NJSC SHAKARIM UNIVERSITY OF SEMEY

EDUCATIONAL PROGRAM

7M08 - Agriculture and bioresources
(Code and classification of the field of education)

7M081 - Agronomy
(Code and classification of the direction of training)

0812
(Code in the International Standard Classification of Education)

M131 - Crop Production
(Code and classification of the educational program group)

7M08101 - Agronomy
(Code and name of the educational program)

Master
(Level of preparation)

Semey

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Semey 2023

PREFACE

Developed

The educational program 7M08101 - Agronomy in the direction of preparation 7M081 - Agronomy on the basis of the State Compulsory Standards of Higher and Postgraduate Education approved by the Order of the Ministry of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 No 2 (as amended by the order) was developed by the Academic Committee dated 20.02.2023 No 66).

Members of the Academic Committee	Full name	Academic degree, academic title, position	Signature
Head of the Academic Committee	Yessengulova Nurlugyl	Dean of the Faculty of Veterinary and Agricultural Management	
Educational program manager	Zakiyeva Araily	senior lecturer of the Department of Agriculture and Bioresources	
Member of the AC	Nurzhanova Kulsara	Head of the Department of Agriculture and Bioresources	
Member of the AC	Kamzina Gulim	senior lecturer of the Department of Agriculture and Bioresources	
Member of the AC	Sakenov Madiyar	Chief Specialist of the Department of Crop Production, Technical Inspection and Mechanization of the Department of Agriculture and Land Relations of the Abai region	
Member of the AC	Akhmetova Aizhan	GU territorial inspection of the Agroindustrial Complex of the Ministry of Agriculture of the Republic of Kazakhstan in the Abai region, chief specialist of the Department of the State Inspection for Plant Quarantine and Phytosanitary control posts	
Member of the AC	Moldashova Balnur	MAG-201 Group Master s student	
Member of the AC	Beisembekova Darina	MAG-201 Group Master s student	

Reviewing

Full name of the reviewer	Position, place of work	Signature
Sharipova Dinara	Senior Researcher at the Laboratory of Mass Production of Bioagents of the Department of Biological Plant Protection of the Kazakh Research Institute of Plant Protection and Quarantine named after Zh.Zhiembayev	

Reviewed

At the meeting of the Commission on Quality Assurance of Veterinary Medicine and Agricultural Management
Recommended for approval by the Academic Council of the University
Protocol № 4.1 "06" April 2023
Chairman of the Commission G.I. Dzhamanova

Approved at the meeting of the Academic Council of the University Protocol No. 8 "25" April 2023.

Approved

at the meeting of the Academic Council of the University
Protocol № 1 "01" of September 2023
Chairman of the Academic Council of the University Orynbekov D.R.

Content

1.Introduction

1.1.General data

The educational program 7M08101 "Agronomy", implemented by the Shakarim University of the city of Semey, the Department of Agriculture and Bioresources, the Veterinary and agricultural management Faculty, was developed taking into account the needs of the regional labor market, the requirements of regulatory documents of the Ministry of Education and Science of the Republic of Kazakhstan and is a system of documents for organizing the educational process.

The educational program regulates the goals, expected results, content, conditions and technologies for the implementation of the educational process, the assessment of the quality of the graduate`s training in this area of training and contains the characteristics of the program and the direction of the graduate`s professional activity, learning outcomes and acquired competencies, policy evaluating learning outcomes, organization of the educational process, ensuring the quality of training of students, a description of the modules that make up the educational program, teaching materials that ensure the implementation of appropriate educational technologies.

The content of the educational program is implemented through a curriculum developed in a modular format, which provides for two cycles of disciplines: a cycle of basic disciplines, a cycle of major disciplines and final certification

1.2.Completion criteria

The main criterion for the completion of the educational process for the preparation of masters of the scientific and pedagogical direction is the development of at least 88 credits of theoretical training, including 6 credits of pedagogical practice, 13 credits of research practice, as well as at least 24 credits of research work of a master s student, including internships and the completion of a master s thesis, at least 8 credits of the final attestations . A total of 120 credits.

1.3.Typical study duration: 2 years.

2.PASSPORT OF THE EDUCATIONAL PROGRAM

2.1.EP purpose	To form undergraduates personal qualities as responsibility, tolerance, desire for self-development and disclosure of their creative potential, awareness of the social importance of the profession of agronomy, the ability to make organizational and managerial decisions in unusual situations and the willingness to be responsible for them, willingness to work in a team.
2.2.Map of the training profile within the educational program	
Code and classification of the field of education	7M08 - Agriculture and bioresources
Code and classification of the direction of training	7M081 - Agronomy
Code in the International Standard Classification of Education	0812
Code and classification of the educational program group	M131 - Crop Production
Code and name of the educational program	7M08101 - Agronomy
2.3.Qualification characteristics of the graduate	
Degree awarded / qualification	Master of Agricultural Sciences under the educational programme 7M08101- Agronomy
Name of the profession / list of positions of a specialist	They can hold primary positions as an agronomist in research laboratories of the agricultural sector, an agronomist in enterprises of various forms of ownership and the processing industry without presenting requirements for work experience in accordance with the qualification requirements of the Qualification Handbook of Positions of Managers, Specialists and Other Employees.
OQF qualification level (industry qualification framework)	7
Area of professional activity	- research work - growing technology - all types of work with agricultural crops, crop products, - work with equipment and devices for the examination of the quality of seeds, biological products, chemical pesticides, biological active substances, macro and micropreparations, technical teaching aids for conducting classes, equipment for scientific work (feed, pastures, water sources).
Object of professional activity	The objects of professional activity of graduates are: research organizations, management.
Types of professional activity	Graduates of the educational program of the specialty 7M08101 "Agronomy" can carry out the following professional activities: - educational (pedagogical); - research; - organizational and managerial. Educational (pedagogical) activities: - teach agricultural, biological and biotechnological disciplines in universities and other educational institutions of state and non-state profile; Tasks of pedagogical activity: * in-depth study of the psychological and pedagogical process of higher education as an integral system, its

	structure, interaction of elements, content, development of organizational forms and methods of training in higher education on the example of the Department of Agrotechnology and Forest Resources; • study of modern educational technologies of higher education; obtaining practical skills of educational and methodical work in higher education, preparation of educational material on the required topic for a lecture, practical lesson, skills of organizing and conducting classes using new learning technologies; studying educational and methodical literature, software for recommended disciplines of the curriculum; direct participation in the educational process; * study of the possibilities of using innovative pedagogical technologies as a means of improving the quality of the educational process; * comprehensive study of federal state educational standards of higher education in the field of training, educational programs, educational and methodological complexes, educational and methodological manuals on disciplines, etc. Research activities: - conduct research and development, carry out design and survey work, scientific and organizational activities in various fields of agriculture; - in the field of agriculture, agronomy, plant protection, breeding and genetics of agricultural crops, soil science, agrochemistry, agricultural production technologies as researchers who are able to participate in collective research projects; teaching activities in educational programs of higher education. Tasks of research work: * application of the acquired knowledge in the implementation of scientific research in the field of general agriculture, • implementation of theoretical studies; * development and improvement of experimental research methods; * conducting experimental studies; * processing and analysis of the results of theoretical and experimental studies. Organizational and managerial activities: - perform organizational and technological activities in production institutions of the state agricultural service, carry out management activities and perform management and marketing tasks.
Graduate Model	A person who, as a highly qualified specialist in accordance with the requirements of the modern labor market, has mastered the necessary for the professional development of agriculture and professional competencies and was able to form these competencies. He is also an agricultural specialist with comprehensive knowledge in the field of agronomy, able to solve the tasks of developing the field of professional activity and organization based on the analysis of scientific and industrial achievements.

3.Modules and content of the educational program

Sociolinguistic and scientific-pedagogical activity

Foreign language (professional)

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	28538 (3012021)
Course	1
Term	1
Credits count	3
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline

Mastery of general cultural, professional and special competencies for the implementation of professional activities, involving teaching free reading of original literature of the relevant branch of knowledge in a foreign language; development of oral communication skills in monological and dialogical form in the specialty; development of written scientific communication skills on topics related to the scientific work of a graduate student, as well as familiarization with the forms and types of international cooperation in the scientific field.

Purpose of studying of the discipline

The purpose of studying the discipline "Foreign language (professional)" in the master`s degree program is the systematic deepening of communicative competence within the framework of international standards of foreign language education on the basis of further development of skills and abilities of active language proficiency in the professional activity of the future master.

Learning Outcomes

ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.

Prerequisites

Bachelor

Postrequisites

Final examination

History and philosophy of science

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	28541 (3012024)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying the culture of scientific thinking, forms analytical capabilities and research skills, provides theoretical and practical knowledge necessary for a future scientist. Explores the historical evolution of the sciences and the philosophical perspectives they form. The origins of modern science, its social and institutional connections are described. General philosophical issues related to thought experiments, confirmation and refutation of theories, the origin and application of quantitative and high-quality research methods are considered.

Purpose of studying of the discipline

the formation of an interdisciplinary worldview among undergraduates, based on a deep understanding of the history and philosophy (theory) of scientific thinking, as part of a universal culture.

Learning Outcomes

ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.

Prerequisites

Bachelor

Postrequisites

Final examination

Tertiary education

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	28539 (3012022)

Course	1
Term	1
Credits count	3
Lections	15hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline

The course is aimed at studying the main directions, principles and patterns of higher education. During the course of the course, the basic concepts of modern pedagogy, concepts and theories of teaching and upbringing, didactics of higher education will be considered. The master`s student will master the skills of designing the organization of the educational process, techniques of individual and group reflection, will be able to correctly formulate pedagogical goals, apply educational technologies in the educational process. in the process, to design work programs of disciplines.

Purpose of studying of the discipline

The purpose of mastering the discipline is to master the system of knowledge about higher education, its content, structure, principles of educational process management and mastering modern technologies in the field of management and organization of the educational process

Learning Outcomes

ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.

Prerequisites

Bachelor

Postrequisites

Final examination

Psychology of management

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	28540 (3012023)
Course	1
Term	1
Credits count	3
Lections	15hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	20hours
Independent work of the student	40hours
Total	90hours
Knowledge control form	Examination

Short description of discipline

The content of the course is aimed at mastering the approaches and directions of management psychology, psychological laws of management, features of planning and solving management problems. Students will get acquainted with the psychological methods of resolving conflict situations, master the ways of motivating work, the methods of using effective management styles. Skills will be formed to analyze the psychological causes underlying the decline in the effectiveness of the management process.

Purpose of studying of the discipline

The purpose of the discipline "Psychology of Management" is the formation of scientifically based ideas about the system of mental phenomena, psychological variables of behavior and conscious human activity in modern conditions and allows undergraduates to form skills of applying the acquired psychological knowledge in educational activities

Learning Outcomes

ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.

Prerequisites

Bachelor

Postrequisites

Final examination

Teaching practicum

Discipline cycle	Basic disciplines
Discipline component	University component
SubjectID	28556 (3012011)
Course	2
Term	1
Credits count	6
Pedagogical practics	180hours
Total	180hours
Knowledge control form	Total mark on practice

Short description of discipline
The pedagogical practice of a graduate student is an essential component and an integral part of the educational process of undergraduates. This type of practice performs the functions of general professional training in terms of preparing undergraduates for teaching at a university. The pedagogical practice of a master`s student is a complex of educational and methodological works in order to master pedagogical skills and develop professional and practical competencies of students.
Purpose of studying of the discipline
Familiarity with the specific conditions of professional pedagogical activity, consolidation and deepening of theoretical knowledge of the undergraduate and the acquisition of practical skills and competencies in the field of professional activity
Learning Outcomes
ON1 Apply fundamental scientific, pedagogical, managerial, communicative knowledge and skills in professional activities.
Prerequisites
Tertiary education
Postrequisites
Final examination

Plant protection and basic farming

Innovative technologies for the use of fertilizers

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	28440 (3011984)
Course	1
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline focuses on the study of innovative technologies for the use of fertilizers, advanced solutions for optimizing the agrochemical properties of the soil and their importance for the correct application of fertilizers. The issues of improving the technology of using fertilizers, minimizing the negative impact of fertilizers on the environment, the use of modern technology for fertilizing, the effect of fertilizers on the growth and development of plants in different periods of vegetation, on the formation of yields are considered.
Purpose of studying of the discipline
The purpose of mastering the discipline is to deepen knowledge of the basic technologies used by modern production to improve soil fertility, improve fertilizer systems of agricultural crops and the ecological state of agrocenoses.
Learning Outcomes
ON4 Determine and calculate methods, technology and doses of organic and mineral fertilizers, microbiological preparations for the planned harvest.
Prerequisites
Bachelor
Postrequisites
Soil fertility models

Reclamation of disturbed lands of the Republic of Kazakhstan

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	28441 (3011985)
Course	1
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the factors of natural and anthropogenic disturbances of arable territories, a complex of specialized and agrotechnical works aimed at restoring productivity and economic value of disturbed territories. The issues of restoration and improvement of lands subject to erosion are considered. It is aimed at acquiring the ability to conduct research on the state of disturbed lands; selection and implementation of effective methods, methods, technologies of land reclamation; implementation of the forecast of the impact of disturbed lands on the surrounding environment.
Purpose of studying of the discipline

The purpose of mastering the discipline is to form knowledge about the directions and procedure of reclamation works of disturbed economic and other activities of lands.

Learning Outcomes

ON9 To investigate and evaluate the reproduction of soil fertility, to use the main indicators of the model of soil fertility, the scientific basis of soil grading and classification, to develop rational ways of using rain-fed lands.

Prerequisites

Bachelor

Postrequisites

Final examination

Modern forage harvesting systems

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	26154 (3011983)
Course	1
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The course is aimed at studying progressive methods of calculating the balance of green feeds, preparation of a green conveyor, energy-saving technologies for growing annual and perennial fodder crops in the green conveyor system, accounting for the quantity, properties, quality of haylage, silage, methods for calculating the need for green mass and preservatives in the production of succulent feeds, the need for animal feed, establishing the area sowing and calculation of the need for seeds of fodder crops.

Purpose of studying of the discipline

The purpose of studying the discipline is progressive methods of calculating the balance of green feed, the organization of a green conveyor, energy-saving technologies for the cultivation of annual and perennial fodder crops in the green conveyor system, accounting for their quantity, quality of silage,silage, methods for calculating the need for green mass and preservatives in the production of succulent feed, the need for feed for livestock on the farm, calculation determination of the area and calculation of the need for seeds of fodder crops.

Learning Outcomes

ON7 To study the problems of crop production, to recommend modern technologies and methods of forage harvesting and promising crops for agriculture, to make managerial decisions in various branches of crop production.

Prerequisites

Bachelor

Postrequisites

Promising cultures of Kazakstan

Adaptive breeding in crop production

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28548 (3011994)
Course	1
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying modern problems of plant adaptation in agriculture. The course covers the current state and prospects for the formation of the domestic agricultural economy, the adaptive potential of cultivated varieties of agricultural plants, strategies for adaptive intensification of crop production, biologization and ecologization of the intensification course of plant adaptation, the basics of adaptive use of natural, biological and man-made resources, agroecological possibilities of crop production in Kazakhstan.

Purpose of studying of the discipline

the study of the problem of plant adaptation in agriculture and the practical solution of the issues of biologization and ecologization of the intensification processes of transition to adaptive development of agriculture.

Learning Outcomes

ON8 Apply new technologies in crop breeding, evaluate the adaptive potential of plants in various soil and climatic conditions.

Prerequisites
Actual problems of crop production
Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis II

Agroclimatic resources of the rainfed farming

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28549 (3011995)
Course	1
Term	2
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the natural use of agro-climatic resources of the Republic of Kazakhstan. The conditions of plant stability and their regulation in rain-fed agriculture, heat and moisture availability of the growing season, climatic security of grain crops, warming of the atmospheric agro-climate, innovative agrotechnologies, aridization of the terrain, diversification of crop production are considered. Forms common interests in the cultivation of agricultural crops and uses natural resources most intensively.
Purpose of studying of the discipline
The discipline allows undergraduates, as well as agricultural production practitioners, to assess and rationally use the agro-climatic resources of the territory and promote the effective use of favorable and overcoming adverse weather phenomena.
Learning Outcomes
ON9 To investigate and evaluate the reproduction of soil fertility, to use the main indicators of the model of soil fertility, the scientific basis of soil grading and classification, to develop rational ways of using rain-fed lands.
Prerequisites
Actual problems of crop production
Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis II

Agro-soil science with the scientific foundations of adaptive agriculture

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28545 (3011991)
Course	1
Term	2
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course is aimed at studying soil fertility, transformation of anthropogenic use processes. The discipline examines the problems of the course of soil-forming phenomena and the importance of factors of soil formation, the structure of sections of profiles of different genesis soils, different types of soils, water regime, the main characteristics and models of agrotechnical fertility, agrotechnical and coordination-economic significance of crop rotations, systematization and the basics of their construction, minimum and zero system of land cultivation.
Purpose of studying of the discipline
The purpose of the discipline is to study new socio-economic and environmental conditions and problems affecting the evolution of soils and their fertility, patterns of development in arable soils of the cultural (naturally anthropogenic) process of soil formation.
Learning Outcomes
ON9 To investigate and evaluate the reproduction of soil fertility, to use the main indicators of the model of soil fertility, the scientific basis of soil grading and classification, to develop rational ways of using rain-fed lands.
Prerequisites
Bachelor
Postrequisites
Final examination

Soil fertility models

Discipline cycle	Profiling discipline

Discipline component	Electives
SubjectID	28552 (3011998)
Course	1
Term	2
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course is aimed at studying the totality of parametric characteristics of the internal state of the soil, various fertility management programs, the probabilistic consequences of their implementation, as well as the expected economic benefits of management (including environmental impacts), ways to further study fertility. Considers criteria and models of soil fertility, principles of modeling and selection of models, creation of production models of soil fertility.

Purpose of studying of the discipline
The purpose of the discipline "Models of soil fertility" is to study the essence of the main elements of soil fertility, their assessment, the main methods of regulating soil fertility.

Learning Outcomes
ON9 To investigate and evaluate the reproduction of soil fertility, to use the main indicators of the model of soil fertility, the scientific basis of soil grading and classification, to develop rational ways of using rain-fed lands.

Prerequisites
Bachelor

Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis II

The research work of a student, including an internship and the implementation of a master s thesis I

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	28555 (3012008)
Course	1
Term	2
Credits count	11
The research work	330hours
Total	330hours
Knowledge control form	Total mark on practice

Short description of discipline
The research (experimental research) work of students is an independent study under the guidance of a supervisor (consultant) of an urgent problem of the branch of science corresponding to the profile of the educational program mastered by the student. Writing articles and participating in conferences allows you not only to broaden your scientific horizons, develop analytical thinking and improve your independent research skills, but also to prepare for writing a master`s thesis.

Purpose of studying of the discipline
The purpose of the research (experimental research) work of the undergraduate is the formation of general cultural and professional competencies necessary for conducting both independent research work, the result of which is the writing and successful defense of a master`s thesis (project), and research work as part of a research team.

Learning Outcomes
ON2 Possess the methodology and methodology of agronomic research, determine and organize the direction of research, process and analyze scientific results and patent research data.

Prerequisites
Actual problems of crop production

Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis II

Scientific and practical basics of designing farming systems

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28546 (3011992)
Course	1
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours

Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course is aimed at studying the development of modern resource-saving technologies and adaptive landscape farming systems, the current state of system research. Reveals the scientific foundations of crop rotations, the principles of their construction, methods of implementing modern technological methods of tillage, measures to combat weeds in adaptive landscape farming systems taking into account the laws of agriculture, methodological foundations of modern adaptive landscape farming systems, scientific and practical foundations of designing adaptive landscape farming systems.

Purpose of studying of the discipline
The purpose of the discipline "Scientific and practical fundamentals of designing farming systems" is to study the essence, structure and classification of modern farming systems, signs and properties of systems, methods of system research, scientific foundations of modern farming systems;

Learning Outcomes
ON6 To introduce elements of innovative technologies in agriculture, irrigation system, to assess the quality of field work.

Prerequisites
Bachelor

Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis II

Scientific foundations of classification and classification of soils

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28553 (3011999)
Course	1
Term	2
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course is aimed at studying the scientific and methodological foundations of soil grading and classification for various natural zones of Kazakhstan. Analyzes the current state of the land fund and soil resources of Kazakhstan, modern ideas about the theory of soil fertility, which serves as the basis for assessing the quantitative and qualitative properties of land, the basics of state accounting of land properties, categories of their suitability, control over the use and territorial protection services.

Purpose of studying of the discipline
The purpose of the discipline "Scientific foundations of soil grading and classification" is to systematize knowledge on the main problems and development of soil grading and classification in the country and abroad.

Learning Outcomes
ON9 To investigate and evaluate the reproduction of soil fertility, to use the main indicators of the model of soil fertility, the scientific basis of soil grading and classification, to develop rational ways of using rain-fed lands.

Prerequisites
Bachelor

Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis II

Scientific basis of the use of fertilizers

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28543 (3011990)
Course	1
Term	2
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course focuses on the study of the rational use of organic and mineral fertilizers for agricultural crops. Examines the factors affecting the effectiveness of fertilizers, technologies for calculating doses of mineral fertilizers, reasonable doses, timing and methods of using fertilizers for the main crops, taking into account their biological characteristics, the degree of expected yield and agro-soil

circumstances. The course is aimed at mastering tasks related to plant nutrition and optimal use of fertilizers.

Purpose of studying of the discipline

The purpose of the discipline "Scientific foundations of the use of fertilizers" is to study the issues of rational use of organic and mineral fertilizers for agricultural crops, factors affecting the effectiveness of fertilizers, timing and methods of application of fertilizers for the main crops, taking into account their biological characteristics, the level of planned yield and soil conditions.

Learning Outcomes

ON4 Determine and calculate methods, technology and doses of organic and mineral fertilizers, microbiological preparations for the planned harvest.

Prerequisites

Bachelor

Postrequisites

The research work of a student, including an internship and the implementation of a master s thesis II

Scientific basis of irrigation system application

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28550 (3011996)
Course	1
Term	2
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The course is aimed at studying modern methods of rational use of water resources. It contains a reasonable development of the irrigation regime depending on the type of agricultural crops, the correct use of irrigation equipment, control and improvement of the reclamation condition of irrigated areas, reduction of water losses in canals, combating land erosion during irrigation, the use of return water for irrigation and the impact of reclamation work on the environment.

Purpose of studying of the discipline

The purpose of the discipline "Scientific fundamentals of irrigation system application" is to study the development of modern high-tech irrigation methods and the development of resource-saving methods of irrigation of agricultural crops, ensuring the formation of high yields.

Learning Outcomes

ON6 To introduce elements of innovative technologies in agriculture, irrigation system, to assess the quality of field work.

Prerequisites

Bachelor

Postrequisites

The research work of a student, including an internship and the implementation of a master s thesis II

Soil assessment

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28554 (3012000)
Course	1
Term	2
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The course is aimed at studying the comparative analysis of innovative methods of soil assessment. Examines the latest methods of assessing soil quality, the main evaluation features for the formation of evaluation scales, various types of assessment of soil properties for practical purposes, as well as specific examples of soil assessment for various purposes and the formation of appropriate cartograms in order to develop different ways of their optimal application.

Purpose of studying of the discipline

The purpose of studying the discipline is to form the skills of undergraduates to conduct land assessment using various approaches and methods, depending on the purpose of the assessment and the use of the results in professional activities.

Learning Outcomes

ON9 To investigate and evaluate the reproduction of soil fertility, to use the main indicators of the model of soil fertility, the scientific basis of soil grading and classification, to develop rational ways of using rain-fed lands.

Prerequisites
Bachelor
Postrequisites
Final examination

System method in agrochemistry

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28542 (3011989)
Course	1
Term	2
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course is focused on the study of modern methods, determination of doses of fertilizers that can increase the yield or change its quality. Considers a methodological systematic approach to conducting fundamental and applied scientific research in the field of agrochemistry, as well as ecological balanced fertilizer systems, optimization of the balance of nutrients, soil and plant diagnostics of mineral nutrition of plants and soil-agrochemical monitoring, modern methods of soil analysis to determine agrochemical indicators, the interaction of the fertilizer system with the planned harvest.
Purpose of studying of the discipline
formation of students` practical knowledge and skills in organizing scientific research in the field of agrochemistry.
Learning Outcomes
ON4 Determine and calculate methods, technology and doses of organic and mineral fertilizers, microbiological preparations for the planned harvest.
Prerequisites
Bachelor
Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis II

Irrigated farming systems

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28547 (3011993)
Course	1
Term	2
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course focuses on the study of intensive technology of irrigated agriculture. Considers the improvement of plant nutrition through the introduction of scientifically based norms of mineral fertilizers and the use of increased norms of organic fertilizers to improve soil fertility in irrigated agriculture, the use of crop varieties responsive to irrigation, the use of modern technologies for water supply to the field, computerization of process control processes, the introduction of scientific achievements and best practices.
Purpose of studying of the discipline
The purpose of the discipline "Systems of irrigated agriculture" is to study in scientific justification the principles of application of systems of basic processing of irrigated soil, providing protection of soils from wind erosion, preservation of soil fertility, productive use of natural and climatic resources of the zone of irrigated agriculture while reducing energy and material costs.
Learning Outcomes
ON6 To introduce elements of innovative technologies in agriculture, irrigation system, to assess the quality of field work.
Prerequisites
Bachelor
Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis II

Operation of irrigation systems

Discipline cycle	Profiling discipline
Discipline component	Electives

SubjectID	28551 (3011997)
Course	1
Term	2
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course aims to study irrigation systems used in agronomy. It includes the classification of irrigation systems, requirements for the quality of irrigation water, irrigation principles, organization of the calculation of the water used for irrigation, control over the correct use of water, groundwater regime, control of agricultural technology of plants on irrigated lands, elimination of salinization and waterlogging of the irrigated area.

Purpose of studying of the discipline
The purpose of the discipline is to form undergraduates` knowledge about the main directions of improvement and operation of irrigation systems and monitoring to solve specific problems in the field of environmental management and water use in adverse natural conditions, taking into account the economic efficiency of production and environmental requirements

Learning Outcomes
ON6 To introduce elements of innovative technologies in agriculture, irrigation system, to assess the quality of field work.

Prerequisites
Bachelor

Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis I

Innovative technologies in seed production

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28564 (3012016)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course is aimed at the formation of knowledge on innovative technologies (techniques and methods) in the seed production of agricultural crops and skills in the organization and technique of the seed production process
using innovative technologies. The course examines the development of sustainable seed production in modern conditions, variety renewal and features of the development of productive innovations in seed production, elite seed production,
environmental and agrotechnical conditions for growing high-quality elite seeds.

Purpose of studying of the discipline
The purpose of teaching the discipline is to teach undergraduates to independently summarize information about modern and promising technologies in seed production, analyze the data obtained using a database

Learning Outcomes
ON5 Recommend modern, digital technologies in forecasting, programming, production and processing of crop production and apply innovative technologies in crop production.

Prerequisites
Basic and profile disciplines of the EP

Postrequisites
Final examination

Crop yield programming

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28558 (3011987)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours

Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the programming of the limiting natural factor (humidity, heat, photosynthetic active radiation, fertility of the earth), the needs of a culture of a particular variety in fertilizer, irrigation, the magnitude of the introduction of a regulated factor based on natural causes affecting the crop and creating optimal conditions for its formation. A scientifically-based system of growing potential crop yields in different soil-climatic zones with high yields is considered.

Purpose of studying of the discipline
The purpose of mastering the discipline is to use agrometeorological, agrochemical, agrophysical, agrotechnical factors to develop a system of measures to obtain a given, maximum possible yield in specific soil and climatic conditions, and with sufficient moisture supply - full use of the genetic potential of cultivated varieties.

Learning Outcomes
ON5 Recommend modern, digital technologies in forecasting, programming, production and processing of crop production and apply innovative technologies in crop production.

Prerequisites
Actual problems of crop production

Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis III

Innovative methods in crop breeding

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28569 (3012019)
Course	2
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course is aimed at studying breakthrough achievements in the field of genetics, genomics and biotechnology, the main priorities of modern plant breeding and ways to achieve them. Considers innovative methods of work in modern breeding and includes cellular, genetic, chromosomal and genetic engineering at the level of populations, organisms, tissues, cells, plasmids, chromosomes, genes and their individual parts.

Purpose of studying of the discipline
familiarization of undergraduates with modern scientific developments and advanced breeding technologies and features of crop cultivation, familiarization with the state and prospects for the development of technical means, study of promising areas and acquisition of skills in the selection process, practical training in methods and agrotechnical techniques for growing high-quality seed crops in the region, acquisition of competencies for planning and conducting field scientific experiments.

Learning Outcomes
ON8 Apply new technologies in crop breeding, evaluate the adaptive potential of plants in various soil and climatic conditions.

Prerequisites
Innovations in crop production

Postrequisites
Final examination

Monitoring and integrated plant protection system against harmful organisms

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28557 (3011986)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The course is focused on the study of modern achievements in the protection of crops from harmful organisms. The discipline includes: consideration of positive results in the application of integrated protection; monitoring in phytosanitary; agroecological assessment of integrated protection and a set of methods for protecting plants from harmful organisms adapted to agro-landscape and economic conditions; bioenergetic and economic efficiency of techniques for integrated protection of field crops from diseases of pests and weeds.

Purpose of studying of the discipline

The purpose of the discipline is to study modern achievements in the protection of agricultural crops from harmful organisms, positive results in the application of integrated protection; phytosanitary monitoring; integrated protection in major crops; agroecological assessment of integrated protection.

Learning Outcomes

ON3 Diagnose plant pests, plant diseases, draw up technological schemes for crop protection based on knowledge of the economic thresholds of harmfulness of diseases, pests.

Prerequisites

Masters degree course

Postrequisites

The research work of a student, including an internship and the implementation of a master s thesis II

Physiology of resistance of agricultural plants

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28567 (3012017)
Course	2
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The course focuses on the study of modern data on the physiology of stress, examines the mechanisms of plant protection, their resistance to abiotic and biotic environmental conditions, the effect of plants on temperature increases and decreases, water deficiency, high salt content in the soil, air pollution, ionizing radio emission, the influence of pathogenic microorganisms. Analyzes the main mechanisms of adaptation, adaptation of plants to certain environmental conditions, which is provided by physiological elements.

Purpose of studying of the discipline

The objectives of mastering the discipline physiology of the stability of agricultural plants are to consider and integrate knowledge about the peculiarities of the impact of various environmental factors of the external environment on numerous physiological processes of the plant organism.

Learning Outcomes

ON8 Apply new technologies in crop breeding, evaluate the adaptive potential of plants in various soil and climatic conditions.

Prerequisites

Basic and profile disciplines of the EP

Postrequisites

Final examination

Phytosanitary monitoring of crop disease

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28559 (3011988)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying plant protection, taking into account the theoretical and methodological foundations of the monitoring system for harmful organisms and environmental factors affecting them. Gives an idea of phytosanitary monitoring of agricultural crops and lands on the territory of the foci of the foci of the economy, identification of cases of infection with infectious objects, quarantine pests and infections, with the determination of the limits of their spread on the territory of the Republic of Kazakhstan.

Purpose of studying of the discipline

The purpose of studying the discipline is to build a modern plant protection system and technologies for its implementation based on knowledge and skills in phytosanitary control and monitoring of agrocenoses, agricultural plants and agricultural products.

Learning Outcomes

ON3 Diagnose plant pests, plant diseases, draw up technological schemes for crop protection based on knowledge of the economic thresholds of harmfulness of diseases, pests.

Prerequisites

Actual problems of crop production

Postrequisites

Final examination

DigitalFarming

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28568 (3012018)
Course	2
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The course is aimed at studying the evolution of agriculture and agricultural machinery from precision farming to agricultural production systems based on modern knowledge. The course helps to use intelligent networks and data management tools correctly. Considers the digital transformation of crop production through the introduction of digital technologies and platform conclusions to ensure a technological breakthrough in the agro-industrial complex and achieve productivity growth in "digital" agricultural enterprises.

Purpose of studying of the discipline

The purpose of the discipline is to study digital tools for the use of information resources, platforms and technologies that increase the efficiency of agricultural production.

Learning Outcomes

ON5 Recommend modern, digital technologies in forecasting, programming, production and processing of crop production and apply innovative technologies in crop production.

Prerequisites

Basic and profile disciplines of the EP

Postrequisites

Final examination

Crop production

Innovative technologies and methods of quality control in the storage of crop products

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	28442 (3012003)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The course is aimed at studying methods and methods of storage technology of crop products, basic quality requirements, causes of deterioration in quality and safety during the storage of products. The discipline considers the use of digital technologies in the storage of crop products, software for product quality control using the achievements of scientific and technological progress to rationally reduce losses and improve the efficiency of preserving raw materials of plant origin.

Purpose of studying of the discipline

The purpose of the discipline is the systematic deepening of knowledge and skills in the field of assessing the quality of grain products in terms of safety indicators, consumer properties, confirmation of product quality compliance with the requirements of technical regulations and other regulatory documents.

Learning Outcomes

ON5 Recommend modern, digital technologies in forecasting, programming, production and processing of crop production and apply innovative technologies in crop production.

Prerequisites
Bachelor
Postrequisites
IT technologies in crop production

Methodology of research work

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	28573 (3012002)
Course	1
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course forms the methods of theoretical research, forecasting problems in scientific research and helps to choose the right direction of scientific research. The discipline "Methodology of research work" includes: methodological foundations of scientific knowledge, philosophical aspects, the study of the structure and application of the stages of research work, the use of modern technologies for data collection and processing and their generalization, rules for the preparation of reports on research work.
Purpose of studying of the discipline
The purpose of this discipline is to study the methodology of organizing and conducting research, modern methods and techniques of scientific research, the formation of skills and abilities to independently carry out scientific research in the field of agronomy and the preparation of scientific qualification (dissertation) work.
Learning Outcomes
ON2 Possess the methodology and methodology of agronomic research, determine and organize the direction of research, process and analyze scientific results and patent research data.
Prerequisites
Bachelor
Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis I

Actual problems of crop production

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	28444 (3012012)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying theoretical questions about the patterns of crop formation, identifying reserves for increasing the production of crop products, developing the theory and technology of obtaining the highest yields and the best quality at the lowest cost of labor and money. The issues of violation of environmental safety due to improper use of chemicals that harm plant growth, the suspension of work on the introduction of fertilizers into the soil and irrigation of fields are considered.
Purpose of studying of the discipline
To provide theoretical knowledge about increasing soil fertility by implementing various agro-reclamation measures to obtain a stable and high yield of agricultural crops, rational economic, environmental and technological use of land.
Learning Outcomes
ON7 To study the problems of crop production, to recommend modern technologies and methods of forage harvesting and promising crops for agriculture, to make managerial decisions in various branches of crop production.
Prerequisites
Bachelor
Postrequisites
Promising cultures of Kazakstan

Innovations in crop production

Discipline cycle	Basic disciplines

Discipline component	Electives
SubjectID	28443 (3012013)
Course	1
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the development and implementation of new technologies of the most important agricultural crops. It includes: the development and implementation of resource- saving techniques and innovative agricultural technologies in crop production, as well as new varieties and hybrids of agricultural crops approved for use in the production, management of various areas of the economy, allowing to increase the financial, environmental and social efficiency of production.

Purpose of studying of the discipline
to form students` knowledge, skills and abilities in accordance with the competencies being formed on the scientific and technological foundations of soil science, agrochemistry, agriculture and crop production, on which
crop production technologies are based.

Learning Outcomes
ON5 Recommend modern, digital technologies in forecasting, programming, production and processing of crop production and apply innovative technologies in crop production.

Prerequisites
Bachelor

Postrequisites
Promising cultures of Kazakstan

Organization and planning of research

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	26155 (3012001)
Course	1
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is focused on the study of key areas of scientific research in agronomy. The questions of requirements for experiments and description of the results of observations, methodological bases of scientific knowledge and creativity are considered. The choice of scientific direction and stages of research work, search, analysis and processing of scientific data, forecasting in scientific and industrial creativity, experimental experiments, processing the results of empirical research, the formation of the results of scientific work, research productivity.

Purpose of studying of the discipline
The study of the elements of scientific research methods for the development of effective artistic thinking and the organization of optimal thinking activities.

Learning Outcomes
ON2 Possess the methodology and methodology of agronomic research, determine and organize the direction of research, process and analyze scientific results and patent research data.

Prerequisites
Bachelor

Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis I

Patenting and intellectual property protection

Discipline cycle	Basic disciplines
Discipline component	Electives
SubjectID	28537 (3012014)
Course	1
Term	1
Credits count	5

Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course is aimed at studying the main provisions of copyright and patent law, the legal basis of the legislation of the Republic of Kazakhstan in the field of intellectual property protection. It includes: the concept of patenting and intellectual property protection, the results of intellectual activity protected by copyright, innovations and the relevance of intellectual property rights protection, types of intellectual property, protection of intellectual property objects, transfer and transfer of exclusive rights to intellectual property objects.

Purpose of studying of the discipline
The objectives of teaching this discipline are to study the problems of legal protection of inventions, utility models, the study of national regulatory legal acts and their comparison with international legal acts of various levels in the field of patent law, the study of objects of patent law, identification of signs and conditions of patentability of inventions, utility models and industrial designs, practical development of skills of registration of patent rights, optimization the choice of protection of violated rights of authors and patent holders, identification of the most urgent problems of legal protection of intellectual property results in the field of patent law, study of the features of the current state
of the results of intellectual activity in the field of patenting.

Learning Outcomes
ON2 Possess the methodology and methodology of agronomic research, determine and organize the direction of research, process and analyze scientific results and patent research data.

Prerequisites
Bachelor

Postrequisites
The research work of a student, including an internship and the implementation of a master s thesis I

IT technologies in crop production

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28566 (3012015)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course defines the essence of innovations and their classification, the structure and features of the innovation process in the agro-industrial complex, innovative activity and its features in crop production, the state and trend of production, as well as the economic efficiency of the industry. The course examines promising areas for the application of innovative technologies and their introduction into agricultural production, applied computer programs for optimizing the placement of crops in zonal crop rotation systems.

Purpose of studying of the discipline
Teach the master to independently summarize information about innovative technologies in agronomy, analyze the data obtained using the innovation database. Possess the skills of using modern information technologies for the collection, processing and dissemination of innovations in agronomy, use and create databases on innovative technologies in agronomy, master the methods of constructing schemes of innovative processes, operations and methods in new technologies of cultivation of crops; the method of dissemination of innovations in production.

Learning Outcomes
ON5 Recommend modern, digital technologies in forecasting, programming, production and processing of crop production and apply innovative technologies in crop production.

Prerequisites
Basic and profile disciplines of the EP

Postrequisites
Final examination

Adaptive technology of crop production

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28560 (3012004)
Course	2
Term	1
Credits count	5

Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The course forms theoretical knowledge on the adaptive potential of cereals, legumes, oilseeds, root crops and tubers, spinning and fodder crops in various soil and climatic conditions. The issues of the adaptive potential of agricultural crops, the possibility of increasing the production of agricultural products and improving their quality, the development of scientifically based adaptive technologies for the cultivation of field crops with limited use of chemicals are considered.

Purpose of studying of the discipline
The purpose of the discipline is a thorough study of the soil and climatic conditions of the upcoming master`s work, the peculiarities of the development of field crops, requirements for environmental factors and the creation of technological processes for managing growth, development and formation of a high–quality crop.

Learning Outcomes
ON8 Apply new technologies in crop breeding, evaluate the adaptive potential of plants in various soil and climatic conditions.

Prerequisites
Basic and profile disciplines of the EP

Postrequisites
Final examination

Innovative technologies for processing of crop products

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28570 (3012020)
Course	2
Term	1
Credits count	5
Lections	30hours
Practical and seminar classes	15hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at the rational use of grown products taking into account their quality, the expansion of the range of products, the use of innovative waste-free technologies in the processing of crop production. The course covers innovative ways of preserving fresh and processed products without loss in weight and with minimal losses, as well as new ways of storing products without deterioration of their quality, modern methods of certification of agricultural products and products of their processing.

Purpose of studying of the discipline
formation of professional knowledge among future specialists on innovative technologies of storage and processing of crop products; to study the condition of grain entering storage; modern waste- free technologies in grain processing; obtaining new products in the processing of crop products.

Learning Outcomes
ON5 Recommend modern, digital technologies in forecasting, programming, production and processing of crop production and apply innovative technologies in crop production.

Prerequisites
Innovative technologies and methods of quality control in the storage of crop products

Postrequisites
Final examination

The research work of a student, including an internship and the implementation of a master s thesis II

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	28563 (3012009)
Course	2
Term	1
Credits count	4
The research work	120hours
Total	120hours
Knowledge control form	Total mark on practice

Short description of discipline
The research (experimental research) work of students is an independent study under the guidance of a supervisor (consultant) of an

actual problem of a branch of science
corresponding to the profile of the educational program mastered by the student. Writing articles and participating in conferences allows you not only to broaden your scientific horizons, develop analytical thinking and improve
the skills of independent research work, but also to prepare for writing a master`s thesis.

Purpose of studying of the discipline

The purpose of the research (experimental research) work of the undergraduate is the formation of general cultural and professional competencies necessary for conducting both independent
research work, the result of which is the writing and successful defense of a master`s thesis (project), and research work as part of a research team.

Learning Outcomes

ON2 Possess the methodology and methodology of agronomic research, determine and organize the direction of research, process and analyze scientific results and patent research data.

Prerequisites

The research work of a student, including an internship and the implementation of a master s thesis I

Postrequisites

The research work of a student, including an internship and the implementation of a master s thesis III

Promising cultures of Kazakstan

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28562 (3012006)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The course is aimed at studying the key aspects and potentials of promising agricultural crops of Kazakhstan in modern conditions. The course examines the state and prospects of cultivation of new crops such as soybeans, rapeseed, chickpeas, amaranth, etc., their agrotechnical significance, expansion of species composition, biological features depending on environmental conditions, patterns of plant growth and development, optimized techniques of technology for growing promising crops of Kazakhstan, as well as the improvement of these crops by breeding methods to create new highly productive varieties and hybrids.

Purpose of studying of the discipline

The purpose of this discipline is to identify the main current problems and prospects for the development of agriculture, as well as the current state and innovative ways, problems and prospects for the development of promising crops.

Learning Outcomes

ON7 To study the problems of crop production, to recommend modern technologies and methods of forage harvesting and promising crops for agriculture, to make managerial decisions in various branches of crop production.
ON8 Apply new technologies in crop breeding, evaluate the adaptive potential of plants in various soil and climatic conditions.

Prerequisites

Basic and profile disciplines of the EP

Postrequisites

Final examination

Agribusiness management in crop production

Discipline cycle	Profiling discipline
Discipline component	Electives
SubjectID	28561 (3012005)
Course	2
Term	1
Credits count	5
Lections	15hours
Practical and seminar classes	30hours
Independent work of a student under the guidance of a teacher	35hours
Independent work of the student	70hours
Total	150hours
Knowledge control form	Examination

Short description of discipline

The course focuses on the study of the basics of commercialization of technological achievements, modeling in agronomy, the basics of managing production processes of field agricultural systems, skills in the development and search for management solutions in crop production, project management in crop production, intensive production technologies and the use of industrial crops. It includes: methods of justification, adoption and implementation of management decisions, methods of simple investment analysis for the

development of management decisions in crop production.

Purpose of studying of the discipline

The purpose of mastering the discipline is to develop students` skills of effective organization and management of agribusiness.

Learning Outcomes

ON7 To study the problems of crop production, to recommend modern technologies and methods of forage harvesting and promising crops for agriculture, to make managerial decisions in various branches of crop production.

Prerequisites

Basic and profile disciplines of the EP

Postrequisites

Final examination

Research scientific training

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	28571 (3012007)
Course	2
Term	2
Credits count	13
Working practice	390hours
Total	390hours
Knowledge control form	Total mark on practice

Short description of discipline

The research practice of the undergraduate is conducted in order to familiarize himself with the latest theoretical, methodological and technological achievements of domestic and foreign science, modern methods of scientific research,
processing and interpretation of experimental data. Research practice is a mandatory section of the main educational program of the Master`s degree in scientific and pedagogical direction and is aimed at the formation of theoretical, research, methodological and practical skills.

Purpose of studying of the discipline

The research practice of the undergraduate is conducted in order to familiarize himself with the latest theoretical, methodological and technological achievements of domestic and foreign science, modern methods of scientific research,
processing and interpretation of experimental data.

Learning Outcomes

ON2 Possess the methodology and methodology of agronomic research, determine and organize the direction of research, process and analyze scientific results and patent research data.

Prerequisites

The research work of a student, including an internship and the implementation of a master s thesis II

Postrequisites

Final examination

The research work of a student, including an internship and the implementation of a master s thesis III

Discipline cycle	Profiling discipline
Discipline component	University component
SubjectID	28572 (3012010)
Course	2
Term	2
Credits count	9
The research work	270hours
Total	270hours
Knowledge control form	Total mark on practice

Short description of discipline

The research (experimental research) work of students is an independent study under the guidance of a supervisor (consultant) of an urgent problem of the branch of science corresponding to the profile of the educational program mastered by the student. Writing articles and participating in conferences allows you not only to broaden your scientific horizons, develop analytical thinking and improve your independent research skills, but also to prepare for writing a master`s thesis.

Purpose of studying of the discipline

The purpose of the research (experimental research) work of the undergraduate is the formation of general cultural and professional competencies necessary for conducting both independent research work, the result of which is the writing and successful defense of a master`s thesis (project), and research work as part of a research team.

Learning Outcomes

ON2 Possess the methodology and methodology of agronomic research, determine and organize the direction of research, process and analyze scientific results and patent research data.

Prerequisites

The research work of a student, including an internship and the implementation of a master s thesis II

Postrequisites

Final examination

Final assessment

Master`s dissertation

Credits count	8

4.Summary table on the scope of the educational program

«7M08101 - Agronomy»

Name of discipline	Cycle/ Component	Term	Number of credits	Total hours	Lec	SPL	LC	IWST	IWS	Knowledge control form
Sociolinguistic and scientific-pedagogical activity										
Foreign language (professional)	BS/US	1	3	90		30		20	40	Examination
History and philosophy of science	BS/US	1	5	150	15	30		35	70	Examination
Tertiary education	BS/US	1	3	90	15	15		20	40	Examination
Psychology of management	BS/US	1	3	90	15	15		20	40	Examination
Teaching practicum	BS/US	3	6	180						Total mark on practice
Plant protection and basic farming										
Innovative technologies for the use of fertilizers	BS/CCh	1	5	150	30	15		35	70	Examination
Reclamation of disturbed lands of the Republic of Kazakhstan	BS/CCh	1	5	150	30	15		35	70	Examination
Modern forage harvesting systems	BS/CCh	1	5	150	30	15		35	70	Examination
Adaptive breeding in crop production	AS/CCh	2	5	150	15	30		35	70	Examination
Agroclimatic resources of the rainfed farming	AS/CCh	2	5	150	30	15		35	70	Examination
Agro-soil science with the scientific foundations of adaptive agriculture	AS/CCh	2	5	150	30	15		35	70	Examination
Soil fertility models	AS/CCh	2	5	150	30	15		35	70	Examination
The research work of a student, including an internship and the implementation of a master s thesis I	AS/US	2	11	330						Total mark on practice
Scientific and practical basics of designing farming systems	AS/CCh	2	5	150	15	30		35	70	Examination
Scientific foundations of classification and classification of soils	AS/CCh	2	5	150	30	15		35	70	Examination
Scientific basis of the use of fertilizers	AS/CCh	2	5	150	30	15		35	70	Examination
Scientific basis of irrigation system application	AS/CCh	2	5	150	30	15		35	70	Examination
Soil assessment	AS/CCh	2	5	150	30	15		35	70	Examination
System method in agrochemistry	AS/CCh	2	5	150	30	15		35	70	Examination
Irrigated farming systems	AS/CCh	2	5	150	15	30		35	70	Examination
Operation of irrigation systems	AS/CCh	2	5	150	30	15		35	70	Examination
Innovative technologies in seed production	AS/CCh	3	5	150	15	30		35	70	Examination
Crop yield programming	AS/CCh	3	5	150	15	30		35	70	Examination
Innovative methods in crop breeding	AS/CCh	3	5	150	30	15		35	70	Examination
Monitoring and integrated plant protection system against harmful organisms	AS/CCh	3	5	150	15	30		35	70	Examination

Physiology of resistance of agricultural plants	AS/CCh	3	5	150	30	15		35	70	Examination
Phytosanitary monitoring of crop disease	AS/CCh	3	5	150	15	30		35	70	Examination
DigitalFarming	AS/CCh	3	5	150	30	15		35	70	Examination
Crop production										
Innovative technologies and methods of quality control in the storage of crop products	BS/CCh	1	5	150	15	30		35	70	Examination
Methodology of research work	BS/CCh	1	5	150	30	15		35	70	Examination
Actual problems of crop production	BS/CCh	1	5	150	15	30		35	70	Examination
Innovations in crop production	BS/CCh	1	5	150	15	30		35	70	Examination
Organization and planning of research	BS/CCh	1	5	150	30	15		35	70	Examination
Patenting and intellectual property protection	BS/CCh	1	5	150	15	30		35	70	Examination
IT technologies in crop production	AS/CCh	3	5	150	15	30		35	70	Examination
Adaptive technology of crop production	AS/CCh	3	5	150	15	30		35	70	Examination
Innovative technologies for processing of crop products	AS/CCh	3	5	150	30	15		35	70	Examination
The research work of a student, including an internship and the implementation of a master s thesis II	AS/US	3	4	120						Total mark on practice
Promising cultures of Kazakstan	AS/CCh	3	5	150	15	30		35	70	Examination
Agribusiness management in crop production	AS/CCh	3	5	150	15	30		35	70	Examination
Research scientific training	AS/US	4	13	390						Total mark on practice
The research work of a student, including an internship and the implementation of a master s thesis III	AS/US	4	9	270						Total mark on practice
Final assessment										
Master`s dissertation		4	8	240						