The list of academic disciplines of the university component

6B08 - Agriculture and Bioresources
(Code and classification of the field of education)

6B081 - Agronomy
(Code and classification of the direction of training)

0812
(Code in the International Standard Classification of Education)

B077 - Crop production
(Code and classification of the educational program group)

6B08102 - Green fields technologies
(Code and name of the educational program)

bachelor
(Level of preparation)

set of 2024

Semey 2024

Developed
By the Academic Committee of the EP
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Manager of EP Zakiyeva A.

Reviewed
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Approved
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at a meeting of the University Academic Council by protocol No. 11 of June 28, 2024.

Bases of economics, law and ecological knowledge

Discipline cycle	General educational disciplines
Course	1
Credits count	5
Knowledge control form	Examination

Short description of discipline
The integrated discipline includes the main issues and principles in the field of fundamentals of law and anti- corruption culture, economics, entrepreneurship and leadership, ecology and life safety. Features of the use of regulatory legal acts, the ability to use the business, ethical, social, economic, entrepreneurial and environmental standards of society. Specifics of environmental-legal, economic, entrepreneurial relations, leadership qualities and principles of combating corruption.

Purpose of studying of the discipline
It consists in studying the basic patterns of the functioning of living organisms, the biosphere as a whole and the mechanisms of their sustainable development under the conditions of anthropogenic impact and emergency situations; in understanding the concept of corruption, the legitimacy of the fight against it, the content of the state penal policy; in the formation of students` basic fundamental stable knowledge on the basics of economic theory, in instilling the skills and abilities of economic thinking; in introducing students to the theory and practice of entrepreneurship, to the basics of creating their own business; in the formation of theoretical knowledge and practical skills for the development and improvement of leadership qualities.

Learning Outcomes
ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technology, taking into account modern trends in the development of society.

Learning outcomes by discipline
1) Analyzes the issues of safety and preservation of the natural environment as the most important priorities of life;
2) Shows knowledge of the basics of environmental management and sustainable development, assesses the impact of man- made systems on the environment;
3) Shows knowledge of the main regulatory legal acts of the Republic of Kazakhstan, their understanding and application;
4) Demonstrates knowledge of the laws of the development of economic processes, clearly formulates his own position, finds and clearly sets out arguments in its defense;
5) Is able to characterize the types of entrepreneurial activity and the entrepreneurial environment, draw up a business plan, create an entrepreneurial structure and organize its activities;
6) Knows the fundamental provisions about the role of leadership in managing large and small social groups.

Prerequisites
School course

Postrequisites
Basic and profile disciplines of the EP

Introduction to the specialty

Discipline cycle	Basic disciplines
Course	1
Credits count	3
Knowledge control form	Examination

Short description of discipline
The discipline considers the basic concepts of crop production industries in order to create an initial idea of future professional activity, a body of knowledge about the relationship of agronomy with other branches of production and processing of agricultural products. The main attention is paid to the prospects for the development of modern technologies in agriculture and crop production , the laws of agriculture, the basics of agrochemistry and crop production.

Purpose of studying of the discipline
To acquaint students with the basics of the chosen specialty-agronomy, its role in the development of agricultural production and solving food problems of mankind.

Learning Outcomes
ON2 To predict the phases of crop development, weather conditions, the influence of factors on yield and use them correctly in agriculture; to describe the morphological features of plant organs; knowledge of the essence of the physiological processes taking place in the plant cell, biological features.

Learning outcomes by discipline
1) to consider the stages of knowledge development and views on the soil of representatives of different epochs since the inception of agriculture;
2) to give knowledge about the life and work of outstanding scientists of soil scientists and agronomists, about the history of interesting and important ideas, hypotheses, theories and methods for science;
3)in-depth familiarization of students with theoretical and practical knowledge about the profession of an agronomist, the possibilities of applying knowledge in the disciplines of agronomy;

Prerequisites
School course

Postrequisites
Soil science Crop production Agriculture

Agricultural Microbiology

Discipline cycle	Basic disciplines
Course	1
Credits count	3
Knowledge control form	Examination

Short description of discipline
It gives an idea of the main forms of bacteria and their role in agriculture. The issues of the systematics of microorganisms and microbiological processes occurring during the preparation of organic fertilizers, as well as the creation and application of microbial preparations in crop production and feed production are considered. The use of preparations for canning and obtaining feed and probiotics or replacing pesticides with microbiological preparations is being studied.
Purpose of studying of the discipline
formation of basic professional competencies in agricultural microbiology.
Learning Outcomes
ON10 To carry out all types of breeding work, taking into account the basic laws of plant genetics and biotechnology; to determine the varietal and sowing qualities of seeds.
Learning outcomes by discipline
- To know the methods of searching, collecting and processing information, the method of system analysis in microbiology;
- Be able to apply methods of searching, collecting, processing information, a systematic approach to solving tasks and carry out critical analysis and synthesis of information obtained from relevant Russian and foreign sources;
To master the methods of searching, collecting and processing, critical analysis and synthesis of information, the methodology of a systematic approach to solving tasks.
Prerequisites
School course
Postrequisites
Crop production

Decorative crop production

Discipline cycle	Basic disciplines
Course	1
Credits count	5
Knowledge control form	Project

Short description of discipline
The course of this discipline includes: the history and current state of the decorative crop industry, a brief description of ornamental plants, their place in agro-industrial, amateur and household gardening, types of decorative crop production: floriculture, landscape design, decorative gardening and floristry. He studies the basics of agrotechnology of ornamental plant growing, technology of cultivation of seedlings and seedlings of ornamental plants, styles of floral compositions, features of research work in floristics.
Purpose of studying of the discipline
The purpose of mastering the discipline "Decorative crop production" is to form students` knowledge and skills in biology, morphology, decorative qualities and technologies of cultivation of ornamental crops.
Learning Outcomes
ON5 To apply new methods of cultivating crops, taking into account soil and climatic conditions and biological characteristics of plants; to justify the method of harvesting crops, primary processing of crop products and storing them.
ON9 Use modern technology for growing vegetable crops in open and closed soils; plan work in greenhouses and greenhouses.
Learning outcomes by discipline
- the ability to carry out landscape analysis, assessment of the condition of plants at the stage of pre-design surveys;
- willingness to implement technologies for growing planting material: ornamental trees and shrubs, flower crops, lawns in open and closed ground;
- the ability to correctly and effectively carry out measures to preserve plantings in the interests of ensuring the right of every citizen to a favorable environment.
Prerequisites
School course
Postrequisites
Crop production

The fodder base of beekeeping

Discipline cycle	Basic disciplines
Course	1
Credits count	3
Knowledge control form	Essay

Short description of discipline
The discipline covers issues related to the creation of forage stocks; the forage base of beekeeping; honey-bearing resources of beekeeping and pollination of agricultural plants. Studies the classification of honey-bearing and pollen-bearing plants, their distribution; crop rotations of honey-bearing field, fodder, vegetable plants; plants of orchards, berry fields, meadows, pastures; special honey plants and technologies of their cultivation; methods of improving and expanding the forage base for bees; ways of effective use of bees during pollination to obtain high yields.
Purpose of studying of the discipline
The purpose of the discipline "Fodder base of beekeeping" is for students to master theoretical and practical knowledge and acquire skills in the field of organization and technology of the fodder base of beekeeping based on modern scientific achievements.
Learning Outcomes
ON8 To carry out work on the technology of improving forage lands, preparing forage; to determine modern methods and principles of pasture management measures.
Learning outcomes by discipline
- use bees in pollination of entomophilic agricultural plants;
Own:
- methods for determining the nectar content of flowers and honey productivity of plants;

- methods for determining pollen productivity of flowers;
- methods of using bees for pollination of agricultural crops.

Prerequisites
School course

Postrequisites
Forage production

Educational practice

Discipline cycle	Basic disciplines
Course	1
Credits count	2
Knowledge control form	Total mark on practice

Short description of discipline
During the course of the training practice, the student consolidates the knowledge gained in the process of studying the disciplines of the basic, variable and profile parts; develop practical work skills; get acquainted with modern equipment. Acquires skills: work with educational, scientific, regulatory, methodological and instructional literature, recognition of wild and cultivated plants, the main types of soils; diagnostics of pests and diseases of agricultural crops; agrometeorological observations.

Purpose of studying of the discipline
The main purpose of the educational practice is to consolidate the knowledge acquired in the course of lectures, laboratory classes and independent work of the student, and to obtain professional competencies, acquire practical skills and professional experience.

Learning Outcomes
ON2 To predict the phases of crop development, weather conditions, the influence of factors on yield and use them correctly in agriculture; to describe the morphological features of plant organs; knowledge of the essence of the physiological processes taking place in the plant cell, biological features.

Learning outcomes by discipline
1. Acquire the knowledge and skills necessary for the development of special disciplines, future specialty and professional work;
2. Develop skills of self-solving problems and tasks related to the problems of the chosen specialty;
3. Master the best working methods used on farms.

Prerequisites
Introduction to the specialty

Postrequisites
Production practice 1

Forage production

Discipline cycle	Basic disciplines
Course	2
Credits count	5
Knowledge control form	Examination

Short description of discipline
Examines the basics of creating and strengthening the forage base on the basis of rational use and improvement of natural and field forage lands, information about the bioecological features of plants of hayfields and pastures, technology for improving forage lands. The discipline studies methods of determining the yield and nutritional value of feed, the process and methods of harvesting hay, silage and haylage; technology of feed preparation, determination of the quality of yield of fodder crops.

Purpose of studying of the discipline
Acquisition of knowledge about the patterns of development and life of forage plants, the relationship of plants with the environment, methods and techniques for creating optimal conditions for the growth of forage crops and obtaining feed based on them.

Learning Outcomes
ON8 To carry out work on the technology of improving forage lands, preparing forage; to determine modern methods and principles of pasture management measures.

Learning outcomes by discipline
1. To determine the characteristics of the forage base based on the natural use and severity of field forage lands
2. Analyze information about the bioecological features of plants of hayfields and pastures
3. Develop methods for determining the yield and nutritional value of feed

Prerequisites
The fodder base of beekeeping

Postrequisites
Meadows and pasture farming

Genetic

Discipline cycle	Basic disciplines
Course	2
Credits count	5
Knowledge control form	Examination

Short description of discipline
The discipline introduces the basics of heredity and variability of organisms, the main provisions of genetics, Mendel`s laws, the chromosomal theory of heredity. Gives an idea of the cytological foundations of heredity, the patterns of inheritance in remote and intraspecific hybridization. Examines the provisions on the molecular foundations of heredity, the main types of variability, polyploidy and its role in breeding and evolution, genetic evaluation of populations and individuals by offspring.

Purpose of studying of the discipline

The purpose of this course is to ensure the disclosure of the content of the basic principles, laws and concepts of each section of the course and the development of genetic thinking skills for conscious perception and mastering the methods of genetics.

Learning Outcomes

ON10 To carry out all types of breeding work, taking into account the basic laws of plant genetics and biotechnology; to determine the varietal and sowing qualities of seeds.

Learning outcomes by discipline

1) To know the regularities of the manifestation of the fundamental properties of life – heredity and variability – at various levels of the organization of living systems.
2) apply knowledge about genetic patterns in solving genetic problems, forecasting and explaining the results of various types of crosses, solving practical problems in the field of breeding, biotechnology, genetic engineering, medicine, nature protection and human health, medical and genetic counseling, genetic control of biosafety of new products and industries.
3) Possess - various methods of solving genetic problems; the most important methods of genetic analysis.

Prerequisites

School course

Postrequisites

Breeding and seed production of agricultural crops

World of Abai

Discipline cycle	Basic disciplines
Course	2
Credits count	3
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying historical facts, the philosophical and artistic foundations of the works of Abay Kunanbaev, Shakarim Kudaiberdiev, which form worldview and aesthetic values, the student`s ability to express his opinion, practical skills and perception of such human qualities as morality, honesty, artistic character. The genius of the writers of Kazakh literature and the role of M. Auezov in the study and popularization of Abai`s heritage, the significance of his works for history, literature and science are determined.

Purpose of studying of the discipline

Formation of the meaning of philosophical and ideological being, understanding of the problems raised in the works of Abai Kunanbayuly, Shakarim Kudaiberdiuly, Mukhtar Auezov and application of the acquired knowledge in the practice of everyday life.

Learning Outcomes

ON1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technology, taking into account modern trends in the development of society.

Learning outcomes by discipline

1) Analyzes the philosophical and artistic foundations of works, historical facts related to the creative heritage of Abai Kunanbayev, Shakarim Kudaiberdiyev, Mukhtar Auezov
2) Uses in practice the humanistic ideas of Abai`s philosophical and artistic works
3) Assesses the place and significance of Abai`s works in the history of literature and science
1) Analyzes the philosophical and artistic foundations of works, historical facts related to the creative heritage of Abai Kunanbayev, Shakarim Kudaiberdiyev, Mukhtar Auezov
2) Uses in practice the humanistic ideas of Abai`s philosophical and artistic works
3) Assesses the place and significance of Abai`s works in the history of literature and science

Prerequisites

The module of socio-political knowledge (sociology, political science, cultural studies, psychology)

Postrequisites

Basic and profile disciplines of the EP

The Parking management in agriculture

Discipline cycle	Basic disciplines
Course	2
Credits count	5
Knowledge control form	Project

Short description of discipline

To teach students to use technical services in agriculture, the General design of cars and tractors, methods of rational use of technology in production.

Purpose of studying of the discipline

To study the main types of agricultural machinery used for basic and surface tillage, sowing and planting, preparation and fertilization, post-harvest processing of grain and seeds of various crops; irrigation of agricultural land; loading and transportation of agricultural goods.

Learning Outcomes

ON3 To recognize the main types and varieties of soils, to justify the directions of their use in agriculture and methods of fertility reproduction; to complete tillage units, to carry out technological adjustments of agricultural machines.

Learning outcomes by discipline

In the course of theoretical classes, the student should know how to prepare the machine for productive and trouble-free operation. For example, the installation of teeth on a given seeding scheme, the installation of sowing machines on a given seeding rate (seeds, fertilizers) intended for continuous and row-to-row tillage,the installation procedure of the working bodies of cultivators.

Prerequisites

Introduction to the specialty

Postrequisites

Production practice 2

Fundamentals of scientific research in crop production

Discipline cycle	Basic disciplines
Course	2
Credits count	5
Knowledge control form	Examination

Short description of discipline
The discipline forms an idea of modern research methods in crop production and agriculture. It includes: modern methods of planning experiments, methods for laying and conducting vegetation and field experiments, planning records and observations, and statistical processing of experimental data. The discipline "Fundamentals of scientific research in crop production" is closely related to the disciplines of agriculture, agrochemistry, crop production, soil science and plant protection.

Purpose of studying of the discipline
The purpose of the course "Fundamentals of scientific research in crop production" is to consider the theoretical foundations of the most important methods of studying the formation of crop yields.

Learning Outcomes
ON4 To conduct field research experiments, to argue the results of research, to prepare all kinds of scientific works.

Learning outcomes by discipline
- familiarization of students with general information about science and scientific research;
- teaching students methods and methodology of scientific research;
- assimilation by students of the methodology of registration of the results of research work;
- acquisition by students of the necessary knowledge in the field of presentation (defense) of research work (final qualifying work).

Prerequisites
Introduction to the specialty

Postrequisites
Methods of agricultural crops variety testing

Soil science

Discipline cycle	Basic disciplines
Course	2
Credits count	5
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying the origin, genesis, classification, geographical distribution and protection of soils, ways of rational use of it in agricultural production, preservation and improvement of fertility. The course examines the factors of soil formation, chemical composition, physical properties, nomenclature and classification of soils, water, air, thermal properties and soil regimes, regulation of soil regimes and directions of the soil-forming process, the main types and varieties of soils.

Purpose of studying of the discipline
generalization of new theoretical knowledge about soils and their fertility, acquisition of practical skills in diagnostics and qualitative assessment of soils, agricultural production grouping and regulation of soil regimes.

Learning Outcomes
ON3 To recognize the main types and varieties of soils, to justify the directions of their use in agriculture and methods of fertility reproduction; to complete tillage units, to carry out technological adjustments of agricultural machines.

Learning outcomes by discipline
1) Description of morphological features of soils and determination of the main types of soils in Kazakhstan;
2) apply methods for determining the chemical properties of soils, the granulometric composition of soil moisture; correctly and skillfully conduct a comprehensive analysis of the results of the study of soil properties;;
3) apply the acquired knowledge in practice and apply methods of studying soils;

Prerequisites
Introduction to the specialty

Postrequisites
Agriculture Agrochemistry

Production practice 1

Discipline cycle	Basic disciplines
Course	2
Credits count	5
Knowledge control form	Total mark on practice

Short description of discipline
During the internship, the student consolidates the knowledge gained in the process of studying the disciplines of the basic, variable and profile parts; develop practical skills; get acquainted with modern equipment. Acquires skills: carrying out basic and pre-sowing tillage, organizing and carrying out sowing of agricultural crops, carrying out technological techniques for caring for crops and plantings of agricultural crops. carrying out protective measures against harmful organisms (weeds, pests and diseases), organizing and carrying out harvesting of agricultural crops, primary processing of crop production and laying it for storage.

Purpose of studying of the discipline
The purpose of practical training 1 is to acquire practical skills in morphology, taxonomy of insect pests and diseases; recognition of the main types and varieties of soils

Learning Outcomes
ON2 To predict the phases of crop development, weather conditions, the influence of factors on yield and use them correctly in agriculture; to describe the morphological features of plant organs; knowledge of the essence of the physiological processes taking

place in the plant cell, biological features.

Learning outcomes by discipline

1. collection, processing and generalization of practical material on the topic of research work (project);
2. analysis of statistical data and practical material on the research topic;
3. formulation of conclusions, patterns, recommendations and suggestions on the topic of research work (project) or report.

Prerequisites

Educational practice

Postrequisites

Production practice 2

Digitalization in crop production

Discipline cycle	Basic disciplines
Course	2
Credits count	3
Knowledge control form	Examination

Short description of discipline

It is aimed at studying innovations and technological progress, developed primarily within the framework of digitalization of crop production and agriculture in Kazakhstan. The discipline "Digitalization in crop production" includes: the implementation of national services in digital form, monitoring of agricultural land using the latest electronic methods, digitization of land, the introduction of a precision farming structure and equipping agricultural machinery with wireless navigation systems.

Purpose of studying of the discipline

The purpose of the discipline is to form students` knowledge, practical skills and abilities; to study digital tools for using information resources, platforms and technologies that increase the efficiency of modern agricultural production; to gain practical skills in using modern digital technologies to solve applied problems in agriculture.

Learning Outcomes

ON2 To predict the phases of crop development, weather conditions, the influence of factors on yield and use them correctly in agriculture; to describe the morphological features of plant organs; knowledge of the essence of the physiological processes taking place in the plant cell, biological features.
ON5 To apply new methods of cultivating crops, taking into account soil and climatic conditions and biological characteristics of plants; to justify the method of harvesting crops, primary processing of crop products and storing them.
ON6 To develop rational and resource-saving farming systems; to carry out agrotechnical measures to protect soils from erosion and deflation; to carry out all types of reclamation works, to use irrigation methods and techniques.

Learning outcomes by discipline

"1) to use modern digital technologies for self-development of self-learning; to use the opportunities provided for the acquisition of new knowledge and skills;
2) to choose and apply digital technologies to solve tasks in their professional activities; to predict the development of various processes;
3) solve various official and professional tasks using information technology;"

Prerequisites

Information and communication technology

Postrequisites

Agrochemistry Innovative agricultural technologies in agriculture

Agrochemistry

Discipline cycle	Basic disciplines
Course	3
Credits count	5
Knowledge control form	Examination

Short description of discipline

The course of this discipline includes: creating the best conditions for plant nutrition, taking into account the knowledge of the qualities of different types and structures of fertilizers, the personalities of their relationship with the soil, determining very effective forms, methods and timing of the introduction of fertilizers. Studies the quantitative and qualitative composition of macro - micro fertilizers, complex fertilizers, organic fertilizers, the effect of fertilizers on the environment, methods of agrochemical research.

Purpose of studying of the discipline

formation of knowledge, skills and practical skills on the basics of nutrition of agricultural crops, which are the scientific basis for the intensification of agricultural production due to economically sound, resource-saving and environmentally safe use of fertilizers

Learning Outcomes

ON3 To recognize the main types and varieties of soils, to justify the directions of their use in agriculture and methods of fertility reproduction; to complete tillage units, to carry out technological adjustments of agricultural machines.
ON6 To develop rational and resource-saving farming systems; to carry out agrotechnical measures to protect soils from erosion and deflation; to carry out all types of reclamation works, to use irrigation methods and techniques.

Learning outcomes by discipline

1) be able to carry out the selection of soil and plant samples for analysis;
2) be able to conduct chemical analysis of soils, plants and fertilizers;
3) calculate the doses of fertilizers for the planned harvest, determine the method of their application for crops;

Prerequisites

Soil science

Postrequisites

Agriculture

Biotechnology crops

Discipline cycle	Basic disciplines
Course	3
Credits count	5
Knowledge control form	Essay

Short description of discipline
The discipline includes theoretical questions and practical results in plant biotechnology related to obtaining forms with new improved features. Examines the application of biotechnology methods in crop breeding, seed production and cultivation technology, microbiology of cells and tissues cultivated in an artificial nutrient medium, clonal micro-separation and plant health, plant growth and formation regulators, the basic principles of genetic engineering, the use of invitro methods in plant breeding.

Purpose of studying of the discipline
To study the biology of cells and tissues cultivated in an artificial nutrient medium, clonal micro- reproduction and plant health improvement, regulators of plant growth and development

Learning Outcomes
ON10 To carry out all types of breeding work, taking into account the basic laws of plant genetics and biotechnology; to determine the varietal and sowing qualities of seeds.

Learning outcomes by discipline
1) know the basic techniques and methods of cellular and genetic engineering used in agriculture, cultivation of plant cells and tissues.
2) be able to use the basic techniques and methods of cellular and genetic engineering used in biotechnology.
3) Be able to grow agricultural plants "in viva" and "in vitro", cultivation of plant cells and tissues, the technique of microclonal reproduction of plants

Prerequisites
Plant biology

Postrequisites
Breeding and seed production of agricultural crops

Protection of crops from pests and diseases

Discipline cycle	Basic disciplines
Course	3
Credits count	5
Knowledge control form	Essay

Short description of discipline
Theoretical knowledge of the material nature, causes and development of diseases, biological characteristics of pests and to instill skills and abilities to identify, alarm, predict, control measures and prevent the development and spread of diseases and pests.

Purpose of studying of the discipline
The purpose of this discipline is to master students` knowledge, skills and abilities to identify diseases and pests of agricultural plants, prevent plant diseases and measures to combat diseases and pests of agricultural plants.

Learning Outcomes
ON7 To conduct surveys of agricultural lands for the presence of pests and plant diseases, to identify the main types of pests and diseases, to develop integrated systems of plant protection measures.

Learning outcomes by discipline
1) know the species composition and biological characteristics of pests and diseases;
2) develop the necessary methods of plant protection from pests and diseases.
3) conduct phytopathological examination of agricultural crops.

Prerequisites
Agricultural entomology Agricultural Phytopathology

Postrequisites
Production practice 2

Production practice 2

Discipline cycle	Basic disciplines
Course	3
Credits count	5
Knowledge control form	Total mark on practice

Short description of discipline
During the internship, the student consolidates the knowledge gained in the process of studying the disciplines of the basic, variable and profile parts; develop practical skills; get acquainted with modern
equipment. Acquires skills: carrying out basic and pre-sowing tillage, organizing and carrying out sowing of agricultural crops, carrying out technological techniques for caring for crops and planting agricultural crops,
carrying out protective measures against harmful organisms (weeds, pests and diseases), organizing and carrying out harvesting of agricultural crops, primary processing of crop production and laying it for storage.

Purpose of studying of the discipline
The purpose of industrial practice 2 is to consolidate professional competencies, acquire practical skills in production

Learning Outcomes
ON7 To conduct surveys of agricultural lands for the presence of pests and plant diseases, to identify the main types of pests and diseases, to develop integrated systems of plant protection measures.

Learning outcomes by discipline
1. To develop technological maps of cultivation of agricultural crops taking into account soil and climatic conditions and biological characteristics of agricultural crops;

2. to justify the method of harvesting agricultural crops, primary processing of crop production and laying it for storage.

Prerequisites

Educational practice

Postrequisites

Production practice 3

Breeding and seed production of agricultural crops

Discipline cycle	Basic disciplines
Course	3
Credits count	5
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying the breeding process in crop production, hybridization techniques, crossing techniques; testing of crops; filling out documentation for varietal crops. The issues of organization of primary seed production and improvement of varieties in the process of primary seed production are considered; cultivation of elite varieties of cereals, legumes; cultivation of seeds of fertile and sterile analogues of the corn line; cultivation of virus- free elite potatoes using clone selection; varietal characteristics of the most significant crops.

Purpose of studying of the discipline

To study the selection process in crop production, methods and techniques of selection, evaluation of breeding material, varietal control

Learning Outcomes

ON2 To predict the phases of crop development, weather conditions, the influence of factors on yield and use them correctly in agriculture; to describe the morphological features of plant organs; knowledge of the essence of the physiological processes taking place in the plant cell, biological features.

ON10 To carry out all types of breeding work, taking into account the basic laws of plant genetics and biotechnology; to determine the varietal and sowing qualities of seeds.

Learning outcomes by discipline

1) to know modern methods of breeding, their development and improvement based on the latest discoveries in biology (in relation to the peculiarities of a particular culture);

2) to implement in practice the methods of breeding new highly productive varieties of agricultural crops, the organization of variety testing and zoning, as well as the system of placement and introduction into seed production of the best zoned varieties.

3) Possess methods of selecting varieties of field crops for specific environmental and economic conditions.

Prerequisites

Genetic

Postrequisites

Methods of agricultural crops variety testing

Agriculture

Discipline cycle	Profiling discipline
Course	3
Credits count	7
Knowledge control form	Examination and term work/Project

Short description of discipline

This discipline is aimed at studying theoretical and practical issues of agriculture, including the intensification of the living conditions of agricultural plants, a set of measures against weeds, crop rotations, precursors and methods, methods of soil treatment, the principles of biologization, ecologization of agriculture and the prerequisites of the agro-landscape approach in modern farming systems are also considered. The issues of improving soil fertility and general problems of growing crops are highlighted.

Purpose of studying of the discipline

to give students in this discipline deep and high-quality knowledge. in particular, on the basis of theoretical training and practical skills in the implementation of a system of agrotechnical measures, the reproduction of effective soil fertility - as the main means of production, through weed control, management and development of crop rotations, proper tillage system

Learning Outcomes

ON3 To recognize the main types and varieties of soils, to justify the directions of their use in agriculture and methods of fertility reproduction; to complete tillage units, to carry out technological adjustments of agricultural machines.

ON6 To develop rational and resource-saving farming systems; to carry out agrotechnical measures to protect soils from erosion and deflation; to carry out all types of reclamation works, to use irrigation methods and techniques.

Learning outcomes by discipline

"1) to draw up schemes of various types and types of crop rotations;

2)apply comprehensive weed control measures;

3) determine the quality of tillage;"

Prerequisites

Soil science

Postrequisites

Innovative agricultural technologies in agriculture

Crop production

Discipline cycle	Profiling discipline
Course	3
Credits count	5
Knowledge control form	Examination

Short description of discipline
This course studies morphological and biological features of crop varieties, living conditions and cultivation techniques. The discipline reveals the theoretical foundations of plant productivity and crop formation, classification and characteristics of field crops, as well as cultivation technology. The practical part of the discipline is aimed at drawing up technological maps of cultivation of leading field crops, taking into account specific soil and climatic conditions of the area.
Purpose of studying of the discipline
To study the morphological and biological features and agricultural methods of cultivation of agricultural crops
Learning Outcomes
ON2 To predict the phases of crop development, weather conditions, the influence of factors on yield and use them correctly in agriculture; to describe the morphological features of plant organs; knowledge of the essence of the physiological processes taking place in the plant cell, biological features.
ON5 To apply new methods of cultivating crops, taking into account soil and climatic conditions and biological characteristics of plants; to justify the method of harvesting crops, primary processing of crop products and storing them.
Learning outcomes by discipline
1) know the technology of cultivation of agricultural crops, and ways to protect plants from harmful organisms, and determine the dose of fertilizers taking into account soil fertility; methods of harvesting without loss
2) be able to carry out timely harvesting of field crops and without losses; correct the situation during the technological process, if weather
conditions allow; obtain high and stable yields of agricultural crops; calculate fertilizer doses, plan measures to protect plants from harmful objects.
3) own the technological process during the growing season of field crops; own a harvesting plan with rational fixing of harvesting equipment, and a flow method of harvesting
Prerequisites
Plant biology
Postrequisites
Technology and storage of crop products

Fruit growing

Discipline cycle	Basic disciplines
Course	4
Credits count	5
Knowledge control form	Examination and term work/Project

Short description of discipline
The main attention is paid to the study of the cultivation of fruit and berry plants, local varieties and hybrids of fruit crops, taking into account their biological conditions. The importance of fruit crops in the nutrition of mankind is revealed. The characteristics of fruit crops, features of agricultural cultivation techniques, selection and seed production of fruit and berry crops, methods of protection against diseases harmful to the body of crops, weed control, features of mechanization of work in fruit growing are given.
Purpose of studying of the discipline
formation of knowledge and skills in the field of fruit growing necessary to study the mechanisms of formation of complex signs and properties in the whole organism, the relationship between the processes of seed and vegetative reproduction of plants.
Learning Outcomes
ON2 To predict the phases of crop development, weather conditions, the influence of factors on yield and use them correctly in agriculture; to describe the morphological features of plant organs; knowledge of the essence of the physiological processes taking place in the plant cell, biological features.
ON9 Use modern technology for growing vegetable crops in open and closed soils; plan work in greenhouses and greenhouses.
Learning outcomes by discipline
– to know the stages of fruit growing development, classification of varieties, methods of studying the variability of fruit plants and breeding varieties;
– be able to find, process and critically evaluate information related to fruit growing problems;
– possess the skills of seed and vegetative reproduction of selected varieties and biotypes, as well as the basic methods of preserving the gene pool of fruit plants.
Prerequisites
Greenhouses
Postrequisites
Production practice 3

Innovative agricultural technologies in agriculture

Discipline cycle	Profiling discipline
Course	4
Credits count	5
Knowledge control form	Essay

Short description of discipline
The discipline is aimed at studying innovative activities in the agricultural sector, increasing agricultural crop yields and animal productivity, increasing labor productivity, reducing the cost and material consumption of agricultural products, increasing profits, as well as reducing financial and economic damage from environmental pollution. Considers modern agricultural technologies of agriculture - nature-like, adaptive, soil protection, environmental protection, minimum, zero, green ("green"), no-till technologies of tillage.
Purpose of studying of the discipline
To master the skills of using modern information technologies for the collection, processing and dissemination of innovations in agriculture, to use and create databases on innovative technologies in agronomy, to master the methods of constructing schemes of innovative processes, operations and techniques in new technologies of crop cultivation; the method of spreading innovations in

production.

Learning Outcomes

ON6 To develop rational and resource-saving farming systems; to carry out agrotechnical measures to protect soils from erosion and deflation; to carry out all types of reclamation works, to use irrigation methods and techniques.

Learning outcomes by discipline

- to use modern achievements of world agronomic science and advanced agricultural technologies in scientific research;
- apply modern research methods to develop innovative agrotechnological techniques.
- to use innovative processes in the agro-industrial complex in the design and implementation of technologies to obtain high and sustainable yields of good quality.

Prerequisites

Agriculture

Postrequisites

Pre-diploma practice Production practice 3

Meadows and pasture farming

Discipline cycle	Profiling discipline
Course	4
Credits count	5
Knowledge control form	Essay

Short description of discipline

The course is aimed at studying the construction and management of pasture farming, mastering the skills of technologies for growing grass and conducting meadow farming. The types of plants of natural hayfields and pastures, technologies of growing grass forage crops, methods and principles of pasture management measures, measures to improve forage lands are considered. The classification and inventory of natural forage lands, a brief description of the natural grasslands of meadows and pastures of natural zones of Kazakhstan are given.

Purpose of studying of the discipline

To study the management of pasture farming, mastering the skills of technologies for growing grass and conducting meadow farming

Learning Outcomes

ON8 To carry out work on the technology of improving forage lands, preparing forage; to determine modern methods and principles of pasture management measures.

Learning outcomes by discipline

1) know the varieties of meadow fodder plants zoned for the north-east of the country
2) organize the rational use of haymaking, pasture and green conveyor, storage, haylage and silage of grasses. Hay accounting and evaluation;
3) possess methods of forecasting the yield of meadow grass stands depending on the fertility of the soil."

Prerequisites

Forage production

Postrequisites

Pre-diploma practice Production practice 3

Methods of agricultural crops variety testing

Discipline cycle	Profiling discipline
Course	4
Credits count	7
Knowledge control form	Examination

Short description of discipline

Introduces the general provisions of the state variety testing, the organization of the territory of the state variety site, the planning of variety testing, the main provisions of setting small-scale experiments, the study of elements of varietal technology, the features of testing varieties on reclaimed lands, production testing of varieties, observations and accounting during the growing season, harvesting and crop accounting. Concepts are given about seed and planting material, about the technology of production of crop products and agrotechnics of variety testing, about the immunological assessment of varieties and hybrids.

Purpose of studying of the discipline

To study the general provisions of the state variety testing, planning of variety testing, the main provisions of setting small-scale experiments, elements of varietal technology, seed and planting material, laying and registration of experiments, observations and records during the growing season, harvesting and crop accounting.

Learning Outcomes

ON4 To conduct field research experiments, to argue the results of research, to prepare all kinds of scientific works.

Learning outcomes by discipline

"1) know the methodology of variety testing and approbation of agricultural crops,
2) to carry out testing of seed crops of agricultural crops.
3) own the organization of work on the preparation of seeds for sowing."

Prerequisites

Fundamentals of scientific research in crop production

Postrequisites

Pre-diploma practice Production practice 3

Technology and storage of crop products

Discipline cycle	Profiling discipline
Course	4

Credits count	5
Knowledge control form	Essay

Short description of discipline

The course is aimed at studying problems related to the quality of crop production and ways to improve them, the nature of losses of these products and the organization of their storage, rational methods of processing and storage of agricultural raw materials. The discipline considers questions about the vital activity of pathogens, insects and ticks in plant raw materials and the harm caused by them, and control measures. The material on flour milling, bakery and canning industries is demonstrated.

Purpose of studying of the discipline

The purpose of this course is to study the basics of the theory and practice of storage of agricultural products, as well as training specialists and managers of agriculture in the field of technology of storage and processing of agricultural products.

Learning Outcomes

ON5 To apply new methods of cultivating crops, taking into account soil and climatic conditions and biological characteristics of plants; to justify the method of harvesting crops, primary processing of crop products and storing them.

Learning outcomes by discipline

1) know the methods of managing technological processes in the production of crop products that meet the requirements of standards and the market; the situation in the technological process;
2) to substantiate the method of harvesting agricultural crops, primary processing of crop production and laying it for storage.
3) To choose the most rational modes of storage of products, taking into account its quality and purpose; to select the optimal modes of processing of raw materials, taking into account its quality and the range of products received.

Prerequisites

Crop production

Postrequisites

Pre-diploma practice Production practice 3