



«585761-EPP-1-2017-1-FI-EPPKA2-CBHE-JP Enhancing Competences of Sustainable Waste Management in Russian and Kazakh HEIs / EduEnvi

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1. The main results of the project



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- **What courses/modules were developed, for which target groups**

- M.Auezov SKSU team built course of online learning module on sustainable waste management: **Module 2: Biotechnologies for waste utilization. Course 1: Basics of Ecological Biotechnologies - 3 ECTS.**

Main Target group: Local Academic staff

Secondary target group: Master degree students, representatives of companies and local authorities.

How we did develop courses? 5 team members participated in the workshops within the project

-Through the training sessions **team members** adopted the latest research, best practices, and latest technology in Europe in Sustainable Waste Management.

- after the training sessions and peer assessment work the academic staff combined industry-cooperation into defining the competence definitions of curricula as well as about the latest curriculum building approaches

- the academic staff integrated entrepreneurship and innovation methods into the learning module and course

Basics of ecological Biotechnologies.

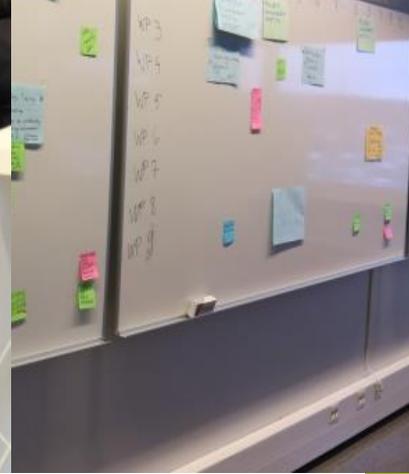
- the academic staff used the pedagogically best suited eLearning tools for each learning purpose in the course, such as collaborative knowledge building, brainstorming, feedback collection, knowledge testing.

Team members organized webinars and seminars where they share by their experience with other teachers:

135 teachers participated in these events (certificates of participation).



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<http://eduenvi.tamk.fi/>



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- How were employers' requirements taken into account when developing the courses

Module 2: Биотехнологии для утилизации отходов

Course: Введение в экологическую биотехнологию - 3 ECTS, ЮКГУ

The academic staff integrated entrepreneurship and innovation methods into the learning module and course

Basics of ecological Biotechnologies.

M.Auezov SKU established more closer cooperation with industries and made need analysis of the industries such as PetroKazakhstanOilProducts, Joint-stock company Chempharm (SANTO Member of Polypharma Group), Water treatment plant, associate partner universities such as South-Kazakhstan State pedagogical university in Shymkent, U.U. Uspanov Kazakh Research Institute of Soil Science and Agrochemistry. All of these enterprises and institutions participated in the needs analysis concerning competences of future professionals, offered expertise, participated in meetings, seminars, conferences organized by the EduEnvi project: 26.04.2018 y., 26.01.-03.02.2019 y., 27.02.2019 y., 13.11.2019 y., 26.04.2020 y., 23.04.2020 y., 12.05.2020 y., 11.02.2021 y., 15.02.2021 y., 27.02.2021 y., 7-9.04.2021 y., and in the Summer school, organized by M.Auezov SKU in joint cooperation with KokSU, Kaznu, TSU, UrFU.

All of this events allowed to do the integration of industry-university cooperation into the learning modules.

Academic staff took into account their problems with utilization of some waste, including them into case study, projects, materials of lectures.



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The possibilities of the webinars were used by the project participants not only as a modern tool for dissemination and interactive learning, but also as a means of increasing the efficiency of scientific and organizational work at the university: a number of webinars were organized with the participation of universities, schools and other organizations.





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- **What new educational programs and / or specializations were prepared on the basis of the developed courses / modules**

Количество и наименование разработанных инновационных образовательных программ в рамках проекта: Number and name of developed educational programs within the project: 2 program.

Materials of course Basics of Ecological Biotechnologies included into 2 programs:

7M05120- «Экобиобезопасность в агропромышленной и индустриальной зоне»- Ecobiosafety in the agroindustrial and industrial zone

7M05126-«Ветеринарная биотехнология»-Veterinary biotechnology



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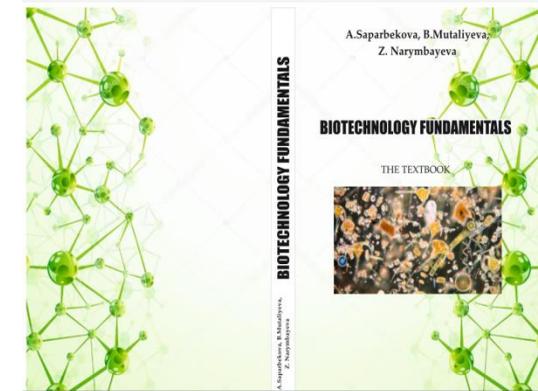
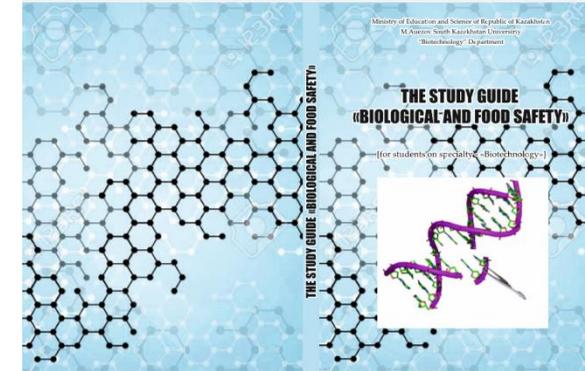
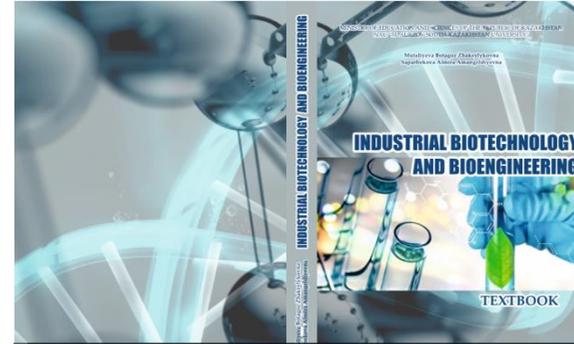


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- **What educational materials and methodological complexes, manuals, teaching aids, etc. were developed, if any**

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Articles:

1. Жунусхожаев А.Т., Муталиева Б.Ж., Парманкулова П.Ж. Мадыбекова Г.М. к.т.н., ЮКГУ им. М. Ауэзова, Шымкент, Казахстан к.т.н, ЮКГУ им. М. Ауэзова, Шымкент, Казахстан докторант, ЮКГУ им. М. Ауэзова, Шымкент, Казахстан преподаватель, Назарбаев интеллектуальная школа химико-биологического направления, Шымкент, Қазақстан. **ИДЕИ ПРОЕКТА ЭРАЗМУС+ 585761 EDUENVI В ИСПОЛЬЗОВАНИИ ИНФОРМАЦИОННО-КОММУНИКАЦИОННЫХ ТЕХНОЛОГИЙ И ОНЛАЙН ОБУЧЕНИЯ ДЛЯ РАЗВИТИЯ ИНКЛЮЗИВНОГО ОБРАЗОВАНИЯ.** Труды республиканского научно-педагогического круглого стола «Креативная молодежь – путь к интеллектуальной державе и модель «4К - Креативность, критическое мышление, коммуникабельность, умение работать в команде» стр.127-131.
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6. ONLINE COURSES FOR SPECIALISTS TRAINING IN SUSTAINABLE WASTE MANAGEMENT IN THE FRAMEWORK OF EDUENVI PROJECT. Mutaliyeva B.Zh., Zhunuskhojayev A.T., Madybekova G.M., Kallio E. Proceedings of International scientific-practical conference "Auezov readings –18: spiritual heritage of the great Abai» on the 175th anniversary of Abai Kunanbayev. 2020, T.8.-p.33-36.



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8. THE ROLE OF ECOLOGICAL BIOTECHNOLOGY IN THE FORMATION OF SPECIALISTS IN THE FIELD OF ENVIRONMENTAL PROTECTION AND ENVIRONMENTAL MANAGEMENT

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22. Сапарбекова А.А., Ахмедова З.Р., Латиф А.А., Муталиева Б.Ж., Ли А.И. Использование виноградных выжимок как промышленного источника биологически-активных веществ. II International conference "Internalization of higher education: experience of the realization of joint European projects", dedicated to the 10th anniversary of the implementation of the joint European projects Tempus IV, Erasmus Mundus and Erasmus+ in the ShUalikhanov KSU. Kokshetau, 2019.-p.18-22.



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- **Training format / formats (online, offline, mixed)**

Blended

- **The innovativeness of the programs (in addition to the content - what modern teaching methods are used, how the tools of the Bologna process are used, etc.)**

One of the main significant results of the project is an increase in the level of different categories of competencies of the project participants. These are methodological and instrumental competencies, since teachers, through teaching pedagogy and e-learning tools, have learned to work with a new format of classes; mastering and applying new teaching technologies; recording of video lectures; skills in working with a graphic tablet, MOODLE system, etc. All teachers participating in the project use e-learning tools in the educational process (Canva, Logo, Prezi, Google Form, Google Classroom, Zoom, WebEx meeting, Kahoot, Socrative and others). Practical assignments are created using examples of the real market to involve students in solving specific situations and projects that arise in the industrial field, which ultimately is focused both on improving the qualification level of students and the formation of the ability for further employment.

For example, case assignments contain the following actual situations and problems:

- The city uses outdated waste processing technology. How to increase the level of waste recycling? Please suggest a complex technology that will allow you to obtain fertilizers and protein preparations from organic waste, along with biogas.



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- **How many students (company staff) are trained/ were trained according to the developed programs**
- SKSU-139 students
- 10 representatives of companies

- What are the job prospects (demand) of graduates: Сейчас многие организации уделяют большое внимание экологии, требования возрастают, поэтому знания в этой области нужны и специалисты востребованы.
Now many organizations pay great attention to ecology, requirements are increasing, so knowledge in this area is needed and specialists are in demand.



2. Opinions about the developed courses



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2. Opinions about the developed courses

- students
- teachers
- alumni
- university administration
- employers
- experts

A survey was conducted among students on their satisfaction with the courses, which gave positive feedback. We also attracted stakeholders to provide recommendations on the content of the course. We used the recommendations in the development of an additional course “Problems of Environmental Pollution in the Agro-Industrial Zone”.

Feedback were received from:

139 students from M.Auezov SKSU

135 teachers from M.Auezov SKSU, SKSPU etc.

10 representatives of enterprises

Вопросы Ответы 52

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Вопрос 1 из 6

QUESTIONNAIRE for a STUDENT

Erasmus + project team "Enhancing competence of Sustainable Waste Management in the Russian and Kazakh HEIs – EduEnvi" conducts questionnaires to identify the necessary competencies in education and training in the field of waste management that meet modern labor market requirements. When answering a question, it is enough for you to carefully read all the answers and mark the appropriate ones. You can enter the missing, from your point of view, answers and express your opinion. The survey is anonymous; its results will be presented in the form of summarized reports to improve online courses.

Thank you in advance for your help!

Choose your university *

1. KazNU
2. SKSU
3. KokSU
4. ITMO
5. URFU
6. Tmsu



3. Prospects for further implementation and development



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3. Prospects for further implementation and development

- educational
- research
- collaboration with the local business and industry
- how the equipment/software purchased will be used further

The project have prospects for further implementation and development in the education and science: double diploma in the field of ecological biotechnologies, master degree, Ph.D. theses, scientific works in the field of WM with involvement of supervision from industries.

- Equipment are used for university needs to provide by E-books from ProQuest, to do video contents for educational process.
- 1 center of Erasmus+ program / room were created within the project
- Signed agreements (Подписаны меж договора) – 6

Mobility of students (Мобильность студентов) - 80 students of SKSU, KokSU, TSU, UrFU, Uva during Summer school



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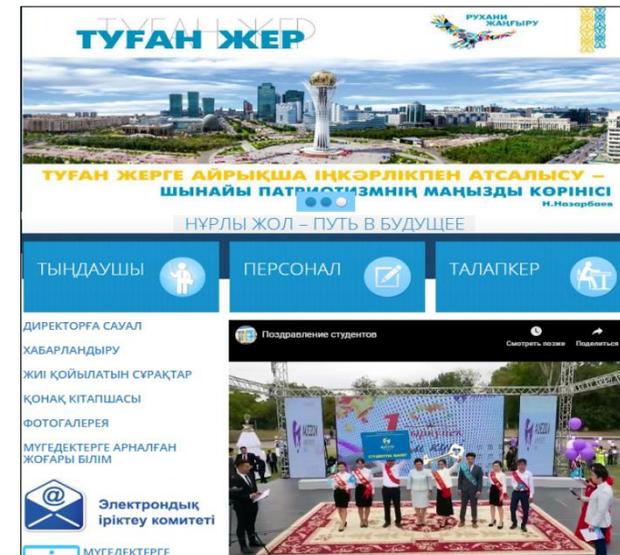
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Университет внедряет современные технологии дистанционного обучения с 2004 года.

Сегодня ЮКУ - один из лидирующих университетов в области электронного обучения в Казахстане. По результатам национального рейтинга образовательных программ, проводимым Независимым казахстанским агентством по обеспечению качества в образовании (НКАОКО) с 2015 года организация портала дистанционного обучения ЮКУ признаются одним из лучших по республике.

- На базе системы дистанционного обучения «Прометей» разработан образовательный портал SDE.SKSU.KZ. Количество пользователей составляет более 25 000 человек;

- Для обеспечения учебного процесса качественным электронным учебным контентом созданы специализированная комплексная видеостудия и центр разработки электронного контента, в том числе и для курса Основы экологических биотехнологий.



В институте создан студийный комплекс, оснащенный современной техникой, с целью обеспечения дистанционной образовательной деятельности.



Доступ к подготовленным видео материалам можно получить через Интернет видео хостинг YouTube и сайт института

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