Non-commercial joint-stock company
«Kazakh National Agrarian Research University»

AGREED
Chairman of the Board
of LLP «Kazakh Research Institute
Agriculture and Plant Growing»
_____Sh. Bastaubaeva
«_01_» ___03___ 2024

APPROVED
Chairman of the Board - Rector
_____ A. Kurishbaev
«_01_» ___03___ 2024

EDUCATIONAL PROGRAM

«7M08112 - Breeding and seed production of agricultural crops»

Awarded degree: Master of Science in Agriculture under the educational program
«7M08112 - Breeding and seed production of agricultural crops»

ALMATY 2024

Approved at the meeting of the Department «Agronomy, breeding and biotechnology»
Protocol № 6 « 10 » 01 2024
Head of the department _____ Y.Zhanbyrbaev

Considered at meetings Academic Committee of the Faculty of «Agrobiology»
Protocol № 6 « 30 » 01 2024
Chairman of the AC of the faculty _____ G.Bayadilova

Reviewed by the Educational Methodological Council of the University and recommended to the Academic Council
Protocol № 4 « 01 » 02 2024
Chairman of the EMC of the University _____ A.Abdyrov
The educational program was approved at the meeting of the Academic Council of KazNARU
Protocol № 9 « 01 » 03 2024

Developers:

P.d. head of the department E.Abildaev

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Professor of the Department S.Suleimenova

Associate Professor G.Bayadilova

Senior lecturer, PhD G.Baiseitova

Employer:
Chairman of the Board of LLP «Kazakh Research Institute Agriculture and Plant Growing» Sh.Bastaubaeva

Agreed:

Head of the Educational Programs Design Office Zh.Kussainova

Field of application

It is intended for the training of masters in the educational program «7M08112 — Breeding and seed production of agricultural crops» in the NPJSC «Kazakh National Agrarian Research University»

Regulations

«On Education» The Law of the Republic of Kazakhstan dated 27 July, 2007 No. 319-III;

Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 №2;

Classifier of training programs for personnel with higher and post-graduate education. Order of the Minister of Education and Science of the Republic of Kazakhstan of October 13, 2018 No. 569;

Standard Rules for the activities of educational organizations implementing educational programs of higher and (or) postgraduate education. Order of the Minister of Education and Science of the Republic of Kazakhstan of October 30, 2018 No. 595;

Rules of the organization of the educational process on credit technology of training. Order of the Minister of Education and Science of the Republic of Kazakhstan dated 12.10.2018 No. 563;

Algorithm of inclusion and exclusion of educational programs in the Register of educational programs of higher and postgraduate education. Order of the Minister of Education and Science of the Republic of Kazakhstan No. 665 dated December 4, 2018;

Order No. 106 of the Minister of Science and Higher Education of the Republic of Kazakhstan dated October 12, 2022. Rules for keeping the register of educational programs, implemented by the organizations of higher and (or) postgraduate education, as well as the grounds for inclusion in the register of educational programs and exclusion from it.

Industry qualifications framework (Atameken NPP website http://atameken.kz/**):**

Professional standard: Teacher (faculty) of higher and (or) postgraduate education organizations Approved by order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated November 20, 2023 № 591.

Professional Standard «Nursery garden activities» Appendix № 17 to the order of the Deputy Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan «Atameken» dated 26.12.2019 г., № 263.

Atlas of new professions:

Agrogeneticist https://www.enbek.kz/atlas/ru/profession/225

1. Passport of the educational program

Code and classification of the education field	7M08 Agriculture and bioresources
Code and classification of training areas	7M081 Crop Production
Code and name of educational program	«7M08112 — Breeding and seed production of agricultural crops»
Type of educational program	New
The purpose of the educational program	Educating of highly qualified specialists of seed breeders with professional skills in the field of breeding and seed production of agricultural crops, capable of solving theoretical and practical problems of professional activity in modern conditions.
Level according to ISCED	7
Level according to NQF	7
Level according to SQF	7
Номер приложения к лицензии на направлению подготовки кадров	KZ89LAA00031870 05 August 2021
Accreditation of EP The name of the accreditation body The period of accreditation validity	Certificate №: AB4873 IAAR 16.06.2023 г. - 15.06.2028 г.
Degree awarded	Master of Science in Agriculture under the educational program «7M08112 — Breeding and seed production of agricultural crops»
Learning outcomes	Table 2
List of qualifications and positions	A graduate can carry out professional activities in the following areas: - Head of the nursery; - Head of the department (in agriculture); - Teacher at universities of agricultural profile; - Agrogeneticist https://www.enbek.kz/atlas/ru/profession/225; - Chief Agronomist; - Agronomist; - Agronomist-seed grower; - Agronomist for assessing the quality of the tested varieties; - Breeder; - Breeder-biotechnologist; - Researcher at the Research Institute;
Field of professional activity	- Solving complex tasks in the field of agriculture; selection and seed production of agricultural crops, agricultural biotechnology, crop production, technologies for the production of agricultural crops, technologies for processing and storage of crop products. Creation of new varieties and hybrids of agricultural and ornamental plants, collection and preparation of working collections of breeding numbers, study of the world gene pool of cultivated plants and their wild relatives. - Questions of plant resistance to adverse environmental factors at various levels of the organization of biological objects, ways to strengthen plant resistance.
Scope and object of professional activity	Field of professional activity: - research organizations; - educational organizations;

	- manufacturing enterprises and laboratories, biotechnological, microbiological, industries; - sanitary and epidemiological stations, plant protection; - breeding and seed-growing departments of research institutes and universities; - laboratories for quality and safety control of agricultural products; - variety testing stations, plant protection stations; - botanical gardens and nature reserves; - the system of secondary and higher education. The object of professional activity: - a plant; - plant seeds; - plant genetic resources; - technological processes of plant breeding; - production of crop production; - scientific research on the creation of new varieties and hybrids; - seed production of new varieties and hybrids of agricultural plants.
Functions of professional activity	- deepening of theoretical and practical individual training in various areas of breeding and seed production of agricultural crops with the basics of genetics, due to the needs of the state and the labor market; - the ability to formulate and solve timely scientific and practical problems at the intersection of sciences, successfully carry out research and management activities in various institutions of the appropriate profile; - quality control of agricultural products - creating the necessary conditions for the cultivation of crops; - application of scientific methods of cognition in professional activity - generalization of the results of experimental research and analytical work in the field of breeding and seed production, genetics of agricultural crops in the form of a master's thesis, an article, a report, an analytical note, etc. - think creatively and creatively approach the solution of new problems and situations.
Types of professional activity	**Production and technological:** - collection and creation of a working collection of breeding material; - participation in breeding processes when creating new varieties and hybrids of agricultural crops; - observation, collection and analysis of field observations and laboratory studies of researchers; - accelerated reproduction and introduction of new varieties and hybrids of agricultural crops; - collecting research data, clearing data, structuring it and preparing it for publication. **Selection and seed production:** - study of the source material for plant breeding; - study of the influence of environmental factors on the genotype of plants in order to achieve their maximum productivity; - study of the features of plant breeding; - study of the world gene pool of plants for breeding; - intensification and improvement of the efficiency of the breeding process through the introduction of biotechnological methods; - seed production and testing of varieties of agricultural crops. **Educational (pedagogical):**

	- study of modern methods of teaching disciplines on breeding and seed production, biotechnology and plant genetics; - development of scientifically-based methods of advanced training of employees of the selection and seed-growing direction; - proficiency in the formation of educational material, lecturing, readiness to teach in general education organizations, as well as in educational organizations of higher education and the management of research work of students, the ability to present educational material in oral, written and graphic form for various contingents of listeners - the use of innovative technologies in the process of research and pedagogical activity. - teaching biology in secondary educational institutions.
Be competent	In the field of research methodology: - in matters of innovative technical and technological productions in all branches of agriculture; - in the field of scientific and scientific-pedagogical activity in educational organizations; - in the implementation of scientific projects and research in the professional field. Having: - the ability to independently organize and conduct scientific research using modern breeding and biological achievements; - the ability to organize the production of seeds and planting material of agricultural crops on the basis of the latest achievements of agricultural science and biotechnology; - the ability to recognize genetic differences in breeding, for different environmental conditions, when choosing varieties of agricultural crops; - willingness to apply public speaking skills, skills of conducting an effective dialogue with the audience by methods and methods of teaching disciplines in higher educational institutions; - willingness to apply a variety of methodological approaches to modeling and designing varieties of field, fodder, fruit and vegetable crops.

2. Learning outcomes on EP

Codes	Learning outcomes
LO1	Demonstrate developing knowledge and understanding of the history and philosophy of agricultural science, ability in pedagogical management and knowledge of the basics of psychology, fluency in a foreign language in professional activities and leadership qualities of a future Master of Science.
LO2	Know and understand the foundations of the psychology of education and management, the psychology of cognitive and managerial activity, the typology of conflicts, the foundations of personality behavior in conflict situations.
LO3	Know and understand the basics of modeling business processes and resolving problem situations, the basics of project management using modern innovative and digital technologies.
LO4	Have the ability to set scientific and technical tasks, as well as develop and carry out research based on scientifically based methodology for planning and conducting experiments.
LO5	Ability to understand the basic laws in the field of general genetics, genomics, population genetics, physiology of plant growth and development, the role of genetic resources and starting material in the creation of new plant varieties.
LO6	Demonstrate knowledge and understanding of the basic concepts, laws, mechanisms and achievements of modern research in the field of breeding and seed production, in the creation and adaptation, reproduction and distribution of new and hybrids of agricultural crops.
LO7	Apply the Laws and other regulatory legal acts of the Republic of Kazakhstan in the field of creating and using new varieties and hybrids of agricultural crops to the existing requirements for the formation of judgments, taking into account social, ethical and scientific considerations, as well as when carrying out work on testing new varieties and hybrids in various soil -climatic conditions of the republic.
LO8	Interpret modern biotechnological methods and research in crop breeding and seed production, various methods of plant propagation and general principles of propagation biology in breeding research.
LO9	Collect and use information accumulated in databases on the structure of genomes, proteins and other biological information, possession of the main bioinformatics tools for the analysis of genomic, structural and other biological information.
LO10	Ability to use specialized knowledge of information technology to conduct research in the field of breeding and seed management of agricultural crops.

2. Content of the educational program

№	CC/UC/OC	Discipline code	The name of the discipline forming competences	in academic credits	Volume in hours						Distribution of credits by course and semester				Department	form of control
					in academic hours	Classroom			Extracurricular		1 курс		2 курс			
						Lectures	Practical class	Other (practice)	IWST	IWS	1	2	3	4		
	CC	**Базалық пәндер циклы/ Цикл базовых дисциплин/ Cycle of basic subjects:**		**35**	**1050**	**90**	**230**		**210**	**520**						
		Модуль 1. Ғылыми қарым-қатынас және жоғары білім беру процесін ұйымдастыру/ Научная коммуникация и организация процесса обучения в высшей школе/ Scientific communication and organization of the learning process in higher education		**20**	**600**	**45**	**140**		**120**	**295**						
1	UC	GTF/ IFN/ HAPOS 5204	Ғылым тарихы мен философиясы/ История и философия науки/ History and Philosophy of Science	5	150	15	30		30	75	5				22	exam
2	UC	SHTK/ IYaP/ FLP 5205	Шет тілі (кәсіби)/ Иностранный язык (профессиональный)/Foreign Language (for specific purposes)	5	150		45		30	75	5				22	exam
3	UC	ZhMP/ PVSH/ TT 5206	Жоғары мектептің педагогикасы/ Педагогика высшей школы/ Tertiary Teaching	5	150	15	30		30	75	5				21	exam
4	UC	BP/ PU/ POM 5207	Басқару психологиясы/ Психология управления/ Psychology of Management	3	90	15	15		30	30		3			21	exam
5	UC	PP/ TP 5201	Педагогикалық практика/ Педагогическая практика/ Teaching Practice	2	60		20			40		2			21	report
		Модуль 2. Теоретические основы селекций и семеноводство / Селекция және тұқым шаруашылығының теориялық негіздері / Theoretical foundations of breeding and seed production		**15**	**450**	**45**	**90**		**90**	**225**						

6	OC	OSFN/ FOSR/ PBOPB 5208	Өсімдік селекциясының физиологиялық негіздері / Физиологические основы селекции растений/ Physiological basis of plant breeding	5	150	15	30		30	75	5				1	exam
		STSHGN/ NOSS/ SBOBASP 5208	Селекция және тұқым шаруашылығының ғылыми негіздері/ Научные основы селекции и семеноводства / Scientific basis of breeding and seed production													
7	OC	GORB / RBCR / RBFP 5209	Гүлді өсімдіктердің репродуктивті биологиясы / Репродуктивная биология цветковых растений/ Reproductive biology of flowering plants	5	150	15	30		30	75	5				1	exam
		GGKZE/ ZOSGG/ RAFOTSOGAG 5209	Гендер мен геномдардың құрылымының заңдылықтары мен ерекшеліктері/ Закономерности и особенности структуры генов и геномов/ Regularities and features of the structure of genes and genomes													
8	OC	OSB/ BSR/ BIPB 5210	Өсімдіктер селекциясындағы биотехнология / Биотехнология в селекции растений/ Biotechnology in plant breeding	5	150	15	30		30	75	5				1	exam
		GING/ GOGI/ GWBOGE 5210	Гендік инженерия негіздерімен геномика/ Геномика с основами генетической инженерии/ Genomics with basics of genetic engineering													
		Кәсіптік пәндер циклі/ Цикл профилирующих дисциплин/The cycle of specialized disciplines		**53**	**1590**	**120**	**385**		**240**	**845**						
		Модуль 3. Іскерлік шешімдерді басқару және модельдеу / Управление и моделирование бизнес решений/ Management and modeling of business solutions		**30**	**900**	**60**	**220**		**120**	**500**						
9	UC	KSZhB/ UPOP/ PMITFOE 5301	Кәсіпкерлік саласындағы жобаларды басқару/ Управление проектами в области предпринимательства/ Project management in the field of entrepreneurship	5	150	15	30		30	75		5			14	exam
10	UC	ASHDSTSHSGZA /MNIOSSSK/ MOSRITFOBASP	Ауыл шаруашылығы дақылдарының селекциясы және тұқым шаруашылығы саласындағы ғылыми зерттеулер әдіснамасы/	5	150	15	30		30	75		5			1	exam

		OAC 5308	Методология научных исследований в области селекция и семеноводство сельскохозяйственных культур/ Methodology of scientific research in the field of breeding and seed production of agricultural crops														
11	UC	ZP/ IP/ RST 6318	Зерттеу практикасы/ Исследовательская практика/ Research scientific training	10	300		100			200		5		5	1	
12	UC	BSHM / MBR/ MOBS 6309	Бизнес шешімдерді модельдеу/ Моделирование бизнес решений/ Modeling of business solutions	5	150	15	30		30	75			5		21	exam
13	UC	Kon/ Con 6310	Конфликтология/Conflictology	5	150	15	30		30	75			5		21	exam
		Модуль 4. Селекция және тұқым шаруашылығының практикалық мәселелері/ Практические вопросы селекции и семеноводство / Practical issues of breeding and seed production		**23**	**690**	**60**	**165**		**120**	**345**						
14	OC	OGR/ GRR/ PGR 5312	Өсімдіктердің генетикалық ресурстары / Генетические ресурсы растений/ Plant genetic resources	6	180	15	45		30	90		6			1	exam
		SMOSBS/ SSBKSR/ VSACOBOCP 5312	Сорттану және мәдени өсімдіктер сорттарының биоәртүрлілігін сақтау/ Сортоведение и сохранение биоразнообразия культивируемых сортов растений/ Varietal science and conservation of biodiversity of cultivated plant													
15	OC	BS/ AS/ AB 6315	Бейімдеу селекциясы / Адаптивная селекция/ Adaptive breeding	6	180	15	45		30	90			6		1	exam
16	OC	DTN/ ODT/ BODT 6316	ДНҚ технологиясының негіздері / Основы ДНК-технологии / Basics of DNA technology	6	180	18	42		30	90			6		1	exam
17	OC	BN/ OB/ FOB 6313	Биоинформатика негіздері/ Основы биоинформатики/ Fundamentals of Bioinformatics	6	180	15	45		30	90			6		1	exam
		AKCT / CTA/ DTIA 6313	Агроөнеркәсіптік кешендегі цифрлық технологиялар / Цифровые технологии в АПК/ Digital technologies in agriculture													
		TTB/SSK/ SSASC 6317	Тұқымтану және тұқымдық бақылау/ Семеноведение и семенной контроль/ Seed science and seed control	5	150	15	30		30	75			5		1	exam

		STSH / SS/ BSP 6317	Селекциялық тұқым шаруашылығы/ Селекционное семеноводство/ Breeding seed production													
			Магистранттың ғылыми-зерттеу жұмысы/ Научно-исследовательская работа магистранта/ Research work of a graduate student	**24**	**720**		**120**			**600**						
			Тағылымдамадан өту мен магистрлік диссертацияны орындауды қамтитын магистранттың ғылыми-зерттеу жұмысы (МҒЗЖ)/ Научно-исследовательская работа магистранта, включая прохождение стажировки и выполнение магистерской диссертации (НИРМ)/Research work of a master's student(RWMDS), including internship and completion of a master's thesis	24	720		120			600		4	3	17	1	report
			Қорытынды аттестаттау (ҚА) / Итоговая аттестация (ИА) / Final certification (FC)	**8**	**240**					160				8		
			Магистрлік диссертацияны рәсімдеу және қорғау (МДРҚ) / Оформление и защита магистерской диссертации (ОиЗМД) / Preparation and defence of Master's Thesis (PDMT)	8	240		80			160				8		Master's thesis defense
			Барлығы/ Всего/ Total	**120**	**3600**	**210**	**815**		**450**	**2125**	**30**	**30**	**30**	**30**		

[1] **Note:**

№	Факультет / Кафедра	
	ҚАЗАҚ ТІЛІНДЕ	**IN ENGLISH**
I	**Агробиология**	**Agrobiology**
1	Агрономия, селекция және биотехнология	Agronomy, breeding and biotechnology
2	Жеміс-көкөніс шаруашылығы, өсімдік қорғау және карантин	Horticulture, plant protection and quarantine
3	Топырақтану, агрохимия және экология	Soil science, agrochemistry and ecology
II	**Ветеринария**	**Veterinary**
4	Акушерлік, хирургия және өсіп-өну биотехнологиясы	Obstetrics, Surgery and Reproductive Biotechnology
5	Биологиялық қауіпсіздік	Biosecurity
6	Клиникалық ветеринариялық медицина	Clinical Veterinary Medicine
7	Микробиология, вирусология және иммунология	Microbiology, virology and immunology
8	Ветеринариялық санитариялық сараптау және гигиена	Veterinary sanitary examination and hygiene
9	Н.У.Базанова атындағы «Физиология, морфология және биохимия»	"Physiology, morphology and biochemistry" named after N.U. Bazanova
III	**Су, жер және орман ресурстары**	**Water, land and forest resources**
10	Орман ресурстары, аңшылықтану және балық шаруашылығы	Forest resources, hunting and fisheries
11	Жер ресурстары және кадастр	Land resources and cadastre
12	Су ресурстары және мелиорация	Water resources and melioration
IV	«Бизнес және құқық» жоғары мектебі	Higher School "Business and Law"
13	Есеп, аудит және қаржы	Accounting, audit and finance
14	Х.Д.Чурин атындағы «Менеджмент және агробизнесті ұйымдастыру»	"Management and organization of agribusiness" named after H.D. Churin
15	Құқық	Right
V	**Зооинженерия және тағам өндірісінің технологиясы**	**Zooengineering and food production technology**
16	Зооинженерия	Zooengineering
17	Тағам өнімдерінің технологиясы және қауіпсіздігі	Technology and food safety
VI	Инженерлік-техникалық	Engineering
18	Аграрлық техника және механикалық инженерия	Agricultural machinery and mechanical engineering
19	И.В.Сахаров атындағы «Машина пайдалану»	"Machine use" named after I.V. Sakharov
20	Энергия үнемдеу және автоматика	Energy saving and automation
21	IT-технологиялар және автоматтандыру	IT technologies and automation
VII	**Басқарма Төрағасы - Ректордың орынбасары**	**Deputy Chairman of the Board- Rector**
22	Жалпы білім беру пәндер	General university department
23	Дене тәрбиесі және спорт	Physical education and sports
24	Әскери кафедра	Military department

4. Map of competence

Competency Code	Module	Core competencies	Learning outcomes
MC 1	Module 1. Scientific communication and organization of the learning process in higher education	- in the nature, structure, principles of organization and functioning of science; - in the production of knowledge, patterns of formation and development of scientific disciplines; - in formulating and solving problems arising in the course of research activities; - in the application of methodological and methodological knowledge, conducting scientific research, pedagogical and educational work. - writing scientific articles, theses, speaking at conferences, symposiums.	In application of methodological and methodical knowledge, carrying out scientific research, pedagogical and educational work. Possession of communicative competence in the framework of international standards, gave the development of skills and abilities of active conduct of professional activities.
MC 2	Module 2. Theoretical foundations of breeding and seed production	- Forms knowledge about the physiological basis of growth and development of agricultural crops - Formation of knowledge about the variety of methods of plant propagation and the ability to use theoretical knowledge about plant propagation in practice. Acquaintance with the paths of evolution, methods of plant reproduction. - Formation of knowledge about the biotechnological foundations of plant propagation and the possibility of their use in breeding and seed production.	- Possess knowledge of the physiology of growth and development of crops. - The ability to apply knowledge about the variety of methods of plant propagation in one's professional activities. - Own biotechnological methods of plant propagation and be able to apply them in breeding. - Own biotechnological methods of plant propagation and be able to apply them in seed production.
MC3	Module 4. Managing and modeling business solutions	Forms an idea of the psychology of the negotiation process for conflict resolution, mediation as a technology for conflict regulation. History of the development of project management methods; methodological approaches to decision-making on developing a project concept, its structuring and evaluation. Recommendations on the stages of research work. Familiarization with the decision-making process, starting from the formalization of the initial problem, through the construction and solution of a mathematical model on a computer, to the analysis of the decision and the formation of a management decision. They will study in the system of the agro-industrial complex in market conditions, economic thinking, entrepreneurial activities, organize and effectively	The ability to conduct the psychology of the negotiation process for resolving disputes and their regulation. Decisions are made in the agro-industrial complex system under market conditions. Economic thinking in entrepreneurial activity. Effective management of collective and own enterprises.

		manage collective and own enterprises.	
MC4	Module 4 Practical issues of breeding and seed production	- Formation of knowledge among undergraduates about plant genetic resources as the basis of modern selection and development of fundamental research in plant growing. Loss of diversity and shortage of crops used in production under conditions of global and local climate change. The diversity of collection material and the condition of its reliable preservation and rational use in the development of breeding technologies and priority fundamental and applied directions in plant growing. - Introduces students to the current state of bioinformatics and computational and mathematical methods and approaches to their solution. A review of information, mathematical, and statistical technologies in genomics and proteomics is conducted, as well as the study of computational biology and the dynamics of entire systems of organisms. - Formation among undergraduates of the basis for creating adapted varieties and hybrids of agricultural crops using modern and traditional breeding methods. Introduction to selection as a complex science developing on the basis of new biological research and new breeding techniques aimed at creating varieties and hybrids with high adaptive potential. - Formation of theoretical knowledge about seed production among undergraduates, as well as practical skills in assessing their varietal and sowing qualities. - Formation of knowledge, skills and abilities in preparing documents for varietal quality of seeds and planning technological operations in seed production. - Formation of a set of methods for undergraduates based on the latest achievements of information technology. And this, first of all, is the implementation, within the framework of applied computer programs, of the tasks of selecting highly productive adaptive plant varieties, calculating doses of fertilizers, optimizing crop rotation systems, etc. - Formation of theoretical and practical knowledge among undergraduates about seed science, the structure and biology of seed formation, chemical	- Use genetic resources to create new varieties and hybrids, conduct fundamental research in the field of plant growing. - Use genetic resources to accelerate the breeding process to create domestic competitive varieties of agricultural crops. - Possess information about the current state of bioinformatics. - Possess knowledge and methods of creating adapted varieties and hybrids of agricultural crops. - Own biotechnological methods in plant breeding and be able to apply them in breeding and seed production. ability to evaluate and prepare seeds for sowing; - ability to justify the technology used for sowing and caring for crops; - ability to conduct laboratory analysis of samples of seeds, plants, soil, plants, etc. - the ability to apply the latest achievements of information technology in the fields of breeding and seed production. - ability to apply computer programs to solve plant breeding problems. - the ability to assess the sowing qualities of seeds and their condition. – ability to prepare documents for seed quality of seed material - ability to plan seed production processes. - ability to carry out varietal and sowing control - ability to monitor the implementation of activities for the production and procurement of seeds.

		composition and sowing, yield indicators. Concepts - variety and heterotic hybrid as objects of seed production. The importance of propagation methods and pollination methods for preserving the varietal qualities of seeds. Various types of weeds and diseases, ways to improve the health of seeds and planting material. - Formation of master's students' knowledge of the rules for implementing varietal and seed control, soil assessment, laboratory varietal testing, and examination of seed quality. As well as control over the implementation of activities for the production, procurement, processing, storage, sale, transportation and use of seeds.	

5. Summary table reflecting the volume of disbursed credits in the context of the educational program

Course of study	Semester	Number of subjects studied				Number of academic credits					Total	Total in academic hours	Quantity	
		CBD		CPD		Theoretical training	Teaching practice	Research practice	MRW	Final certification			Exam	Report
		UC	OC	UC	OC									
I	1	3	3			**30**					30	900	5	
	2	1		3	1	**19**	2	5	4		30	900	4	3
II	3			2	3	**27**			3		30	900	5	1
	4							5	17	8	30	900		2
Total		**3**	**3**	**4**	**4**	**76**	**2**	**10**	**24**	**8**	**120**	**3600**	**14**	**6**

Information about disciplines

№	Name of the discipline	Brief description of the discipline (30-50 слов)	Num-ber of credits	Genera ted compe tencies
Cycle of basic subjects / UC				
1	History and Philosophy of Science	Forms a culture of scientific thinking in students, develops analytical skills and research skills, provides theoretical and practical knowledge necessary for a future scientist. It is important in an era of increasing urgent need for science and scientists. Introduces the phenom-enon of science as a subject of special philosophical analysis into the prob-lematics, forms knowledge about the history and theory of science; about the laws of development of science and the structure of scientific knowledge; about science as a profession and social institution; on the methods of conduct-ing scientific research; on the role of science in the development of society.	5	MC1, LO1
2	Foreign Language (for specific purposes)	The main goal of the discipline is the systemic deepening of communicative competence within the framework of international standards of foreign language education based on the further development of skills and abilities of active command of English in the professional activities of the future Master of Science. Development of master's skills: - reading literature in English in the specialty for receiving and transmitting scientific information; - registration of the extracted information in the form of translations, annotations, abstracts; - conducting conversations in English on topics related to the specialty and scientific work of the undergraduate.	5	MC1, LO1
3	Higher education pedagogy	The course is obligatory for all specialties of the magistracy. This course examines pedagogical science and its place in the system of human sciences, the modern paradigm of education, the system of higher education in Kazakhstan, education and the formation of the personality of a specialist, and management in education.	5	MC1, LO1, LO2
4	Psychology of management	Discipline examines the subject, nature, tasks and structure of management psychology, methods of psychological research and basic approaches to its study. Examines the psychology of the subject of management, the psychology of cognitive activity, perceptual, mne-mic, thought processes in management. The course forms ideas about etiquette in the activity of a modern business person, communicative competence of a manager, emotional and volitional states in management activities and ability to manage activities.	3	MC1, LO1, LO2, LO7

Базалық пәндер циклы/ Цикл базовых дисциплин/ Cycle of basic subjects (OC)				
5	Physiological basis of plant breeding	The discipline "Physiological basis of plant breeding" examines the basic processes and mechanisms underlying the development and growth of plants, as well as their influence on breeding processes. In short, students learn physiological aspects that help optimize the plant breeding process to produce desired characteristics in cultivated crops.	5	MC2, LO5
	Scientific basis of breeding and seed production	The discipline "Scientific basis of breeding and seed production" studies a wide range of scientific and applied aspects related to the improvement of crops through systematic selection and seed production. Studies the basic principles, methods and technologies of seed science, as well as the fundamentals of scientific research in the field of selection and breeding of crops to create high-quality seed material.		MC2, LO5
6	Reproductive biology of flowering plants	The discipline considers the variety of ways of plant propagation and the ability to use in practice the theoretical knowledge of plant propagation. Studying the basics of reproductive biology, embryology and seed science. Influence of environmental factors on seed productivity. Familiarity with the general principles of reproductive biology in breeding research. Acquaintance with the ways of evolution, methods of plant propagation.	5	MC2, LO5
	Regularities and features of the structure of genes and genomes	The discipline "Regularities and features of the structure of genes and genomes" in-depth explores the molecular mechanisms that determine the hereditary characteristics of plants, including mutations, regulation of gene expression and evolutionary changes, with the aim of developing more effective breeding methods and creating resistant varieties.		MC2, LO5
7	Biotechnology in plant breeding	"Biotechnology in plant breeding" studies the techniques of non-traditional breeding for crop production, biotechnological methods used in plant breeding, such as: overcoming progamous and postgamous incompatibility with remote hybridization of plants, haploid technology, cellular breeding, cellular and genetic engineering of plants.	5	MC2, LO6, LO8
	Genomics with basics of genetic engineering	The study of genomics with the basics of genetic engineering is aimed at mastering knowledge about the structure, function and regulation of the genome of organisms, as well as mastering genetic engineering methods for modifying the genome in order to achieve certain goals in the field of medicine, agriculture, industry and other areas.		MC2, LO6, LO9
Бейіндеуші пәндер циклі/ Цикл профилирующих дисциплин/ Major Subject Cycle (UC)				

8	Project management in the field of entrepreneurship	The course "Project management in the field of entrepreneurship" is designed to train undergraduates in the system of the agro-industrial complex in market conditions. It covers the history of the development of project management methods, methodological approaches to decision-making on the development of a project concept, its structuring and evaluation, as well as the development of the role and function of a project manager at various stages of the project life cycle. Undergraduates study organizational forms of project management and methods of their development and optimization, acquiring the skills necessary for the successful conduct of their own business in the field of agro-industrial complex. The course is also aimed at developing students' economic thinking and entrepreneurial abilities, helping them find their niche in the market, open their own business, organize and effectively manage their enterprise.	5	MC3, LO3, LO7
9	Methodology of scientific research in the field of breeding and seed production of agricultural crops	Research methodology is a system of closely interacting components. The stages of scientific research work in the direction of scientific research, the formulation of a scientific and technical problem, the development of theoretical foundations and experimental research, as well as the registration of the results of scientific work are studied.	5	MC3, LO4
10	Modeling of business solutions	The discipline studies decision-making processes, starting from the formalization of the initial problem, through the construction and solution of a mathematical model on a computer, to the analysis of the decision and the formation of a management decision. Considers production, transport and financial models of problems to select management decisions. Forms skills in constructing and solving mathematical models and analyzing these solutions on a computer.	5	MC3, LO3, LO7
11	Conflictology	The discipline considers the main categories of conflictology, typology of the conflicts, technologies of management of the conflicts. Studies the theory of behavior of the personality in the conflict, technologies of effective communication and rational behavior in the conflict. Forms idea of psychology of negotiation process on resolution of conflicts.	5	MC3, LO3, LO7
Бейіндеуші пәндер циклі/ Цикл профилирующих дисциплин/ Major Subject Cycle (OC)				
12	Plant genetic resources	The discipline considers the basic concepts of the science of plant genetic resources as the basis of modern breeding and the development of fundamental research in plant growing. Loss of agrobiodiversity and lack of crops used in production in the context of global and local	6	MC4, LO5

		climate change. A variety of collection material and the condition of its reliable preservation and rational use in the development of breeding technologies and priority fundamental and applied directions in crop production.		
	Varietal science and conservation of biodiversity of cultivated plant	The discipline "Variety Science and Conservation of Biodiversity of Cultivated Plant" examines the methods and principles of quality control of seeds and varieties of agricultural crops in order to ensure high productivity, sustainability and quality of agricultural crop plants.		MC4, LO5, LO6
13	Fundamentals of Bioinformatics	The course "Fundamentals of Bioinformatics" introduces masters to the current state of bioinformatics and computational and mathematical methods and approaches to their solution. The review of information, mathematical, and statistical technologies in genomics and proteomics, as well as the study of computational biology and the dynamics of entire systems of organisms, is carried out.	6	MC4, LO9
	Digital technologies in agriculture	The discipline "Digital Technologies in the Agro-Industrial Complex" trains undergraduates in the use of modern information technologies and computer tools to improve the efficiency of selection processes and seed production of agricultural crops. This includes the study of methods for collecting, analyzing and processing data, as well as the use of information technology to predict and optimize breeding and seed production processes.		MC4, LO10
14	Adaptive breeding	The discipline "Adaptive breeding" studies the basics of creating adapted varieties and hybrids of agricultural crops using modern and traditional breeding methods. Acquaintance with breeding as a complex science developing on the basis of new biological research and new breeding techniques aimed at creating varieties and hybrids with high adaptive potential.	6	MC4, LO6
	Seed science and seed control	The discipline "Seed science and seed control" studies the development and life of seeds from the moment of fertilization to the formation of a new independent plant, as well as seed quality control to improve the efficiency of preserving their sowing properties.		MC4, LO5, LO6
15	Basics of DNA-technology	The discipline "Basics of DNA Technology" trains undergraduates with the basic principles of the structure and functions of DNA, as well as with the methods and technologies used to manipulate it. Particular attention is paid to the application of DNA technologies in various fields such as biology, medicine, agriculture and industry.	5	MC4, LO8, LO9

	Breeding seed production	The discipline " Breeding seed production" trains undergraduates in the principles and methods of breeding agricultural plants in order to create new varieties and hybrids with improved agronomic and quality characteristics, as well as the technology of seed production and propagation of seed material and methods for assessing the quality and standardization of seeds.		MC4, LO5, LO6

Appendix to the EP

Practice bases of the educational program
«7M08112-Selection and seed production of agricultural crops»

№ п/п	Name of companies, enterprises, organizations	Contacts Tel, e-mail
1	Kazakh Scientific Research Institute of Agriculture and Crop growing LLP	kazniizr@mail.ru, +7 72771 53130, +7 7273883925
2	Kazakh Scientific Research Institute of Animal Husbandry and Feed Production LLP	givotnovodstvo@mail.ru, +77273036333.
3	Kazakh Scientific Research Institute of Rice Growing named after I. Zhakhayev LLP	Kz_ris@mail.ru,+7724223-05-63
4	East Kazakhstan Agricultural Experimental Station LLP	Vkniish@mail.ru, +7723229-68-59
5	South-Western Scientific Research Institute of Animal Husbandry and Crop Production LLP	+7 (725) 240-83-97
6	Karaganda Scientific Research Institute of Crop Production and Breeding LLP	10092003@bk.ru, 87213851555

Рецензия

на образовательную программу высшего профессионального образования квалификации «магистр» по направлению подготовки «7М081 Агрономия» с профилем «7М08112 – Селекция и семеноводство сельскохозяйственных культур», разработанную кафедрой «Агрономия, селекция и биотехнология растений» Казахского национального аграрного исследовательского университета.

Образовательная программа подробно описывает профессиональную деятельность выпускников магистратуры по направлению «7М081 Агрономия», профиль подготовки 7М08112 «Селекция и семеноводство сельскохозяйственных культур».

Цель программы магистратуры «7М08112 – Селекция и семеноводство сельскохозяйственных культур» заключается в подготовке специалистов, соответствующих современному уровню развития селекции и семеноводства. Программа направлена на формирование профессиональных компетенций в соответствии с требованиями образовательного стандарта по направлению «7М081 Агрономия» и на удовлетворение потребности государства в квалифицированных селекционерах, владеющих современными технологиями в области генетики, селекции и семеноводства.

Программа разработана с учетом всех основных требований. Компетенции выпускников магистратуры свидетельствуют о полноте и направленности учебного процесса. Содержание программы соответствует характеристикам современного образования, корректно отражая квалификационные и профильные характеристики обучения.

Нормативный срок освоения программы по направлению «Растениеводство» при очной форме обучения составляет 2 года. Структура программы включает обязательные и профильные дисциплины, что позволяет расширить и углубить знания и навыки для успешной профессиональной деятельности.

Учебный план программы обеспечивает раскрытие актуальных вопросов и профиля «Селекция и семеноводство сельскохозяйственных культур». Компетенции обучающихся формируются через активные формы обучения, включая семинары, дискуссии, деловые игры и исследовательские проекты.

Для реализации программы используются инновационные технологии обучения, развивающие исследовательские навыки и профессиональные качества. В реализации программы участвует опытный профессорско-преподавательский состав, обеспечивающий высокое качество теоретического и практического обучения.

К образовательному процессу привлекаются преподаватели и сотрудники научно-исследовательских учреждений. Обязательным элементом программы является практика, включающая учебную (педагогическую) и производственную (научно-исследовательскую) практики, направленные на профессиональную подготовку студентов.

Материалы программы полностью соответствуют содержанию дисциплин и образовательным технологиям, обеспечивая готовность выпускников к профессиональной деятельности.

Образовательная программа по направлению подготовки «7М081 Агрономия», профиль «7М08112 – Селекция и семеноводство сельскохозяйственных культур», полностью соответствует содержанию дисциплин и образовательным технологиям, что позволяет рекомендовать её к реализации в учебном процессе.

Председатель Правления
ТОО «Казахский научно – исследовательский
институт земледелия и растениеводства» _____ Ш. Бастаубаева

Рецензия

на образовательную программу высшего профессионального образования квалификации выпускника «магистр» по направлению подготовки «7М081 - Агрономия» с направленностью «7М08112 – Селекция и семеноводство сельскохозяйственных культур», разработанную сотрудниками кафедры «Агрономия, селекция и биотехнология растений» Казахского национального аграрного исследовательского университета.

Образовательная программа дает подробную характеристику профессиональной деятельности выпускника магистратуры по направлению «7М081 - Агрономия», профиль подготовки «7М08112 - Селекция и семеноводство сельскохозяйственных культур».

Целью образовательной программы магистратуры «7М08112 - Селекция и семеноводство сельскохозяйственных культур» является профессиональная подготовка специалистов в соответствии с современными требованиями селекции и семеноводства сельскохозяйственных культур. Программа направлена на формирование профессиональных компетенций в соответствии с образовательным стандартом по направлению «7М081 - Агрономия», а также на обеспечение потребности государства в высококвалифицированных и гармонично развитых селекционерах, владеющих новейшими технологиями в области генетики, селекции и семеноводства.

В разработке программы учтены все основные требования. Компетенции выпускника магистратуры подтверждают полноту и соответствие учебного процесса заявленным целям. Содержание программы соответствует современным стандартам образования, корректно отражая характеристики квалификации и профиля обучения.

Нормативный срок освоения программы по направлению «Растениеводство» при очной форме обучения составляет 2 года. Структура программы включает базовые (обязательные) и вариативные (профильные) части, что позволяет расширить и углубить знания, умения и компетенции, необходимые для успешной профессиональной деятельности.

Содержательная часть учебного плана не вызывает сомнений. Дисциплины учебного плана охватывают актуальные вопросы и профиль программы «Селекция и семеноводство сельскохозяйственных культур». Профессиональные компетенции формируются через активные и интерактивные формы обучения, включая семинары, дискуссии, деловые игры, исследовательские проекты и межвузовские телеконференции.

Для реализации программы используются инновационные технологии обучения, развивающие исследовательские навыки и профессиональные качества, соответствующие направлению подготовки «7М081 - Агрономия». К реализации программы привлекается опытный профессорско-преподавательский состав, обеспечивающий высококачественное теоретическое обучение и практическую подготовку.

Преподаватели из числа действующих руководителей и сотрудники научно-исследовательских учреждений также принимают участие в образовательном процессе. Обязательной частью программы является практика, включающая учебную (педагогическую) и производственную (научно-исследовательскую) практики, ориентированные на профессиональную подготовку обучающихся.

Материалы программы полностью соответствуют содержанию дисциплин и образовательным технологиям, что позволяет выпускникам быть готовыми к выполнению профессиональных задач.

Образовательная программа по направлению подготовки «7М081 - Агрономия», направленность «7М08112 - Селекция и семеноводство сельскохозяйственных культур», полностью соответствует содержанию дисциплин и образовательным технологиям, что позволяет рекомендовать её к реализации в учебном процессе.

Генеральный директор
ТОО «Alem Agro Holding
(АлемАгро Холдинг)» _____ Абдыкадыров А.А

ҚАЗАҚ ҰЛТТЫҚ АГРАРЛЫҚ ЗЕРТТЕУ УНИВЕРСИТЕТІ
Коммерциялық емес акционерлік қоғамы

АГРОБИОЛОГИЯ ФАКУЛЬТЕТІ
АГРОНОМИЯ, СЕЛЕКЦИЯ ЖӘНЕ БИОТЕХНОЛОГИЯ КАФЕДРАСЫ

№ 6 ХАТТАМАСЫНАН КӨШІРМЕ

Алматы қаласы 16 қаңтар 2024 жыл

Агрономия, селекция және биотехнология кафедра мәжілісінің отырысы

Төрағасы - Е. Жанбырбаев
Хатшы - Қ. Құланбай
Қатысқандар: 20 адам

КҮН ТӘРТІБІ:

1. 2024-2028 оқу жылына арналған 6В05103-«Биоинженерия», 6В05104–«Биоинформатика», 2024-2026 оқу жылына 7М08112-«Ауылшаруашылығы дақылдарының селекциясы және тұқым шаруашылығы», 2024-2027 оқу жылына 8D08113 – «Өсімдіктер селекциясы» білім беру бағдарламаларын талқылау, бекіту

ТЫҢДАЛДЫ:

Кафедраның меңгерушісі Е.А. Жанбырбаев жаңа талаптарға сәйкес етіп жасалған 2024-2028 оқу жылына арналған 6В05103-«Биоинженерия», 6В05104–«Биоинформатика», 2024-2026 оқу жылына 7М08112-«Ауылшаруашылығы дақылдарының селекциясы және тұқым шаруашылығы», 2024-2027 оқу жылына 8D08113 – «Өсімдіктер селекциясы» білім беру бағдарламаларын талқылауды ұсынды.

СӨЗ СӨЙЛЕГЕНДЕР:

Оқу-әдістемелік жұмыстарға жауапты кафедра меңгерушісінің орынбасары қауымдастырылған профессор Г. Баядилова: 2024-2028 оқу жылына арналған білім беру бағдарламалары кафедрада барлық деңгей бойынша жауапты комитетшісі Г. Байсеитованың профессорлық-оқытушылар құрамымен, жұмыс беруші мекемелерімен бірігіп, қаралып келісілгенін мәлімдеді. Қарастырылып отырған ББББ барлық деңгейдегі білім алушылардың қазіргі заман талабына сай академиялық дәрежесінде білім беруге бағытталған пәндер енгізілген. Барлық деңгей бойынша оқу нәтижелері дискрипторларды қолдана отырып өзгертілді және жаңа оқу бағдарламасына сай кейбір пәндер өзгертілді.

Кафедраның меңгерушісі Е. Жанбырбаев 2024-2028 оқу жылына арналған 6В05103-«Биоинженерия», 6В05104–«Биоинформатика», 2024-2026 оқу жылына 7М08112-«Ауылшаруашылығы дақылдарының селекциясы және тұқым шаруашылығы», 2024-2027 оқу жылына 8D08113 – «Өсімдіктер селекциясы» білім беру бағдарламаларын барлық деңгейіндегі білім алушыларды сапалы дайындауға бағытталғаны туралы атап өтті.

Білім беру бағдарламасын талқылау барысында кафедраның профессорлық-оқытушылар құрамының және жұмыс берушілердің ұсыныстары ескерілді, барлық ұсыныстар ескеріле отырып, қорытынды жасалынды.

ҚАУЛЫ ЕТТІ:

2024-2028 оқу жылына арналған 6В05103-«Биоинженерия», 6В05104–«Биоинформатика», 2024-2026 оқу жылына 7М08112-«Ауылшаруашылығы дақылдарының селекциясы және тұқым шаруашылығы», 2024-2027 оқу жылына 8D08113 – «Өсімдіктер селекциясы» білім беру бағдарламалары «Агробиология» факультетінің Академиялық комитетіне жіберілсін.

Төрағасы: Е. Жанбырбаев
Хатшы: Қ. Құланбай

ҚАЗАҚ ҰЛТТЫҚ АГРАРЛЫҚ ЗЕРТТЕУ УНИВЕРСИТЕТІ
Коммерциялық емес акционерлік қоғамы
«Агробиология» факультетінің
Академиялық комитеті мәжілісінің

№ 6 ХАТТАМАСЫНАН КӨШІРМЕ

Алматы қаласы 30 қаңтар 2024 жыл

ҚАТЫСҚАНДАР:
Төрайымы - Г. Баядилова
Хатшы - А. Ешенгалиева
Қатысқандар: 9 адам
Е. Жанбырбаев, М. Есеналиева, Ж. Бакенова, К. Караева, Г. Байсеитова, Э. Куандыкова, Г. Байсеитова

КҮН ТӘРТІБІ:

1. «Агробиология» факультетінің 2024-2028 оқу жылына арналған білім беру бағдарламаларын талқылау, бекіту

ТЫҢДАЛДЫ:

Факультеттің Академиялық комитетінің төрайымы Г. Баядилова және Академиялық комитеттің мүшелері, 2024-2028 оқу жылына арналған 6В05103-«Биоинженерия», 6В05104–«Биоинформатика», 2024-2026 оқу жылы 7М08112-«Ауылшаруашылығы дақылдарының селекциясы және тұқым шаруашылығы», 2024-2027 оқу жылына арналған 8D08113 – «Өсімдіктер селекциясы» білім беру бағдарламаларын талқылау.

СӨЗ СӨЙЛЕГЕНДЕР:

Факультеттің Академиялық комитетінің төрайымы Г. Баядилова, сөз кезегін Академиялық комитеті отырысының мүшесі Г. Байсеитоваға берді.

Академиялық комитет мүшесі Г. Байсеитова өз сөзінде 2024-2028 оқу жылына арналған 6В05103-«Биоинженерия», 6В05104–«Биоинформатика», 2024-2026 оқу жылына 7М08112-«Ауылшаруашылығы дақылдарының селекциясы және тұқым шаруашылығы», 2024-2027 оқу жылына арналған 8D08113 – «Өсімдіктер селекциясы» ББББ кафедрада қаралып, жұмыс берушілермен бірігіп дайындалғаны туралы атап өтті. ББББ қазіргі заман талабына сай академиялық дәрежесінде білім беруге бағытталған пәндермен толықтырылған.

Білім беру бағдарламасына МЖМББС сай ЖБП міндетті пәндер компоненттеріне өзгерістер жасалынып, БП, КП циклінің таңдау пәндеріне заман талабына байланысты толықтырулар жасалынды. Жаңа оқу бағдарламасына сай кейбір пәндер жаңартылды. Аталған оқу бағдарламалары жұмыс берушілермен келісілген.

Қорыта келгенде жоғарыда аталған білім беру бағдарламалары білім алушыларды сапалы дайындауға бағытталған. Білім беру бағдарламаларын жан-жақты қаралып енгізілген және кафедра отырысында қорытындыланған.

ҚАУЛЫ ЕТТІ:

2024-2028 оқу жылына арналған 6В05103-«Биоинженерия», 6В05104–«Биоинформатика», 2024-2026 оқу жылына 7М08112-«Ауылшаруашылығы дақылдарының селекциясы және тұқым шаруашылығы», 2024-2027 оқу жылына арналған 8D08113 – «Өсімдіктер селекциясы» білім беру бағдарламалары факультеттің Академиялық комитеті комиссиясының ұйғарымымен бір ауыздан бекітілсін.

Дайындалған білім беру бағдарламасы Университеттің оқу-әдістемелік Кеңесінде қарастыру үшін «Агробиология» факультетінің Кеңесіне жіберілсін.

Төрайымы: Г. Баядилова
Хатшы: А. Ешенгалиева