Periodical Report
6 Months of project implementation

New and Innovative Courses for Precision Agriculture

M. KOZYBAYEV NORTH KAZAKHSTAN STATE UNIVERSITY

Koshekov Kairat,
Doctor of Technical Sciences

NICOPA

Work plan

1. Development of an action plan for the project at NKSU.
2. Make a list of subjects taught for modernization and implementation in the educational process.
3. a) Development of questionnaires for the analysis of existing curricula / disciplines (questionnaire for teachers, students, graduates, young professionals);
+ questionnaires for non-academic partners interested in the project: potential employers, local associations, representatives of industrial enterprises, and other parties that are relevant to the project
b) Develop a schedule for the survey.
c) Conducting a survey of various target groups.
d) Analysis of the survey.
4. To develop an analytical report on the results of the analysis of existing curricula / disciplines.
To make a list of curriculum plans to be updated.
To develop a schedule for updating selected training programs.
5. Prepare a documentation set for PAGIS and VCR.
6. a) Development of criteria for the selection of teachers for participation in trainings planned in EU universities.
b) Planning and conducting training activities for selected candidates to participate in trainings, including language courses.
7. To develop and approve a package of organizational documents for the PASO creation at each target institution.

Work group

No	Name, Surname, email	Position	Responsibility (WP, tasks according to the work plan)
1 co-ordinator	Koshekov Kairat, kkoshekov@mail.ru	D.T.S, Head Department of "Electric Power Engineering", the local project coordinator	Koshekov K. is responsible for internal communication on all issues of project implementation at the university, external communication with project management and other organizations of the consortium, scientific support of the project, implementation of the project plan and documentation of all completed project activities, presentation of reports, participation in coordination meetings, creation of a laboratory office on the precision farming at the university, organizing and conducting master classes
2	Shayakhmetova Altyn, altyn.sh@mail.ru	C.N.S., Dean of Agrotechnology Faculty	Shayakhmetova A.S. is responsible for the analysis, updating and development of training modules / programs and other educational and methodological documentation in accordance with the requirements of the Bologna process and existing new developments in the field of precision farming on the specialties 5B080100Agrnomy and 5B080700Forest resources and forestry, implementation of the project results at the university, testing at industrial enterprises and in educational organizations of the North-Kazakhstan oblast, organizing questionnaires for students, graduates and employers, performance in the media, the organization and conducting master classes, organizing of accreditation (or approval) of new and modernized modules at the university and timely starting pilot training since September 2020
3	Sartin Sergey, sartin78@mail.ru	C.Ph.M.S., Head Department of "Physics"	Sartin S.A is responsible for the analysis, updating and development of training modules / programs and other educational and methodological documentation in accordance with the requirements of the Bologna process and existing new developments in the field of precision farming on the following specialties: 5B012800Physics and Computer Science and 5B061100- and 6M061100-Physics and Astronomy, implementation of the project results at the university, testing at industrial enterprises and in educational organizations of the North Kazakhstan Oblast, organizing questionnaires for students, graduates and employers, performance in the media, the organization and conducting master classes, organizing accreditation (or approval) of new and upgraded modules at the university and t timely starting pilot training since September 2020
4	Savostin Aleksey, alexey.savostin@gmail.com	C.T.S., Associate Professor of "Electric Power Engineering" Department	Savostin A.A is responsible for the analysis, updating and development of training modules / programs and other educational and methodological documentation in accordance with the requirements of the Bologna process and existing new developments in the field of precision farming on the specialties: 5B071600- and 6M071600Instrument Engineering, 5B071900- and 6M071900Radio Engineering, Electronics and Telecommunications; implementation of the project results at the university, testing at industrial enterprises and in educational organizations of the North Kazakhstan Oblast, organizing questionnaires for students, graduates and employers, performance in the media, organizing accreditation (or approval) of new and upgraded modules at the university and timely starting pilot training since September 2020
5	Koshen Bauyrzhan,	D.N.S., Professor of "Agronomy and Forestry" Department	Koshen B.M. is responsible for developing recommendations for modernizing training modules / plans, choosing equipment for a new laboratory and developing topics for advanced training courses, scientific support for hardware implementation of precision farming technologies, analysis and processing of questionnaires and materials from stakeholders in the field of precision farming
6	Omarov Zhomart	CEO "Shagala Agro" LLC, general director	Omarov Zh.Zh. is responsible for the practical testing of the project results, the qualitative assessment of educational and methodological documentation on the relevance, novelty and practical significance
7	Ritter Dmitry, dritter@mail.ru	C.T.S., Associate Professor of "Electric Power Engineering" Department	Ritter D.V. is responsible for the reception and commissioning of new equipment and the creation of a new classroom / laboratory, the organization of the project quality group and the implementation of internal and external quality assessment activities (WP3)
8	Akhmetov Murat, tompik.m@mail.ru	Master, Senior Teacher of "Agronomy and Forestry" Department	Akhmetov M.B. is responsible for preparation of publications on the project and handouts, information stands, placement of information about the project results on the website of NKSU named after M. Kozybayev, collecting materials, photos, videos for updating the Web-platform, communication with graduates
9	Mustafina Aigerim,	Student of IE-17 group	Mustafina A.B. is responsible for explanatory activity about the project goals and objectives for students, office work on the project in the office, evaluation of the developed training modules / programs for overwork and the quality of mastering the material studied by students.

Courses to update

Name of the course to be upgraded	Person/teacher/department/faculty responsible for the course upgrade	What has to be upgraded in the course?	Deadlines
Implementation: 1. Optimization of computer vision algorithms and real-time implementation. 2. Global navigation satellite systems (NAVSTAR, GLONASS, GALILEO, etc.). 3. Remote sensing and application of PAs associated with the Earth and the environment.	EP "Physics and Astronomy" (Ba) and "Physics" (Ba), Sartin S.A, Department of "Physics"	1. Remote sensing and application of PA and the environment: 8 ECTS. 2. Global navigation satellite systems (NAVSTAR, GLONASS, GALILEO, etc.): 3.5 ECTS. 3. Optimization of computer vision algorithms and real-time implementation: 4 ECTS.	31.03.2020
Implementation: 1. Using SENTINEL 1-2-3 images for monitoring agricultural fields. 2. Web technologies (AgroSDI, Geoportals, Geo-services, Geo-analytical systems). 3. Basics of precision farming- characteristics, technology, economic efficiency, optimal use of resources.	EP "Physics and Astronomy" (Ma) and "Physics" (Ma), Sartin S.A, Department of "Physics"	1. Using SENTINEL 1-2-3 images for monitoring agricultural fields: 4 ECTS. 2. Basics of precision farming- characteristics, technology, economic efficiency, optimal use of resources: 5 ECTS	31.03.2020
Implementation: 1. Using SENTINEL 1-2-3 images for monitoring agricultural fields. 2. Yield sensors for precision farming. 3. The use of precision farming for growing crops.	EP "Agronomy" (Ma), Shayakhmetova A.S., Agrotechnology Faculty, "Agronomy and Forestry" Department	1. Using SENTINEL 1-2-3 images for monitoring agricultural fields: 4 ECTS. 2. Web technologies (AgroSDI, Geoportals, Geo-services, Geo-analytical systems): 3ECTS. 3. Yield sensors for precision farming: 3 ECTS. 4. Physical properties of the soil and its measurement: 4 ECTS. 5. Management and decision making in precision agriculture - 3 ECTS. 6. Intensive course on the development of new technologies "in the field" -2.5 ECTS.	31.03.2020
Modernization: 1. Systems of precision farming. 2. Sustainable agricultural land management.	EP "Agronomy" (Ba), Akhmetov M.B, "Agronomy and Forestry" Department	1. Remote sensing and application of PA and the environment: 8 ECTS. 2. Basics of precision farming characteristics, technology, economic efficiency, optimal use of resources: 5 ECTS. 3. Application of precision farming for growing crops: 4 ECTS 4. Launching initiatives for future engineers -2.5 ECTS. 5. Management and decision making in precision agriculture - 3 ECTS. 6. Intensive course on the development of new technologies "in the field" -2.5 ECTS.	31.03.2020
Modernization: 1. Technologies in forestry.	EP "Forest resources and forestry" (Ba), Koshen B.M," Agronomy and Forestry "Department	1. Remote sensing and application of PA and the environment: 8 ECTS. 2. Global navigation satellite systems (NAVSTAR, GLONASS, GALILEO, etc.): 3.5 ECTS. 3. Optimization of computer vision algorithms and real-time implementation: 4 ECTS. 4. Physical properties of the soil and its measurement: 4 ECTS.	31.03.2020
Implementation: 1. Optimization of computer vision and real-time implementation. 2. Launching initiatives for future engineers.	EP "Radio engineering, electronics and telecommunications "(Ma), Savostin A.A," Electric Power Engineering "Department	1. Using SENTINEL 1-2-3 images for monitoring agricultural fields: 4 ECTS. 2. Global navigation satellite systems (NAVSTAR, GLONASS, GALILEO, etc.): 3.5 ECTS. 3. Optimization of computer vision and real-time algorithms: 4 ECTS. 4 Launching initiatives for future engineers - 2.5 ECTS. 5. Intensive course on the development of new technologies "in the field" -2.5 ECTS.	31.03.2020
Modernization: 1. Global navigation satellite systems (NAVSTAR, GLONASS, GALILEO, etc.).	EP "Radio engineering, electronics and telecommunications "(Ba), Ritter D.V, "Electric Power Engineering" Department	1. Remote sensing and application of PA and the environment: 8 ECTS. 2. Global navigation satellite systems (NAVSTAR, GLONASS, GALILEO, etc.): 3.5 ECTS. 3. Web technologies (AgroSDI, Geoportals, Geo-services, Geo-analytical systems): 3ECTS.	31.03.2020
Modernization: 1. Elements of artificial intelligence in technical systems. Implementation: 2. Launch initiatives for future engineers.	EP "Instrument making "(Ma), Savostin A.A, "Electric Power Engineering" Department	. Optimization of computer vision algorithms and real-time implementation: 4 ECTS. 2. Web technologies (AgroSDI, Geoportals, Geo-services, Geo-analytical systems): 3ECTS. 3. Basics of precision farming- characteristics, technologies, economic efficiency, optimal use of resources: 5 ECTS. 4. Launching initiatives for future engineers -2.5 ECTS. 5. Intensive course on the development of new technologies "in the field" -2.5 ECTS.	31.03.2020
Modernization: 1. Sensors of technological processes. 2. Intelligent measuring systems	EP "Instrument making e"(Ba), Koshekov K.T, "Electric Power Engineering" Department	1. Remote sensing and application of PA and the environment: 8 ECTS. 2. Using SENTINEL 1-2-3 images for monitoring agricultural fields: 4 ECTS. 3. Global navigation satellite systems (NAVSTAR, GLONASS, GALILEO, etc.): 3.5 ECTS. 4 Web technologies (Agro SDI, Geoportals, Geo-services, Geo-analytical systems): 3ECTS.	31.03.2020

Criteria for teacher selection for trainigs

Criteria selection of teachers for internships at European universities
1) no less than 3 years work experience in M. Kozybayeva NKSU;
2) knowledge of English at the Intermediate level in accordance with the international scale;
3) experience in the development of modular educational programs, curricula, teaching materials and curricula for special disciplines (in the field of precision farming is welcome!);
4) at least 2 years of lecturing experience;
5) work in M. Kozybaeva NKSU after an internship of at least 3 years;
6) the desire to obtain new knowledge and competence in the field of Precision Agriculture on the experience of European universities and their implementation in the educational process at M. Kozybaev NKSU by upgrading or developing new courses;
7) basic education in the field of radio electronics, instrument making, agriculture, agro engineering, physics, astronomy;
8) the presence of a degree: doctor of science, candidate of science, doctor PhD; and / or academic degree: master.
Now teachers study English.

Teacher that will develop new courses

Koshekov Kairat

Shayakhmetova Altyn

Savostin Alexey

Sartin Sergey

Ritter Dmitry

Akhmetov Murat

Equipment & Software

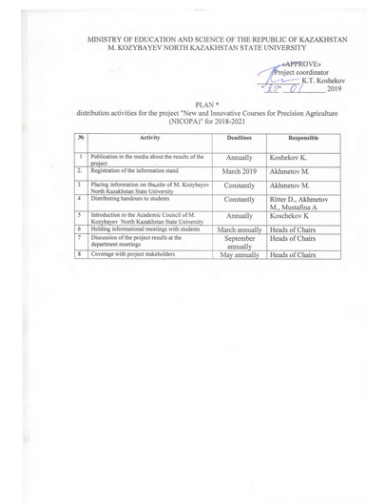| Equipment/Software	Name of the person(s) responsible for the equipment/softwareinstallation	Occupation of the responsible persons	Contact information of the responsible persons
Equipment/Software	Ritter Dmitry	Associate Professor of "Electric Power Engineering" Department	dritter@mail.ru, 877741038609

Dissemination plan

PLAN

distribution activities for the project "New and Innovative Courses for Precision Agriculture (NICOPA)" for 2018-2021

№	Activity	Deadlines	Responsible
1	Publication in the media about the results of the project	Annually	Koshekov K.
2.	Registration of the information stand	March 2019	Akhmetov M.
3	Placing information on the site of M. Kozybayev North Kazakhstan State University	Constantly	Akhmetov M.
4	Distributing handouts to students	Constantly	Ritter D., Akhmetov M., Mustafina A
5	Introduction to the Academic Council of M. Kozybayev North Kazakhstan State University	Annually	Koschekov K
6	Holding informational meetings with students	March annually	Heads of Chairs
7	Discussion of the project results at the department meetings	September annually	Heads of Chairs
8	Coverage with project stakeholders	May annually	Heads of Chairs

Schedule of dissemination events

Calendar of events
on the project "New and Innovative Courses for Precision Agriculture (NICOPA)" for 2018-2021

№	Activity	Deadlines
1	Publication in the media about the results of the project	March 23, 2019
2.	Registration of the information stand	March 28, 2019
3	Placing information on the site of M. Kozybayev North Kazakhstan State University	April 30, 2019
4	Distributing handouts to students	June 28, 2019
5	Introduction to the Academic Council of M. Kozybayev North Kazakhstan State University	June 28, 2019
6	Holding informational meetings with students	September 02, 2019
7	Discussion of the project results at the department meetings	September 28, 2019
8	Coverage with project stakeholders	May 20, 2019

Non-consortium organizations

1. Shagala Agro LLP, SKO, Kyzylzharsky District, Bugrovoye Village, Director O.Z. Zh.
2. LLP "Shatilo and K", SKO Zhambyl district, with. Kazanka, Kostitutsii St., 8 - director Adam O.E.
3. "Atameken-agro" LLP, SKO, Zhambyl district, Blagoveschenka village, ul. Pionerskaya, 15 - director V. Sukhov
4. KT "Mambetov and K", North Kazakhstan Oblast, Mamlyutsky District, Minkseser Village - Director Zhunusov A.N.

Implemented dissemination activities

1) http://www.nkzu.kz/page/view?id=1247;
2) Article in newspaper "Parasat " in Annex 4;
3) Report before the university administration.

Questionnaire for students

Analyze
the responses of the questionnaire and provide results

The survey was attended by 100 students and 20 undergraduates of educational programs for which it is planned to develop the New and Innovative Courses for Precision Agriculture.

As a result of processing the questionnaires, the following was received. More than 90% of respondents know about the Erasmus + program, and more than 80% of them know about the NICOPA project. The overwhelming majority (over 95%) highly appreciated the need to modernize the educational process in the direction of Precision Agriculture.

Also, in accordance with the analyzed results, all respondents are satisfied with the current state of the educational process: the volume of special disciplines, the workload of practical classes, but generally welcome the further improvement of the teaching quality process thanks to the university's participation in international projects involving many years of European experience: 80% indicated a positive evaluation.

More than 60% of respondents wished to have access to more modern equipment and software, as well as to new educational literature.

On the question of interest in obtaining a diploma equivalent to diplomas from leading European universities - 93% responded positively with the rating "Strongly Interested".

82% of respondents were interested in the positive results of the implementation of the NICOPA project and expressed a desire to participate in its implementation.
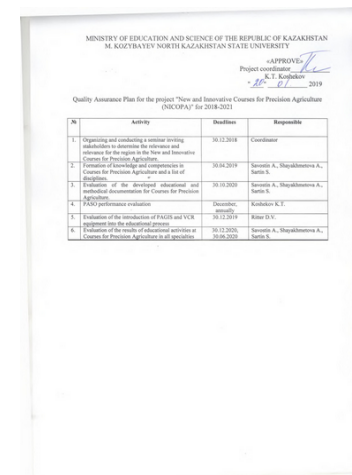
As a result, among students there is a high awareness of the project and interest in its high performance.

Quality Assurance Plan

Quality group

Name, Surname	Occupation	Organization	Contact info (email)
Omarov Zhomart	Director	CEO "Shagala Agro" LLC	altyn.sh@mail.ru
Mustafina Aigerim	Student of IE-17 group	M.Kozybaev NKZU	Prosto.aigera@gmail.ru 87074887610
Igor Grishanov	Director, PhD	"ABI ZHER" LTD	agrosever@mail.ru

PASENSO

Communication

No communication problem.

Thank you for you attention!

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