сельского козяйства» является совершенствование и внедрение образовательных программ с использованием лучшего опыта европейских университетов в области точного сельского хозяйства. Наша миссия внедрить точное земледелие. Наука не стоит на месте -

каждый день развивается и надо ухватить важны моменты. Команда проекта разработала анкеты для анализа текущей ситуации по внедрению проекта по точному сельскому козяйству и анализа существующих учебных пламов дисциплии для бакалавров, магистрантов и преподвателей. По итогам проведенного экисетирования было выявлено, что более 79 %, из числа опрошенных преподвателей закомы с понятикам и определениями точного земпеделия и точного сельского козяйства, более 58% обучающихся котели бы совершенствовать знания в данной области

ҚАЗАҚСТАН РЕСПУБЛИКАСЫ БІЛІМ ЖӘНЕ ҒЫЛЫМ МИНИСТРЛІГІ

Ш.УӘЛИХАНОВ атындағы



Шокан Уэлихановтын 185 жылдығына ариалған «ШОКАН ОКУЛАРЫ - 24» атты халықаралық ғылыми-тәжірибелік конферен МАТЕРИАЛДАРЫ

МАТЕРИАЛЫ «ШОКАН ОКУЛАРЫ - 24», освящённой 185-летию Шокана Уалиханов:

MATERIALS of the International practical science conference «SHOQAN OQULARY - 24», dedicated to the 185th anniversary of Shokan Ualikhanov

Tom 2

Кокшетау, 2020



Preparing and publishing brochures/leaflets of the project outputs





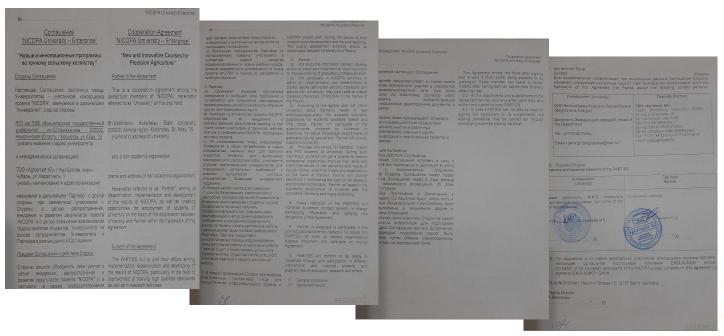






INDUSTRIAL PARTNERS (FOUND FROM NOVEMBER 2019 TILL MAY 2020)

The Nicopa University-Enterprise agreement was signed with Agrosmart KZ LLP.





COMMUNICATION PROCESS

To communicate with other universities, EU partners, the coordinator and other project participants, we use the following communication tools: ZOOM, email - mail, Skype













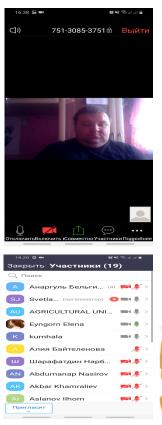


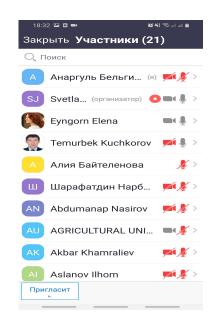




















Thank you for you attention!



Anargul Belgibayeva, Local coordinator email: anargul.belgibayeva@mail.ru