THE MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE REPUBLIC OF KAZAKHSTAN

M.Auezov SOUTH KAZAKHSTAN UNIVERSITY

« APPROVED BY»
Chairman of the Board-Rector _____
d.h.s., academician Kozhamzharova D.P.
«___»_____2023 y.

EDUCATIONAL PROGRAM

6B08120- Soil science and Agrochemistry

Registration number	6B08100026
Code and classification of the field of education	6B08- Agriculture and bioresources
Code and classification of areas of study	6B081- Agronomy
Group of educational programs	B077- Crop production
Type of EP	Acting EP
ISCE level	6
NQF level	6
SRC level _	6
Language of learning	Kazakh, Russian
The complexity of the EP	240 credits
Distinctive features of EP	Dual training
University Partner (JEP)	-
University Partner (TDEP)	-

Shymkent- 2023y

Drafters:

Fullname	position	signature
Yusupov Sh.	Candidate of Agricultural Sciences, Senior Lecturer of the „Plant growing and animal husbandry“ department	
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Akparov S.M.	Director of "Tukym" LLP	

The educational program was considered by the decision of academic committee of “ Agricultural Sciences and Veterinary Medicine” branch
Protocol №_____ from «____» _____2022.

Chairman of theAC _____G.I.Yelibayeva

Considered and recommended for approval at the meeting of Educational and Methodical Council of M. Auezov SKU.
Protocol №_____ from «____» _____2022.

Approved by the decision of the Academic Council of the University
Protocol № _ from «____» _____2022.

CONTENT

1. PROGRAM CONCEPT

University mission _	Generation of new competencies, preparation of a leader who translates research and entrepreneurial thinking and culture
University values	• Openness - open to change, innovation and cooperation. • Creativity - generates ideas, develops them and turns them into values. • Academic freedom - free in choice, development and action. • Partnership - creates trust and support in relationships where everyone wins. • Social responsibility - ready to fulfill obligations, make decisions and be responsible for their results.
Graduate Model	• Deep subject knowledge, its application and constant expansion in professional activities. • Information and digital literacy and mobility in a rapidly changing environment. • Research skills, creativity and emotional intelligence. • Entrepreneurship, independence and responsibility for their activities and well-being. • Global and national citizenship, tolerance for cultures and languages.
The uniqueness of the EP	• Orientation to the regional labor market and social order through the formation of professional competencies of the graduate, adjusted to the requirements of stakeholders. • Practice -oriented towards expansive education in the region agricultural Sciences with the transition to a dual training system.
Academic Integrity and Ethics Policy	The university has taken measures to maintain academic honesty and academic freedom, protection from any kind of intolerance and discrimination: • Rules of academic integrity (protocol of the Academic Council No. 3 dated October 30 , 2018); • Anti-corruption standard (Order No. 373 n / a dated December 27, 2019). • Code of Ethics (protocol of the Academic Council No. 8 dated January 31, 2020).
Regulatory and legal framework for the development of EP	1. Law of the Republic of Kazakhstan "Education"; 2. Standard rules of activity of educational organizations implementing educational programs of higher and (or) postgraduate education, approved by Order of the Ministry of Education and Science of the Republic of Kazakhstan dated October 30, 2018 No. 595 with amendments and additions dated December 29, 2021 No. 614 3.State obligatory standards of higher and postgraduate education, approved by order of the HPGE dated 21 january, 2023 No. 21; 4.Rules for organizing the educational process on credit technology of education, approved by order of the Ministry of Education and Science of the Republic of Kazakhstan dated April 20, 2011 No. 152; 5.Qualification directory of positions of managers, specialists and other employees, approved by order of the Minister of Labor and Social Protection of the Republic of Kazakhstan dated December 30, 2020 No. 553.

	6.Guidelines for the use of ECTS . 7.Guidelines for the development of educational programs for higher and postgraduate education , Appendix 1 to the order of the director of the CBP&AM No. 45 o / d dated June 30, 2021
About the organization of the educational process	• Implementation of the principles of the Bologna Process • Student -centered learning • Availability _ • And inclusiveness _
Ensuring the quality of the EP	• The internal quality assurance system • Involvement of stakeholders in the development of the EP and its evaluation • With systematic monitoring • Content update (update)
Entry Requirements	U are established in accordance with the Model Rules for Admission to Education in Educational Organizations Implementing Educational Programs of Higher and Postgraduate Education Order of the Ministry of Education and Science of the Republic of Kazakhstan No. 600 of 10/31/2018
Conditions for the implementation of educational programs (EP) for persons with disabilities and special educational needs(SSN)	For students with SEN (special educational needs) and persons with disabilities (PSI), tactile PVC tiles, specially equipped toilets, a mnemonic diagram, and shower bars have been installed in educational buildings and student dormitories. Special parking spaces have been created. Crawler lift installed. There are desks for people with limited mobility (PLM), signs indicating the direction of movement, ramps. In the educational buildings (main building, building No. 8) there are 2 rooms with six working places adapted for users with disorders of the musculoskeletal system (DMS).For visually impaired users, the SARA™ CE Machine (2 pcs.) is available for scanning and reading books. The library website is adapted for the visually impaired. There is a special NVDA audio program with a service. The JIC website http://lib.ukgu.kz/ is open 24/7. An individual differentiated approach is provided for all types of classes and in the organization of the educational process.

2. PASSPORT of the Educational program

Purpose of the EP	• Bachelor training in the field of soil science and agrochemistry of a new formation, possessing broad fundamental knowledge, initiative, adaptive to the changing devands of the labor market and technology.
Tasks of the EP	• formation of socially responsible behavior in society, understanding the importance of professional ethical standards and following these standards; • providing lifelong learning skills that will enable them to successfully adapt to changing conditions throughout their professional careers; • -knowledge of soil formation processes, knowledge of the main types of soils and biogeochemical features of elements in the environment; • -increasing the innovative demand for scientific products, commercialization of research results; • - formation of the competitiveness of graduates in the field of agriculture , ecology, soil science and agrochemistry , to ensure that they can be employed as quickly as possible in their specialty or continue their education at subsequent levels of education.
Harmonization of EP	• 6th level National framework RK qualifications ; • Dublin descriptors 6 skill level ; • 1 cycle qualifying frame _ European space in higher about education (A Framework for Qualification of the European Higher Education Area); • Level 6 European _ qualifying framework for education in throughout _ _ life (TheEuropean Qualification frameworkfor lifelong learning).
Connection of the EP with the professional sphere	- Professional standard " Cultivation of legumes and oilseeds " Order of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. №190 dated 26.10.2022г. -Professional standard "Nursery Activities" Order of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. №190 dated 26.10.2022г.
Name of the degree awarded	After the successful completion of this EP, the graduate is awarded “ Bachelor of Agriculture ” "6B08120 - Soil science and agrochemistry of the educational program"
List of qualifications and positions	Bachelors in OP 6 B08 120 - " Soil science and agrochemistry" may hold primary positions ; develop methods for restoring and recultivating disturbed lands, protecting soils from erosion and deflation; systems and technologies for applying fertilizers; carry out land assessment and soil evaluation. The Bachelor of Soil Science and Agrochemistry exercises control and methodological support in the organization of agroecological and agrochemical monitoring (research institutions, regional agrochemical laboratories, in the system GosNPTszem , regional departments of agriculture, territorial and land committees) without presenting requirements for work experience in accordance with the qualification requirements of the Qualification Directory for the positions of managers, specialists and other

	employees, approved by order of the Minister of Labor and Social Protection of the Population of the Republic of Kazakhstan dated 30 December 20 , 20 No. 553 .
Field of professional activity	• research institutes, research and production centers, organizations and subdivisions of territorial and land committees; • Committees for the Protection of the Environment and Natural Resources; • republican, regional and district centers of "Agrochemical Service"; • farms and peasant farms, private production cooperatives, joint-stock companies, limited liability partnerships.
Objects of professional activity	• - research and production centers of the Ministry of Agriculture of the Republic of Kazakhstan, GosNPTszem, territorial and land committees; • - Committees for the protection of the environment and natural resources, republican, regional and district centers "Republican scientific and methodological center of the agrochemical service" of the Ministry of Agriculture of the Republic of Kazakhstan; • farm and peasant farms, private production cooperatives, joint stock companies, limited liability partnerships, etc.; • - agricultural colleges
Subjects of professional activity	• - soil, plants • fertilizers , chemical ameliorants • - system of application of fertilizers and means of chemical melioration • - methods of reproduction and conservation of soil fertility, methods of restoration of anthropogenic disturbed lands from agricultural purposes
Types of professional activity	• - organizational and technological - organization of the agrochemical service and soil work on the scale of the district, region, republic; • - production and management - testing and introduction into agricultural production of new types of fertilizers and ameliorants, as well as advanced technologies for the use of fertilizers in the context of individual farms, taking into account the level of effective and potential soil fertility, properties of fertilizers and other factors that determine the effectiveness of fertilizers; improvement of the agrochemical service system, survey of the soil cover and compilation of soil cartograms . • - experimental research, setting up and conducting vegetation , field and production experiments in the soil-climatic zones of the Republic of Kazakhstan to assess the effect of various types of fertilizers and ameliorants; compilation of soil maps and agrochemical cartograms; development of methods for restoration and expanded reproduction of soil fertility and fertility management methods; mastering modern express methods for analyzing soils, plants, feed, fertilizers and ameliorants and methods for compiling soil maps and agrochemical cartograms;

	• - educational (pedagogical) - teachers in agricultural colleges
Learning outcomes	**LO 1** Fluently communicates in the professional environment and society in Kazakh, Russian and English, taking into account the principles of academic honesty and decency. **LO 2** To demonstrate socio-cultural, professional development, based on the formation of ideological, civic, spiritual and social responsibility, methods of scientific and experimental research. **LO** 3 Be proficient in new methods of soil cultivation, soil and landscape mapping using GIS technologies, development of methods for differentiated application of fertilizers in the precision farming system. **LO** 4 Understand the essence of modern problems of agrosoil science, agrochemistry and ecology using the technology of soil fertility reproduction, integrated plant protection and agroecological safety of agricultural products based on regulatory documents. Understand the essence of modern problems of agrosoil science, agrochemistry and ecology using resource-saving technologies for the reproduction of soil fertility, integrated plant protection and agroecological safety of agricultural products based on the requirements of the technical regulations of the CU / EurEU and regulatory documents **LO** 5 To be able to independently identify goals, the choice of ways to solve the problems of agriculture and its achievement in agrochemistry and soil science using information technology, modern knowledge and skills, analyzing the indicators of agrochemical, chemical and microbiological analyzes and their use in practice. **LO** 6 Apply a variety of methodological approaches to modeling and designing ecosystems, depending on agrometeorological and reclamation measures, soil cultivation systems, fertilizers used on lands of various crops, taking into account varietal technology. **LO** 7 Understand the classification of soils based on the genesis, agrophysical, chemical, morphological features and soil-forming processes of the most common soils in Kazakhstan and justify their use in agriculture **LO** 8 Assess the physiological state of plants, the adaptive potential of varieties and hybrids in relation to the soil and climatic conditions of cultivation and determine the factors for improving the growth and development of plants to obtain high yields of high-quality agricultural products for their processing and storage. **LO** 9 To study soil-forming processes and regulate their chemical changes in agriculture, studying the synthesis of organic substances in the productive parts of fruit and vegetable plants, as well as their accumulation throughout the growing season and ontogenesis. **LO** 10 To be able to conduct scientific research based on the analysis and collection of information from domestic and foreign literary sources on technologies for the production of crop production and the reproduction of soil fertility using appropriate methods, apply statistical processing of experimental results and formulate conclusions. **LO** 11 Conduct marketing and commercial research on agricultural products, chemicals, biologicals and crop production. **LO** 12 Carry out marketing and commercial research in the agricultural markets for chemical products, biological products and

	crop production. **LO** 13 Apply research, entrepreneurial skills and experience in the face of uncertainty in agricultural production.

3. COMPETENCES OF THE GRADUATE

GENERAL COMPETENCES (SOFTSKILLS). Behavioral skills and personality traits	
GC 1. Competence in managing one's own literacy	GC 1.1 . Ability self-learning, self-development and constant update their knowledge within selected trajectory and under conditions interdisciplinary. GC 1.2 . Ability to express thoughts, feelings, facts and opinions in professional sphere. GC 1.3 . With the ability to mobility in modern world and critical thinking .
GC 2. Language competence	GC 2.1 . Ability line up programs communications on the state, Russian and foreign languages . GC 2.2 . Ability to interpersonal social and professional communication in conditions of intercultural communication .
GC 3. Mathematical and Science Competence	GC 3.1. Ability and willingness apply educational potential, experience and personal qualities acquired in time study mathematical, natural science, technical disciplines at the university , for solutions professional tasks .
GC 4. Digital competence, technological literacy	GC 4.1. Ability to demonstrate and develop information literacy through mastery and use contemporary information and communication technologies in all areas of their lives and professional activities. GC 4.2. Ability to use various types of information and communication technologies : Internet resources, cloud and mobile Services on search, storage, protection and distribution information .
GC 5. Personal, social and academic competencies	GC 5.1. Ability to physical self-improvement and focus on healthy life for ensure complete social and professional activities through methods and means physical culture . GC 5.2. Ability to social and cultural development on the basis of the manifestation of citizenship and morality . GC 5.3 Ability to line up personal educational trajectory during all life for self -development , career growth and professional success. GC 5.4. The ability to successfully interact in a variety of socio-cultural contexts at school, at work, at home and at leisure.
GC 6. Entrepreneurial competence	GC 6.1. Ability exercise creativity and entrepreneurial spirit in various environment. GC 6.2. Ability to work under uncertainty and fast shifts conditions tasks, take decisions, distribute resources and manage their time . GC 6.3. Ability work with requests consumer.
GC 7: Cultural Awareness and Expressiveness	GC 7.1. Ability to show ideological , civil and moral positions . GC 7.2. Ability be tolerant of traditions and culture others peoples peace, possess high spiritual qualities .
PROFESSIONAL COMPETENCES (HARDSKILLS).	
Theoretical knowledge and practical skills specific to this area	PC 1 . possess knowledge in matters of soil and plant diagnostics, soil appraisal, rational technology for the use of fertilizers, taking into account the specifics of the soil and climatic zones of the Republic of Kazakhstan
	PC 2 . develop business plans for the production of competitive products, marketing
	PC3. understanding and responsibility to achieve the results set by the task in resource-saving technologies of agriculture

	PC 4 . work on modern instruments to determine the chemical composition of plants, soils, fertilizers and ameliorants; be responsible for your own health and safety and the health and safety of others ; conduct agrochemical surveys of soils; selection of soil and plant samples; chemical analysis of soils, plants and fertilizers
	PC 5. manage a group of employees with the assumption of responsibility for the result of their actions in the training and experimental areas
	PC 6. take responsibility for the development of professional knowledge and for the results of professional activity ; be able to adjust their actions in accordance with the conditions of the working situation
	PC 7. correctly compose (write) a soil essay; describe the morphological features of soil profile horizons and give the full name of the soil

3.1 Matrix for correlating the learning outcomes of the EP in general with the competencies being formed

	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12	LO 13
GC 1	+				+	+			+	+		+	
GC 2	+			+									
GC 3		+								+			+
GC 4	+		+										
GC 5	+											+	
GC 6				+							+		
GC 7	+											+	
PC 1				+		+	+	+					
PC 2					+					+			
PC3					+					+			+
PC 4				+						+			
PC5					+				+		+		
GC 1		+						+					+
GC 2			+		+					+			

4. MATRIX A OF THE INFLUENCE OF DISCIPLINE ON THE FORMATION OF LEARNING OUTCOMES AND INFORMATION ON LABOR INTENSITY

№	Module name	Cycle	Component	Component Name	Discipline Summary	Number of credits	Formed ER (codes)												
							LO1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12	LO 13
1.	Social Sciences Module	GED	OC	History of Kazakhstan	**Purpose:**The purpose of the discipline isformation of an objective idea of the history of Kazakhstan based on a deep understanding and scientific analysis of the main stages, patterns and originality of the historical development of Kazakhstan. **Content:**Ancient people and the formation of nomadic civilization. Turkic civilization and the great steppe. Kazakh Khanate. Kazakhstan in the era of modern times. Kazakhstan as part of the Soviet administrative-command system. Declaration of Independence of Kazakhstan. State system, socio-political development, foreign policy and international relations of the Republic of Kazakhstan. Methods and techniques of historical description for the analysis of the causes and consequences of events in the history of Kazakhstan.	5	√	√											
2.		GED	OC	Philosophy	**Purpose:**The formation of a holistic idea among students about philosophy as a special form of knowledge of the world, about its main sections, problems and methods of studying them in the context of future professional activity. And also the formation of philosophical reflection, introspection and moral self-regulation among students. **Contents:**Emergence of a culture of thinking. Subject and method of philosophy. Fundamentals of philosophical understanding of the world: questions of consciousness, spirit and language. Being. Ontology and	5	√	√											

					metaphysics. Cognition and creativity. Education, science, technology and technology. Human philosophy and the world of values. Ethics. Philosophy of values. The subject of aesthetics as a field of philosophical knowledge. Philosophy of freedom. Philosophy of art. Society and culture. Philosophy of history. Philosophy of religion. "Mangilik El" and "Modernization of Public Consciousness" are a new Kazakhstan philosophy.														
3.	Socio-Political Knowledges Module	GED	OC	Sociology and political science	**Purpose:**The goal of forming knowledge about social and political activities, explaining social and political processes and phenomena. **Contents:**Consideration of the system of socio-ethical values of the society. Ways to use social, political, cultural, psychological institutions, features of youth policy in the modernization of Kazakhstani society and solve conflict situations in society and professional environment based on them.To study the methods of analysis and interpretation of political institutions and processes, ideas about politics, power, state and civil society, to understand and use the methods and methods of sociological, comparative analysis, to understand the meaning and content of the political situation in the modern world. Analysis and classification of the main political institutions.	4	√	√												
4.		GED	OC	Culturology and psychology	**Purpose:** the formation of scientific knowledge of history, modern trends, current problems and methods for the development of culture and psychology, the skills of a systematic analysis of psychological phenomena. **Contents:** Morphology, language, semiotics, anatomy of culture. Culture of nomads, proto-Turks, Turks. Medieval culture of Central Asia. Kazakh culture at the turn of the XVIII - XIX centuries, XX century. Cultural policy of Kazakhstan.	4	√	√												

					State Program "Cultural Heritage". National consciousness, motivation. Emotions, intellect. The will of man, the psychology of self-regulation. Individual typological features. Values, interests, norms are the spiritual basis. The meaning of life, professional self-determination, health. Communication of the individual and groups. Socio-psychological conflict. Models of behavior in conflict.														
5.	Socio-ethnic development module	GED	HSC	Ecosystem and law	**Purpose:** Formation of integrated knowledge in the field of economics, law, anti-corruption culture, ecology and life safety, entrepreneurship, scientific research methods. **Content:** Fundamentals of safe human-nature interaction, ecosystem and biosphere productivity. The entrepreneurial activity of society in conditions of limited resources, increasing the competitiveness of business and the national economy. Regulation of relations in the field of ecology and human life safety. Knowledge and compliance of Kazakhstan's law, obligations and guarantees of subjects, state regulation of public relations to ensure social progress. Application of scientific research methods.	5		√											
6.		PD	EC	Actual problems and modernization of public consciousness	**Purpose:** of the discipline is the restoration of spirituality, deformed during the periods of tsarist and Soviet reality, the formation of a creative personality based on the modernization of the public consciousness of young people. **Content:** Spiritual modernization: origin and background. Modern national identity. Pragmatism and competitiveness. National identity and national code. Experience and prospects of evolutionary development. The triumph of knowledge and openness of consciousness. Alphabet Reform: Experience and Priorities. Fatherland is the basis of the state.	3		√											

					Education through nationwide sacred places and history. Modern Kazakh culture is the cornerstone of spiritual revival. New humanitarian education and the future national intelligentsia. Abai Kunanbaev and Kazakh society.														
7.		PD	EC	Abay studies	**Purpose:** based on the creativity of A.Kunanbayev, the preservation of the «national code» and in the project «Kazakhtanu» **Contents:** historical overview of the history of Kazakhstan and Kazakh literature of the XIX-XX centuries. Studies of Abai's legacy of the XX-XXI century. Chronology of Abai's creativity. Abai is a great poet, ethnographer, founder of Kazakh written literature. Abai is the compiler of the code of laws «The Position of Karamola», social significance. Abai is a thinker, religious scholar, philosopher. The role of Abai in education and science, the concept of a «Holistic person». «Words of Edification»by Abai, an epic novel by M.Auyezova «The Way of Abai» . K. Tokayev «Abai and Kazakhstan in the XXI century», role, significance.			√											
8.		PD	EC	Mukhtar studies	**Purpose:** Formation of a historical, literary idea of M. Auezov's work in the context of literary history, patriotism and cultural and spiritual position. Development of artistic thinking, skills of independent research activity. **Contents:** The life and creative path of M. Auezov Semipalatinsk, Tashkent, St. Petersburg periods. M. Auezov's activity in the magazines «Sholpan», «Abai». M. Auezov's journalism. An artistic review of the short stories "Korgansyzdyn kuni", "Kyr suretteri", "Okagan azamat", "Kokserek", the play Enlik-Kebek and the stories "Kili Zaman", "Karash-Karash" okigasy", the monograph "Abai Kunanbayev", the epic novel "Abai													

					Zholy".														
9.		PD	EC	Service to Society	**Purpose:** The aim is the formation of socially significant skills and competencies in students based on the assimilation of academic programs, carrying out socially useful activities related to the disciplines studied at the university. **Content.** The concept and meaning of Service learning, the history of the formation and development of the concept of Service Learning. Key components of Service Learning, socially useful activities in the children's and youth environment, organization of volunteer movement in the world and Kazakhstan practice, profile orientation of Service Learning. International practice of learning through socially useful activities. General principles and methodology for the development of social projects. Methods of analysis of implemented social projects.			√										
10		PD	EC	Foundations of Anticorruption Culture	**Purpose:** formation of an anti-corruption worldview, strong moral foundations of a personality, civic position, stable skills of anti-corruption behavior. **Content:** Overcoming legal nihilism, formation of the basics of students' legal culture in the field of anti-corruption legislation. Formation of a conscious perception/attitude towards corruption.Moral rejection of corrupt behaviour, corrupt morality and ethics.Development of skills necessary to fight corruption.Development of anti-corruption standards of conduct.Anticorruption propaganda, dissemination of lawfulness and respect for the law. Activities aimed at understanding the nature of corruption, awareness of social damage caused by its manifestation, ability to defend one's position with arguments, seeking ways to			√										

					overcome manifestation of corruption.														
11	Modul of Communication and Physical Training module	GED	OC	Kazakh (Russian) language	**Purpose:** formation of communicative competence using the Kazakh (Russian) language in the socio-cultural, professional and public life, improvement of the ability to write academic texts. **Contents:** Levels A1, A2, B1, B2-1, B2-2 (B2, C1 Russian language) are presented in the form of cognitive-linguocultural complexes, consisting of spheres, themes, sub-themes and typical situations of communication of the international standard: social, social - cultural, educational and professional, modeled by forms: oral and written communication, written speech works, listening. Demonstration of understanding of the language material in the texts on the educational program, knowledge of terminology and development of critical thinking.	10	√													
12		GED	OC	Foreign language	**Purpose:** The aimis a formation of students' intercultural and communicative competence in the process of foreign language education at a sufficient level A2 and a level of basic sufficiency B1. Student reaches B2level of common European competence if the language level at the start is higher than B1level of common European competence **Contents.** Levels A1, A2, B1, B2 are presented in the form of cognitive-linguocultural complexes, consisting of spheres, themes, sub-themes and typical situations of international standard'scommunication: social, social - cultural, educational and professional, modeled by forms: oral and written communication, written speech works, listening.Demonstration of language material'sunderstanding in texts on educational program, knowledge of terminology and critical thinking development.	10	√	√												

13		GED	OC	Physical Culture	**Purpose:** the formation of social and personal competencies and the ability to purposefully use the means and methods of physical culture that ensure the preservation and strengthening of health in preparation for professional activity; to the persistent transfer of physical exertion, neuropsychic stresses and adverse factors in future work. **Contents:** Implementation of physical culture and health and training programs. A complex of general development and special exercises. Sports (gymnastics, sports and outdoor games, athletics, etc.). Control and self-control during classes, insurance and self-insurance. Refereeing competitions, Means of professionally applied physical training. Modern health-improving systems: the breathing system according to A. Strelnikova, K. Buteyko, K. Dinaiki, joint gymnastics according to Bubnovsky.	8														√
14		PD	HSC	Professional Kazakh (Russian) language	**Purpose:** to provide professionally oriented language training of a specialist who is able to competently construct communication in professionally significant situations and speak the language norms for special purposes. **Content:**Professional language and its components. Professional terminology as the main feature of scientific style. Scientific vocabulary and scientific constructions in educational-professional and scientific-professional spheres. Algorithm of work on the analysis and production of scientific texts on specialty. Producing scientific and professional texts. Basics of business communication and documentation within the framework of future professional activity.	3	√													
15		PD	HSC	Professionally oriented foreign language	**Purpose:** To form the communication skills of future specialists in a professional and cultural-official foreign language in the field of agriculture.	3	√													

					Content: Increasing the initial level of foreign language proficiency achieved at the previous stage of education, and mastering by students the necessary and sufficient level of communicative competence to solve social and communicative tasks in the field of professional and scientific activities, when communicating with foreign partners, as well as for further self-education.													
16		GED	OC	Information and Communication Technologies	**Purpose:** formation of the ability to critically evaluate and analyze processes, methods of searching, storing and processing information, methods of collecting and transmitting information through digital technologies. Development of new "digital" thinking, acquisition of knowledge and skills in the use of modern information and communication technologies in various activities **Contents:** Introduction and architecture of computer systems. Software. Operating systems. Human-computer interaction. Database systems. Data analysis. Data management. Networks and Telecommunications.Cybersecurity. Internet technologies. Cloud and Mobile technologies. Multimedia technologies. Smart technology. E-technologies. Electronic business. Electronic government.	5		√			√								
17	Fundamentals of Natural Sciences	PD	EC	Inorganic and Analytical Chemistry	**Purpose:** Mastering theoretical knowledge in inorganic and analytical chemistry related to the industrial production of economically important products. **Content:** Studying the basic laws, theories and provisions of inorganic and analytical chemistry: classes of inorganic compounds, methods of processing an analytical signal; elements of metrology, standardization and certification in the analysis. Methods and methods for the	4				√		√			√				

					synthesis of inorganic substances, the skills of describing the properties of substances based on patterns arising from the periodic law and the Periodic system of elements. modern chemical, physico-chemical methods of analysis.														
18		PD	EC	Organic Chemistry	**Purpose:** Forms knowledge about the development of the theoretical foundations of organic chemistry and the acquisition of skills in working with organic substances. **Content:** Studying the main provisions of modern theoretical organic chemistry; principles of classification of organic compounds; rules of systematic, rational and trivial nomenclature; the main methods for obtaining organic compounds of various classes, their physical and chemical properties, methods for isolating, purifying and identifying organic compounds; forms the skills of performing laboratory experiments on the synthesis and study of the physico-chemical properties of organic compounds.				√		√			√				
19		PD	HSC	Plant biology	**Purpose:** It consists in teaching the emergence of various forms of plant organisms and their relationship with the standard of living, the role of plants in human life and the biosphere, associated with the stages of evolutionary and ontogenetic **Content:** He studies the role of green plants in nature and agricultural production, their structure, reproduction and evolution, considers the morphological features of pasture and agricultural crops common in the region, their physiological conditions, adaptation and growth, development, factors affecting product quality. . Forms the skills of using morphological analysis to recognize their nature in the analysis of changes in the aboveground and	5		√						√					

					underground parts of plants.														
20		PD	EC	Microbiology in the soil-forming process	**Purpose:** Assimilation by students of knowledge about the structure of microorganisms, about the physiological processes occurring in their body; mechanisms for stimulating the growth and development of agricultural crops. **Content:** Considers the basic laws of microbiology, soil microorganisms and methods for their determination, microbiological processes for the preparation of organic fertilizers, the development of microbiological production of products, biological products for agricultural purposes. Develops the skills of preparing preparations of microorganisms, distinguishing the main forms of bacteria, carrying out a quantitative account of microorganisms in various substrates, obtaining accumulative, pure cultures of microorganisms, and conducting qualitative reactions to the metabolic products of microorganisms.	5					√				√				
21		PD	EC	Agricultural Microbiology	**Purpose:** Assimilation by students of knowledge about microorganisms that have economically valuable properties; the main directions of the use of microbiological preparations in agricultural production. **Content:** Forms knowledge on the basics of general and agricultural microbiology and the ability to use the acquired knowledge to solve practical problems of agricultural production: to study the systematics, morphology, genetics, reproduction of bacteria; the metabolism of microorganisms, the participation of microorganisms in the transformations of various compounds; study soil microorganisms and master methods for determining their composition and activity; on the possibility of using microorganisms in agricultural production						√				√				

					technologies.													
22		PD	HSC	Agricultural Meteorology	**Purpose:** To train future specialists in the physical processes and phenomena occurring between the atmosphere and its surface, as well as their impact on agricultural production. **Content:** He studies the role of a complex of agrometeorological factors affecting plants and soil. Timely use of forecast data from weather stations and posts in scientific and experimental research and production work. He studies methods for measuring solar radiation, temperature, air and soil humidity, frost, dry winds, pressure, precipitation, wind direction and speed, and analysis of agrometeorological conditions. Develops knowledge about the structure of the atmosphere, the movement of air masses, radiation and heat balance, meteorological elements of climate and forecasting their changes, methods and technical means for measuring meteorological data.	4					√	√		√					
23		PD	EC	Introduction to Specialty	**Purpose:** the main tasks of professional educational programs for graduates of agronomists. **Content:** He studies the potentiality of the future profession, knows the structure and composition of the Earth, exogenous and endogenous processes. Be able to lay a soil section, describe the morphological features of the horizons of the soil profile, mineralogical and mechanical composition, and give the full name of the soil according to the classification. To know the essence of the factors of soil-forming processes, the forms of nutrient cycling in nature, the types, composition and methods of fertilizing	4				√			√	√					
24		PD	EC	Fundamentals of Academic writing	**Purpose:** Introduction to the problems of linguistic science, arming students with knowledge of the structure and system of the world's languages, their origin and					√			√	√					

					historical development. **Contents:** It studies language competence, the possession of which allows the researcher to read, understand and write scientific texts, the development of well-structured, reasonable and clear arguments, the demonstration of the use of suitable sources, the knowledge of recommendations for the preparation, writing and publication of scientific texts, reports, writing graduation projects. Acquiring and strengthening the writing and critical thinking skills necessary for effective academic writing.														
25				Educational practice	**Purpose**: Consolidation and deepening of the acquired theoretical knowledge, mastering the necessary skills and abilities. **Content:** Educational practice or introductory practice is one of the student's activities carried out at a certain stage of education. This format provides an opportunity to get acquainted with the details of the future profession, observe the work of current employees and prepare yourself for the main production practice.	1								√					
26	Standardization and Business planning in Agroindustrial complex	PD	HSC	Standardization, certification and metrology	**Purpose:** formation of theoretical knowledge and practical skills in the field of standardization, certification and metrology to solve problems of ensuring the uniformity of measurements and quality control of products, services and works in their professional activities **Contents:** Objects of standardization, certification and metrology. Legislative and regulatory framework for standardization, technical regulation, metrology and conformity assessment systems. General scientific and special methods of standardization. Certification and declaration schemes. Methods and types of measurements. Calculation of errors and uncertainty of measurements.	4											√	√	

					Technical basis of metrology. The role of international management systems in improving the competitiveness of enterprises.														
27		PD	EC	Organization and Conduct of Field experiments and Compilation of Cartograms	**Purpose:** Formation of theoretical knowledge and practical skills in the organization and conduct of field experiments and the compilation of agrochemical cartograms. **Contents:** Studying the main methods of agrochemical research: stages of planning a scientific experiment: rules for compiling a program of observations and counts: a methodology for laying and conducting vegetation and field experiments, a methodology for accounting and statistical processing of the results of the harvest of crops in the experiment and form conclusions, the procedure for maintaining documentation and reporting; sample size planning, empirical and theoretical distributions, statistical methods of data processing. Forms theoretical knowledge and practical skills in organizing and conducting field experiments and compiling agrochemical cartograms.	5							√	√		√			
28		PD	EC	Methods of Vegetation and Lysimetric experiments with Main Crops	**Purpose:** Formation of theoretical knowledge and practical skills in the organization and conduct of field experiments and the compilation of agrochemical cartograms. **Contents:** Studies the organization of vegetation and lysimetric experiments includes: research planning, training and theory of plant nutrition, conduct soil and agrochemical research, method of accounting and mathematical processing of crop yield data in the experiment, draw conclusions, competently identify trends in the soil-forming process. To form practical skills in organizing and conducting vegetative and lysimetric experiments and analysis of the								√	√		√			

					diagnostics of crop nutrients and use their results in professional activities.													
29		Ch.D	EC	Fundamentals of Agrobusiness and Business	**Purpose:** Students will master the basics of the theory and practice of business in the field of agricultural economy. **Content:** Examines the features of the content of entrepreneurship in the agro-industrial complex. Introduces the features of state regulation of entrepreneurial activity. Forms the skills of creating and registering one's own business, developing constituent documents, agribusiness strategies, business plans. It reveals the mechanism for the formation of business ideas, risk management, evaluation and analysis of the effectiveness of entrepreneurial activity in a particular area or sector of the economy.	4											√	√	
30		Ch.D	EC	Organization of Production and Business planning of Protected soil in Agro-industrial Complex	**Purpose:** To train students in planning agricultural experiments, observations and accounting in experience. **Contents:** Knowledge and understanding of patterns, principles, forms of organization of production, forms of entrepreneurial activity, business plan, leasing, commercial activity. Skills for calculating the effectiveness of the application of progressive forms of organization and material incentives for labor; substantiation of the combination of industries in agricultural enterprises; substantiation of the organization of auxiliary and service industries at agricultural enterprises.												√	√	
31		PD	EC	Organization of Scientific Research work	**Purpose:** To teach students how to organize scientific research and conduct scientific experiments. **Contents**: The features of science, its goals, functions, types of scientific research are considered. General scientific and special research methods, basic	4					√		√		√				

					methods for choosing a suitable research topic and methods for creating programs for its implementation; algorithmic search for information from documentary sources of information. Create research programs, master the skills of analyzing scientific literature on the topic of research.														
32		PD	EC	Organization of Scientific Research in Modern conditions	**Purpose:** To study the methods and techniques of conducting scientific work in order to use the obtained knowledge for the successful completion of coursework, diploma design, participation in student scientific papers, preparation of scientific publications based on the results of independent research during the period of study at the university. **Contents:** Considers modern innovative technologies of science, features, its goals; general scientific and special research methods; the main methods for choosing a relevant topic for research and methods for creating a program for its implementation, as well as searching for information based on scientific data in information sources; forms the skills of analyzing scientific literature on the topic of research.					√		√		√				
33	Integrated Plant protection	PD	EC	Pests and Diseases of Agricultural Crops	**Purpose:** to learn the biological basis of disease types and reduce their damage formation of students of the system of theoretical and practical knowledge on chemical and biological protection of agricultural plants against pests, diseases and weeds; use of modern chemical and biological means of protection, resistant varieties that effectively protect agricultural crops, maintain a satisfactory phytosanitary state of crops. **Contents:** Studies the patterns of infection, the emergence of foci of pests and diseases, as well as measures of	5				√							√		

					integrated plant protection against them, identification of pest species by the nature of plant damage, by the type of their development, ways of their life activity and distribution. Forms the skills of researching a diseased plant, is able to find the focus and nature of the infection; make short-, medium-, long-term forecasts of the spread of various diseases.														
34		PD	EC	Harmful nematodes, Mites and Rodents	**Purpose:** to learn the biological basis of disease types and reduce their damage formation of students of the system of theoretical and practical knowledge on chemical and biological protection of agricultural plants against pests, diseases and weeds; use of modern chemical and biological means of protection, resistant varieties that effectively protect agricultural crops, maintain a satisfactory phytosanitary state of crops. **Contents:** It studies the patterns of infection, the occurrence of foci of pests and diseases, as well as integrated plant protection measures against them, identification of pest species by the nature of plant damage, according to the type of their development, ways of their vital activity and distribution. Forms the skills of researching a diseased plant, is able to find the source and nature of infection; make short-, medium-, long-term forecasts of the spread of various diseases.				√						√		
35		Ch.D	EC	Chemical and Biological Protection of Plants	**Purpose:**timely, effective and competent application of measures to protect plants from pests, diseases and weeds with the use of chemical and biological preparations, prevention and prevention of environmental pollution crops. **Content:** Studies modern means of chemical and biological protection of agricultural crops from pests, pathogens. Deep knowledge of methods for the	5				√						√		

					correct application of modern plant protection products in the system of integrated protective measures using the most rational and safe methods for cultivated plants and the environment. Forms the skills of a scientifically based combination of agrotechnical, biological and chemical methods for protecting cultivated crops from pests, diseases and weeds using the collection of information from domestic and foreign studies.														
36		Ch.D	EC	Protection of Agricultural cultures Against Wreckers and Diseases	**Purpose:** formation of students of the system of theoretical and practical knowledge on chemical and biological protection of agricultural plants against pests, diseases and weeds; use of modern chemical and biological means of protection, resistant varieties that effectively protect agricultural crops, maintain a satisfactory phytosanitary state of crops. **Content:** Studies the features of the structure and development of pests and diseases, relationships with the environment, harmfulness and types of damage to agricultural plants, including an economic assessment of crop losses. Knowledge of methods of integrated plant protection against the elimination or reduction of crop losses, caused by pests, spores of diseases inhabiting the soil. Forms skills of integrated protection of plants from pests and diseases, taking into account the established economic thresholds of harmfulness.				√							√		

37	Agriculture and Plant growing	Ch.D	HSC	Selection and Seed production of Agricultural Crops	**Purpose:** Theoretical foundations and practical knowledge necessary for selection and seed research and organization of seed production. **Content:** Studying the theoretical foundations and advanced modern methods, varietal technologies and scientific discoveries in the field of breeding and seed production of agricultural crops, basics of seed certification, application of methods and techniques for creating high-yielding varieties and hybrids with adapted seed resistance to diseases and released into agricultural production. Acquire skills in methods of planning the breeding process, selection, creation and scientific study of the source material of domestic and foreign breeding; organization of primary seed production of newly released varieties and hybrids; mastering modern technologies for finalizing seed material and carrying out varietal control	5						√		√	√				
38		PD	EC	Physics and Chemistry of Soils	**Purpose:** Formation of modern knowledge and skills about the soil, origin, the composition and properties of the organic and mineral parts of the soil, its physical, chemical, physico-chemical and biological properties, functioning, relationships with the external environment. **Contents:** Studies the origin, composition and properties of the organic and mineral parts of the soil, its physical, chemical, physico-chemical and biological properties. Be able to identify soils and evaluate soil properties and regimes, the level of soil fertility based on indicators of agrochemical, chemical and microbiological analyzes and its limiting factors; conduct scientific research and develop measures for their optimization;	6					√		√						

					To acquire the skills of conducting physical, chemical, physicochemical studies of soils using modern methods, equipment and materials.													
39		PD	EC	Chemistry of Soils	**Purpose:** To study the laws of general chemistry and chemical equilibrium in heterogeneous environments and some properties of mineral and organic substances that form the basis of the soil mass. **Contents:** Studies the chemical composition of soils, their properties and applicability in these processes at the level of modern chemical and ecological views, as well as the latest methodological and methodological approaches to the scientific study of saline and degraded soils, having outlined the goals, ways of solving problems and achieving them in soil science. They learn the chemical bases of the processes occurring in soils at the ionomolecular and colloidal levels. Forms theoretical knowledge and practical skills in the development of many non-traditional problems, located at the junction of a number of sciences: soil science, ecology, biogeochemistry, organic and inorganic chemistry.					√		√					
40		PD	HSC	Plant Breeding I	**Purpose:** To explain the importance of crop production in agriculture. Mastering the basic laws of creating a product, the main provisions (principles) of a commodity orientation. **Content**: It studies the types and varietal forms of field crops, biological characteristics, environmental requirements for their cultivation and methods for growing quality crops. Technically increases the maximum productivity of agricultural products with high quality and low costs, forms the skills of lean cultivation.	5		√								√	√		
41		PD	HSC	Plant Breeding II	**Purpose:** Explain to students how to	5		√								√	√		

					master the laws of product formation, master the methods of using advanced technologies for growing field (vegetable) crops, the correct application of a complex scientifically based system of agro-events in growing major crops. **Content:** Studying the specific and varietal forms of field crops, biology features, requirements for environmental conditions and methods of growing the largest crops of high quality. Forms the skills of innovative technologies for cost-effective cultivation to obtain maximum yields of agricultural products at its high quality and minimum costs.													
42		PD	EC	General geology	**Purpose:** Considers the crust and inner layers of the Earth, their composition, structure, movement, history of development, the laws of formation and location of mineral resources. **Content:** Studies general information about the Earth, from its position in world space to various geological processes that occur on the surface and in the bowels of the Earth. Forms theoretical skills about genesis, agrophysical, agrophysical, chemical properties, endo- and exogenous processes, leading to the formation of minerals, rocks, structural landforms. Masters GIS technologies in the description of soil and landscape mapping.	4		√					√						
43		PD	EC	Fundamentals of Mineralogy	**Purpose:** Description of minerals, identification of natural mineral aggregates; Systematization of mineral aggregates; acquaintance with chemical composition, structure and physical properties; **Content:** It studies the earth's crust, which is composed of dense and loose aggregates called rocks. Rocks are made up of minerals, which are natural chemical compounds and the basis for soil formation. Native elements that are			√					√						

					products of various physicochemical processes occurring inside the earth's crust and constitute the mineralogical part of the soil. Acquires the skills of theoretical knowledge about the formation of minerals, rocks, structural landforms														
44		Ch.D	EC	Fertilizer Application System	**Purpose:**to study the theoretical problems of plant nutrition and methods of their regulation, to study the basic properties of organic and mineral fertilizers and changes in the agrochemical properties of the soil associated with plant nutrition and fertilization. **Contents:** Studies the physiological foundations of plants, agrotechnical methods and conditions for the differentiated application of fertilizers for agricultural crops on grasslands, in orchards and berry fields, when cultivating vegetables in open and protected ground based on agrochemical soil indicators, as well as the technology of their storage. Receives skills in methods for determining the doses of organic and mineral fertilizers, the balance of humus and nutrients in the soil	6				√	√	√							
45		Ch.D	EC	Fertilizer Application and Soil biological activity	**Purpose:** to teach students how to create the best conditions for plant nutrition with the help of fertilizers, the peculiarities of their interaction with the soil, the correct composition of the system of applying the nurtures of individual cultures, squatting, farming. **Content:** Studies biological activity as a combination of microbiological, biochemical processes in soils of agrocenoses. Forms knowledge about the role of biological activity in the mobilization and immobilization of nutrients. Actual and potential biological activity: their significance for characterizing the state of soils. Receives skills in the use of chemical ameliorants,					√	√	√							

					traditional and non-traditional mineral and organic fertilizers, plant protection chemicals (CPP) and toxicants of various nature.														
46				Technological Practice	**Purpose:** Consolidation of theoretical knowledge gained in the study of natural - scientific and professional disciplines; * gaining experience of practical work at the enterprise **Content:** To study the experience in the accumulation, storage and use of fertilizers, the organization of reclamation measures, the system of labor organization and measures developed in the economy to increase its productivity. Obtaining skills during the period of spring field work to get acquainted with the plan of spring sowing, the structure of sown areas.	4							√	√					
47	Agrochemistry and Fertilizer Application system	PD	HSC	Agrochemistry	**Purpose**: To create good conditions for plant nutrition with the help of fertilizers, to study the features of their interaction with the soil. **Contents**: Theoretical foundations of chemicalization of agriculture; problems of plant nutrition, methods of its regulation; studies the basic properties of organic and mineral fertilizers, agrochemical properties of the main types of soils in Kazakhstan. Taking into account soil fertility, climatic conditions and biological characteristics of agricultural crops, they teach the skills of optimizing the mineral nutrition of agricultural crops with the rational use of mineral, organic, complex mixed fertilizers and ameliorants.	5			√	√	√	√			√				
48		Ch.D	EC	Ecological Basics Chemicalixation of Agriculture	**Purpose:**the formation of theoretical knowledge and practical skills in the effective use of chemicals in agriculture, as well as ways to reduce their possible negative impact on the environment **Contents:** Studies a balanced chemicalization of agriculture, ensuring	4			√	√		√							

					the production of environmentally friendly products, by which it is proposed to understand products that have a high nutritional value that enhances health, does not contain toxic substances, does not have a carcinogenic, mutagenic or other adverse effect on the body human in the process of its consumption in increasing soil fertility, improving acidic and saline lands, maintaining and improving the nutritional value of feed. Receives skills in the production of environmentally friendly products.														
49		Ch.D	EC	Resource-saving Technologies in Adaptive - landscape Agriculture	**Purpose:** theoretical knowledge of increasing soil fertility through the implementation of various agro-reclamation measures to ensure a sustainable and high yield of agricultural crops, economically, ecologically and technologically efficient use of land. **Contents:** Under the conditions of a market economy, he studies the processes of restructuring the economic mechanism for adapting the precision farming system to agricultural landscapes, taking into account the resource-saving factor and organizing production on the principles of resource and energy conservation for the reproduction of soil fertility. Forms practical skills to increase production efficiency while reducing costs and minimizing environmental damage through the use of resource-saving technologies and precision farming.				√	√		√							
50		Ch.D	EC	Soil Fertility of the Republic of Kazakhstan	**Purpose:** studying students with methods of making the best condition for plant nutrition with the help of fertilizers, to features their interaction with the soil and increase in its fertility **Content:** Studies the essence of soil formation in the soils of Kazakhstan, the search for new scientific research, методов окультиривание почв, принципы методологического подхода	4			√			√							

					к моделированию и проектированию экосистем земельных угодий, the role of the anthropogenic factor in soil pollution and degradation, strict linkage of intensification factors with the principles of conservation agriculture; widespread use of biological methods to increase soil fertility and rational use of all natural resources. Acquires professional skills in soil-ecological assessment and grading of soils.														
51		Ch.D	EC	Reclamation Soil science	**Purpose:** studying students with methods of making the best condition for plant nutrition with the help of fertilizers, to features their interaction with the soil and increase in its fertility **Content:** Studies the processes of changing the composition and properties of soils, in need of various types of melioration, followed by justification of the feasibility of their implementation, predicting changes and identifying the causes of low soil fertility, and also determines ways to solve problems optimal, effective techniques, methods of soil reclamation and is one of the theoretical foundations of agricultural reclamation. Masters the skills and methods of influence of land reclamation measures on the agrophysical, agrochemical, biological properties of the soil; develop reclamation and technological aspects in crop rotation, taking into account environmental requirements in agriculture. on the effective use of irrigation in the needs of agricultural crops and indicates the ways of radical improvement, transformation of reclaimed soils.				√			√								
52				Industrial practice I	**Purpose:** Generalization and deepening of theoretical knowledge in the field of crop production and agriculture based on the study of the work of organizations. **Content:** Collection of information about	5						√						√	

					the activities of an educational institution and the professional activities of an agronomist. Analysis of normative documents that determine the content of education under the updated program. Instilling the skills of mastering the practical foundations of the future profession. Development of skills for collecting and accumulating empirical material. Development of skills for structuring, systematizing knowledge and presenting it in various ways. Development of public speech skills, presentation of reporting documentation.														
53	Module of Dual Education	Ch.D	EC	Fruit and Vegetable growing	**Purpose:** Forms students' skills in growing fruits and vegetables. **Content:** Forms students' concepts of fruit and vegetable growing as a science that studies the biology of fruit and berry plants, their place and role in the ecological system, regular connections with environmental factors and, on this basis, the theoretical foundations being developed necessary to determine the prospects for the development of the industry and create differentiated technology for growing highly productive plantations; and vegetable crops and their cultivation.	4						√		√					
54		Ch.D	EC	Nursery service	**Purpose:** Formation of ideas, theoretical knowledge, practical skills in rational construction and management of the horticulture industry. **Contents:** Studying the classification of nurseries of fruit, berries, grapes and ornamental crops. Crop rotations and methods of crop propagation, technology of growing and increasing the production capacity of planting material. He has knowledge of rootstocks, grafts, cultivation of healthy material, care and control of their quality. He will acquire the skills of reproduction and cultivation of fruit and ornamental crops in the							√		√					

					uterine and school branches of the nursery, as well as with a closed root system and post-harvest seed ripening and their stratification.														
55		Ch.D	EC	Chemical Analysis of Soil, Plants and Fertilizers	**Purpose:** Teaches students to develop theoretical knowledge and practical skills to assess the state of land types and various land categories, as well as identify, track, systematize changes. **Content:**Studying the system of measures of chemical impact on the soil, masters modern methods of both soil and agrochemical analyzes and the use of their results in production activities, competently determine the trends of the soil-forming process in different agricultural landscapes to improve its properties in the cultivation of crops. Forms theoretical and practical knowledge and skills in nutrition management of agricultural plants, determination of optimal norms, terms and methods of applying fertilizers in various production conditions.	4			√		√				√				
56		Ch.D	EC	Instrumental methods of Investigation of Soils and Plants	**Purpose:** To create favorable conditions for plant nutrition in various soil and climatic zones of the Republic of Kazakhstan, to study the interaction of certain types and forms of fertilizers with the soil and to determine effective methods of their application. **Content:** Studies instrumental methods of scientific research on the reproduction of soil fertility, control of the main elements of agricultural technologies for the cultivation of agricultural crops; theoretical problems of plant nutrition and methods of their regulation. Acquires skills in the use of organic and mineral fertilizers.				√		√				√				
57		Ch.D	EC	Feed production	**Purpose:** getting high-quality feed for livestock through the cultivation of meadows and pastures. Effective organization of forage production,	6						√		√	√				

					acquaintance with cultivated and wild-growing forage plants, their biological and forage properties, advanced cultivation technology, methods of effective use, modern technology of harvesting and storage, as well as methods for determining its quality. **Contents:** He studies the biological and ecological characteristics of plants in hayfields and pastures. They learn the technological aspects of the mineral nutrition of cultivated annual and perennial fodder crops, systems for improving forage lands and their constituent measures; organizations and methods of rational use of pastures, organization of a green conveyor; technologies for the production of hay, silage, haylage, artificially dehydrated fodder, the requirements of standards for the quality of fodder. Forms the skills of obtaining specific knowledge in the field of theory and practice of rationed feeding of animals in modern conditions.													
58		Ch.D	EC	Natural Forage Plants	**Purpose:** To assess the possibilities of selecting the main species, varieties, hybrids of fodder crops and their cultivation technology for specific soil and climatic conditions and ways to reduce the cost of the feeds obtained in the farm. **Content:** He studies the theoretical substantiation of natural pastures, hayfields and their biological features. Technologies for growing arid crops. Forms knowledge in the field of theory and practice of problems of conservation of natural pastures and hayfields in the difficult climatic conditions of the Republic of Kazakhstan. They acquire the skills of scientific and experimental work and field experiments, which will later be used by them in their professional activities.						√		√	√				

59		PD	HSC	Agriculture	**Purpose:** To teach students the peculiarities of irrigation in various zones, the types of irrigation of the Complex, organizational and economic and technical measures to improve hydrological, soil and agro-climatic conditions in order to increase the efficiency of land and water resources use for obtaining high and sustainable crop yields. **Contents:** Study and learn the laws of scientific agriculture; characteristics and features of application in agricultural production. Objects and methods of scientific research in the system of precision farming. Forms the skills of reproduction of soil fertility and prevention of erosion processes in the production of agricultural products; ability to analyze the technological process: on environmental problems arising from the use of intensive chemical-technogenic methods in agriculture and the features of modern methods of farming.	4						√	√			√			
60		Ch.D	HSC	Soil Science	**Purpose:** Formation of the concept of soil as an independent natural-historical body of nature and the main means of agricultural production, to familiarize students with basic information about soil, as a biocos system, as an integral and irreplaceable part of the biosphere, biogeocenosis. **Content:** Studies about the soil as a natural formation, an object of land resources and a means of agricultural production. Know the classification of soils based on genesis, agrophysical, chemical, morphological features and soil-forming processes, and also develops scientific research denoting goals, the choice of ways to solve problems for the protection and rational use of soils. Methodological approaches to modeling	5			√		√		√		√	√			

					and designing ecosystems, especially the relationship between the soil and the terrestrial part of the biota. The role of the soil in the transformation of its flora and fauna, acquires skills in changing environmental factors on soil processes, their dynamism.														
61		PD	EC	Agrosoil Science	**Purpose:** To train highly qualified, competitive specialists in various agricultural industries, able to solve theoretical and practical problems in the field of soil science and agrochemistry, to restore and improve soil fertility, optimize plant nutrition and increase crop yields. acquaintance with basic information. **Content:** He studies soil processes occurring under the influence of agrotechnical measures and the influence of their agricultural crops. Determines the agronomic assessment of soils based on the genesis of agrophysical, chemical, morphological features and soil-forming processes, methods and means of their regulation; identify factors limiting soil fertility. Acquires the skills of professional competencies in the main positions of the agronomic and reclamation assessment of soils, structure, composition and properties, about the patterns of their agricultural use, reproduction of fertility and soil protection.	4			√		√		√						
62		PD	EC	Fundamentals of Soil Science and Agricultural Production	**Purpose:** Need to know the classification of fertilizers, fertilizer application rates for agricultural crops, sowing time. Types of organic fertilizers, composition, seeding rates and sowing technology, life of microorganisms in the soil, production conditions, life of microorganisms in the soil, production conditions, state of creation, symbiotic life with plants, their connection with mineral organic fertilizers to the fertility of soil flora, learns about the impact of diet on				√		√		√						

					productivity, nutrient cycling. **Content:** Studies the classification of soils based on genesis, agrophysical, chemical, morphological characteristics and soil-forming processes of various soils for the selection of soil monoliths and the rationale for their use in agriculture. With the help of soil and landscape mapping using GIS technologies, it determines the contours of the relief, production features of soils, living conditions of agricultural plants and ways to change them, measures to regulate the legal regime of agricultural and non-agricultural land. Forms practical skills in compiling technological maps of crop cultivation, crop rotation schemes according to the structure of sown areas and a set of mechanization tools and attached equipment.															
63		PD	EC	Soil geography	**Purpose:** to investigate the laws of geographic distribution of soils based on the study of the theory of soil formation factors, classification, diagnostics of soil evaluation and enhancement of their fertility. **Content:** He studies the processes of formation and development of soils in geographic space. A description is given of the main approaches to the classification of soils based on genesis, agrophysical, chemical, morphological characteristics and soil-forming processes according to zonal characteristics of the most common soils in Kazakhstan. Forms basic and systematized knowledge about soils, their origin and spatial distribution; designation of the role of the pedosphere as an informative factor in geographical scientific research at various levels. Acquires skills in assessing soils depending on the geographical location.	4						√	√						
64		PD	EC	Soil erosion	**Purpose:** Familiarization of students with the most gigantic spreading processes of							√	√						

					soil erosion degradation - erosion and deflation. Development of skills of independent solution of practical tasks on soil protection from erosion. In addition to this type of degradation, students' familiarity with other less studied types of modern soil degradation, the causes of their origin and development, and measures for soil protection. **Content:** Studies the theoretical foundations of the flow of erosion-accumulation processes, main factors of water and wind erosion; the classification and diagnostics of eroded soils and erosive relief elements are considered. agrotechnical measures aimed at reclamation measures, soil and fertilizer processing systems that ensure sustainable and dynamic development of production on the lands of various agricultural crops, reducing their dependence on the influence of weather conditions. Acquires the skills of agrotechnical, forest reclamation, hydraulic engineering and organizational and economic measures to prevent water and wind erosion.															
65		Ch.D	EC	Soil mapping	**Purpose:** teaching students the techniques of creating the best conditions for plant nutrition with the help of fertilizers, the peculiarities of their interaction with the soil, the correct compilation of soil maps, the system of applying fertilizers for individual crops, crop rotation, farming **Content:** Studies the principles of modern and methods of soil and landscape mapping, methodology of large-scale soil mapping, methods of field soil cover and their use for the purpose of mapping soil materials from remote sensing of the earth using GIS technologies. Forms the practice of using the materials of soil scientific research for	5			√	√									

					production purposes for the implementation of agrotechnical and reclamation measures to improve soil fertility. Acquires skills in preventing and protecting erosion-prone and eroded lands.														
66		Ch.D	EC	Ecological mapping	**Purpose:** mastering the theoretical foundations and methods of carrying out soil-cartographic works of various scales and their practical use for various production purposes. **Content:** Studies soil and landscape mapping using GIS technologies, methods for assessing the current ecological state of the territory and agroecological safety of agricultural products. Forms the skills of geographical approaches in the main areas of environmental research using information technologies of various levels; the correctness of the compilation of ecological maps and cartographic methods in ecological and geographical scientific research.				√	√									
67				Industrial Practice II	**Purpose:** Systematization, generalization and deepening of theoretical knowledge in the field of plant protection and quarantine based on the study of the work of organizations in which students have practical training. **Content:** Considers technology, economics, organization and management of agricultural production, the organization of the agronomic service and the methods of work of the chief agronomist, agronomists of industries and production units of the economy. Gaining skills with maps by crops, take part in the development of a work plan for spring field work and its implementation, as well as in organizing control	5												√	√
68	Module of new Professional	PD	EC	Subjects on the Additional Educational Program	**Purpose:** Acquisition of new professional competencies in the field of related educational programs. **Content:** They study the additional	12												√	√

	competencies acquisition				educational program Minor (Minor) - a set of disciplines and (or) modules and other types of educational work, determined by students for study in order to form additional competencies														
69	Module of Final Certification			Predegree or Industrial Practice	**Purpose:** Consolidation of theoretical knowledge gained in the study of the disciplines provided for by the curriculum, gaining experience in the study of an actual scientific problem and preparing for the completion of the bachelor's final qualifying work. **Content:** Knowledge - formation of general professional and professional competencies necessary for the development of crop cultivation technologies, acquisition of production experience of independent work in the conditions of professional agronomic activity, updating knowledge, skills and abilities in the field of agriculture in real conditions of agronomic activity.	10							√	√				√	
70				Writing and Defending a Thesis, a Graduate work or Preparing and Passing a Comprehensive exam	**Purpose:** Systematization, consolidation and expansion of theoretical knowledge and practical skills in the educational program and their application in solving specific problems in the field of plant protection. **Content:** Knowledge and understanding-oriented practice, as the final stage of training, is responsible for the formation of the student's skills of independent work in the professional field. Successful defense of a graduation project at a meeting of the State Attestation Commission is the legal basis for awarding the student the appropriate qualification.	8							√	√				√	

5 . SUMMARY TABLE SHOWING THE VOLUME OF LOANS DISCOVERED BY EDUCATIONAL PROGRAM MODULES

Course of Study	Semester	The number of mastered modules	Number of studied disciplines			Amount of credits					Total hours	Total loans KZ	Amount	
			OC	HSK	EC	Theoretical education	Physical training	Training practice	Internship Undergraduate practice	Final examination			exam	Dif. offset
1	1	3	5	1	1	27	2				900	30	6	1
	2	3	3	2	3	27	2	1			900	30	5	3
2	3	6	2	4	1	28	2				900	30	6	1
	4	6	3	5	-	24	2		3		900	30	5	3
3	5	3	-	1	5	30					900	30	6	-
	6	4	-	2	3	25			5		900	30	4	1
4	7	3	-	1	3	15			5		600	20	3	1
	8	3	-	-	5	20					600	20	5	-
	9	1	-	-	-				8	10	600	20		1
Total		**32**	**13**	**16**	**20**	**196**	**8**	**1**	**21**	**10**	**7200**	**240**	**40**	**11**

6. STRATEGIES AND METHODS OF TRAINING, MONITORING AND EVALUATION

Learning Strategies	Student-centered learning: the learner is the center of teaching/learning and an active participant in the learning and decision-making process. Practice-oriented learning: focus on the development of practical skills.
Teaching methods	Conducting lectures, seminars, various types of practices: • application of innovative technologies: • problem learning; • case study; • work in a group and creative groups; • discussions and dialogues, intellectual games, competitions, quizzes; • methods of reflection, projects, benchmarking; • Bloom's taxonomy; • presentations; • rational and creative use of information sources: • multimedia training programs; • electronic textbooks; • digital resources. Organization of independent work of students, individual consultations.
Monitoring and assessing the achievability of learning outcomes	Current control on each topic of the discipline, control of knowledge in classroom and extracurricular activities (according to the syllabus). Assessment Forms: • surveys in the classroom; • testing topics of academic discipline; •test papers; • protection of independent creative works; • discussions; • trainings; • colloquia; • essays, etc. Midterm control at least two times during one academic period within the same academic discipline. Intermediate certification is carried out in accordance with the working curriculum, academic calendar. Conduct forms: • exam in the form of testing; •oral exam; • a written exam; • combined exam; • protection of projects; protection of practice reports. **Final state certification.**

TRAINING AND RESOURCE SUPPORT OF THE EP

Information Resource Center	The structure of the Educational Information Center includes 6 subscriptions, 16 reading rooms, 2 electronic resource centers (ERC). The basis of the network infrastructure of the Educational and Information Center is 180 computers with Internet access, 110 workstations, 6 interactive whiteboards, 2 video doubles, 1 video conferencing system, 3 A-4 format scanners, JIC software - AIBS "IRBIS-64" under MS Windows (basic set of 6 modules), stand-alone server for uninterrupted operation in the IRBIS system. The library fund is reflected in the electronic catalog available to users on the site http://lib.ukgu.kz on-line 24 hours 7 days a week. Thematic databases of their own generation: "Almamater", "Proceedings of SKSU scientists", "Electronic archive" have been created. Online access from any device 24/7 via the external link http://articles.ukgu.kz/ru/pps. Catalogs are processed electronically. EC consists of 9 databases: "Books", "Articles", "Periodicals", "Proceedings of the teaching staff of SKSU", "Rare Books", "Electronic Fund", "SKGU in Print", "Readers" and "SKU". The EIC provides its users with 3 options for accessing its own electronic information resources: from the “Electronic Catalog” terminals in the catalog hall and in the EIC subdivisions; through the information network of the university for faculties and departments; remotely on the library website http://lib.ukgu.kz/. Open access to international and republican resources: "Springer Link", "Polpred", "Web of Science", "EBSCO", "Epigraph", to electronic versions of scientific journals in the public domain, "Zan", "RMEB", "Adebiet", Digital library "Aknurpress", "Smart-kitar", "Kitar.кz", etc. For people with special needs and disabilities, the library website has been adapted to the work of visually impaired users
Material and technical base	For conducting practical classes and passing educational, industrial and undergraduate practice within the framework of dual education, there is: Training and production base "Kainar-bulak". Land area: 2.8000 ha Cereals, vegetables, melons, medicinal, industrial crops are cultivated at the scientific-experimental site. An intensive orchard of fruit trees, a collection vine nursery, plantations of berry crops have been laid out using new drip irrigation technologies, using mineral fertilizers and biostimulants. The scientific and experimental base "Kainar-bulak" is equipped with a technopark, scientific laboratories for conducting agricultural experiments. For classroom (lecture, practical, laboratory) classes there are: Lecture rooms - 4 (101 - 80.4 m2, 211 - 64.11 m2, 218 - 64.38 m2, 318 - 61.3 m2) Classrooms for laboratory classes - 5 (203 - 50.0m2, 208 - 60.18m2, 210 - 31.8m2, 216 - 16.0m2, 217 - 34.16m2) Greenhouses - 2 (600 m2) Experimental site - 1 (Lysimeter) (50.05 m2)

	Experimental plot - 1 (Small / plot) (50.6 m2) Training workshop - 1 (95.4 m2) Office of the head of the department - 1 (221 - 20.72 m2) Teachers' room - 1 (219 - 39.20 m2 Auditorium for practical exercises 2 - (209 - 16.49 m2, 212 - 16.49 m2,) Office of undergraduates - 1 (222A - 16.20 m2) Educational and auxiliary premises: Library -1 (73.92 m2) Reading rooms - 1 (98.56 m2) Food point - 15 (2080.62 m2) Assembly Hall -1 (529 m2) Sports hall - 1 (522.33 m2) Medical point - 8 (119.95 m2) Computer rooms - 4 (200 - 67 m2, 205 - 47.6 m2, 207 - 31.8 m2, 214 - 64.11 m2)

APPROVAL SHEET

according to the Educational program " 6B08120- Soil science and Agrochemistry
"

Director of DAA _____ Naukenova A.S.

Director of DASc _____ Nazarbek U.B.

Director of DE&C _____ ____ Bazhirov T.S.ф