

The list of academic disciplines of the university component

6B07 - Engineering, Manufacturing and Civil engineering
(Code and classification of the field of education)

6B072 - Manufacturing and processing
(Code and classification of the direction of training)

0720
(Code in the International Standard Classification of Education)

B068 - Food production
(Code and classification of the educational program group)

6B07202 - Technology of Food Products
(Code and name of the educational program)

bachelor
(Level of preparation)

set of 2023

Developed

By the Academic Committee of the OP
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Reviewed

at the meeting of the Quality Assurance Commission of the Faculty of Engineering and Technology
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Protocol № 4/6 10th of April 2023
Chairman of the Commission on Quality Assurance Abdilova G.B.

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.

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 technologies taking into account current trends in the development of society.

Learning outcomes by discipline

- 1) analyzes the issues of safety and conservation of the natural environment as the most important priorities of life;*
- 2) demonstrates knowledge of the fundamentals of nature 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) shows knowledge of the patterns of 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 technology of food productions

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

Short description of discipline

The course provides familiarization with the branches of the food industry, the classification of food enterprises, modern concepts of the organization of production in the food industry. The classification of raw materials for food production, product range, formulations, output is considered. The study of technological schemes and their graphic construction, types of technological processes at food industry enterprises, technological operations, processes, organization of control of technological processes and safety at work.

Purpose of studying of the discipline

to give students a primary idea of the technological process, the organization of production at the enterprise, the main physiological processes and their relationship with food quality.

Learning Outcomes

ON4 To apply scientific knowledge gained during general engineering training to improve technological processes

Learning outcomes by discipline

- 1) To determine the organoleptic parameters of food products, perform calculations of the nutritional and biological value of food products;*
- 2) To apply technological data in the food industry, compare production organizations at various enterprises;*
- 3) To draw conclusions about the quality of food products*

Prerequisites

School course

Postrequisites

General technology of processing industries General technology of food production

Mathematics

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

Short description of discipline

The purpose of this course is to provide students with fundamental training in mathematics. The course is aimed at forming a sufficiently high culture of mathematical thinking among students and developing the ability to creatively approach problem solving. In addition to studying the fundamental foundations of higher mathematics (elements of analytical geometry, linear algebra, mathematical analysis,

differential equations), the course assumes consideration of various applications of mathematics to solving production problems from the field of professional specialization.

Purpose of studying of the discipline

creation of the basis for the development of logical thinking and mathematical culture. Formation of basic knowledge and acquisition of basic skills of using mathematical apparatus for solving theoretical and applied problems, as well as the necessary level of mathematical training for mastering other applied disciplines studied within a specific profile; skills of working with special mathematical literature

Learning Outcomes

ON3 To use the basics of natural science knowledge and methodology to identify production problems and solve professional problem

Learning outcomes by discipline

- 1) Selects methods of mathematical analysis and modeling, theoretical and experimental research of applied problems
- 2) Uses mathematical symbolism to express quantitative and qualitative relations of objects
- 3) Applies methods of visual graphical representation of research result

Prerequisites

School course

Postrequisites

Basic and profile disciplines of the EP

Physics

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

Short description of discipline

In process of studying this discipline, students get acquainted with the basic laws, concepts of all sections of physics. Physics is an area of experimental science, performing laboratory work and tasks, students are convinced of unity of the theory and practice of experiments. Students have the opportunity to gain knowledge on the subject in any area of their specialty.

Purpose of studying of the discipline

Formation of ideas about the role of experimental and theoretical methods of cognition of the surrounding world, development of skills for independent solving of physical problems, motivation to study modern scientific literature.

Learning Outcomes

ON3 To use the basics of natural science knowledge and methodology to identify production problems and solve professional problem

Learning outcomes by discipline

- 1) Assesses the degree of reliability of the results obtained using experimental research methods;
- 2) Uses various physical concepts, laws, theories in practice;
- 3) Applies knowledge of the basic laws of physics in solving professional problems.

Prerequisites

School course

Postrequisites

Basic and profile disciplines of the EP

Technological bases of physiology, hygiene and sanitation of nutrition

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

Short description of discipline

The discipline considers the general provisions of the sanitary and epidemiological service, sanitary standards, requirements for food products. Familiarization with industrial sanitation, hygiene, organization of deratization, disinfection, disinsection. The course introduces students to the human digestive system, energy metabolism in the body, macro- and micronutrients of food, protective and toxic components of food, requirements for water quality, raw materials, finished products, semi-finished products, current and planned control of enterprises according to sanitary requirements.

Purpose of studying of the discipline

acquisition of knowledge necessary for the formation of scientific and methodological approaches in solving professional issues in the field of food technology and industrial sanitation.

Learning Outcomes

ON6 To ensure the production of high-quality food products in accordance with the requirements of regulatory documents and modern nutrition science

Learning outcomes by discipline

- 1) To identify the main problems and tasks of hygiene, apply the basics of hygiene in food enterprises;
- 2) To explain the structure and composition of the human digestive system on the basis of modern knowledge about the needs of the human body in nutrients and energy, taking into account gender, age, nature of work activity, calculate human energy consumption;
- 3) To apply sanitary norms and rules imposed by to equipment, premises, finished products, raw materials, to production workers at food industry enterprises.

Prerequisites

School course

Postrequisites

General technology of processing industries General technology of food production

Educational practice

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

Short description of discipline

Students receive primary ideas about the technology, organization and mechanism of work at a food enterprise. During the internship, students get acquainted with the work of the main divisions of food enterprises, the raw material zone, the general organization of the technological process at the enterprise. Raw materials for food production. The main technological processes and operations of food production. Production recipes of food products. Storage of finished products. The quality of food products.

Purpose of studying of the discipline

Familiarization with the structure of the enterprise, study of the main processes of technological production

Learning Outcomes

ON3 To show general engineering training in mastering the basics of technical and professional skills

ON4 To apply scientific knowledge gained during general engineering training to improve technological processes

Learning outcomes by discipline

1) Distinguish the structure of the enterprise, evaluate the raw material zone, the organization of the technological process of an industrial enterprise;

2) Use data on technological recipes to analyze the technological flow;

3) Draw conclusions on the organizational activities of the enterprise, the formation of the product range.

Prerequisites

Introduction to the technology of food productions Technological bases of physiology, hygiene and sanitation of nutrition

Postrequisites

General technology of processing industries General technology of food production

Engineering Graphics

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

Short description of discipline

In this discipline, the rules of execution and design of graphic works are studied; the problems of geometric and projection drawing are solved; the rules for the use of conditional graphic designations when performing drawings and diagrams are studied. Students, studying this discipline, acquire the skills of making images of parts using views, sections and sections, making sketches and working drawings, assembly drawings; drawing sizes and position numbers, drawing up specifications.

Purpose of studying of the discipline

the basic rules of execution and registration of design documentation are studied. Full mastery of the drawing as a means of expressing technical thought and

production documents, as well as the acquisition of stable drawing skills are achieved as a result of mastering the entire complex of technical disciplines of the relevant profile, supported by the practice of course and diploma design

Learning Outcomes

ON3 To show general engineering training in mastering the basics of technical and professional skills

Learning outcomes by discipline

1. Explain the main provisions of the USDD (Unified System for Design Documentation), which establish interrelated rules and regulations for the development, execution and circulation of design documentation;

2. Perform calculations of processes, devices, machines;

3. Determine the geometric shapes of parts from images and be able to make these images from life and according to the drawing of products or its elements.

Prerequisites

School course

Postrequisites

Technological equipment of meat, dairy industry and public catering enterprises Technological equipment of the baking, macaroni and confectionery industry

Microbiology of food products

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

Short description of discipline

The discipline studies the cultivation of microorganisms; methods of preparing preparations of microorganisms; methods and means of sterilization; morphology of filamentous fungi, yeasts, bacteria; technique of crops of microorganisms on nutrient media; ; methods of quantitative accounting of microorganisms; isolation of a pure culture of lactic acid bacteria; cultural and physiological-biochemical characteristics of bacteria; characteristics of bacteria that cause food spoilage; microbiological analysis of food products; sanitary-bacteriological analysis of water; study of indoor air microflora; sanitary and microbiological analysis of the soil

Purpose of studying of the discipline

Students will learn about microbes and viruses that can only be seen under microcopying, study the patterns of their development, spread in the external environment, changes caused by the organism of animals, plants.

Learning Outcomes

ON4 To apply scientific knowledge gained during general engineering training to improve technological processes

Learning outcomes by discipline

- 1) to apply methods of microbiological diagnostics in professional activity;
- 2) to use microbiological equipment for the study of food products;
- 3) to interpret the results of microbiological studies to assess the quality of food products

Prerequisites

School course

Postrequisites

Control and assessment of the quality of raw materials and food products Technochemical control of processing industries

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 technologies taking into account current 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

Prerequisites

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

Postrequisites

Basic and profile disciplines of the EP

Chemistry

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

Short description of discipline

The discipline is aimed at studying the basic concepts and laws of chemistry, classical and quantum-mechanical ideas about the structure of the atom and chemical bonds; consideration of periodic laws and structure of the periodic system of chemical elements, types of chemical bonds; mastering the laws of thermodynamics, chemical kinetics and chemical equilibrium, corrosion of metals, ways of expressing the concentration of solutions; promote the ability to apply the knowledge gained in practice, to solve problems in professional training.

Purpose of studying of the discipline

Familiarization of students with modern ideas about the structure of substances, with the basic theories of chemical processes, with the properties of catalytic and complex systems, as well as with the properties of elements. Knowledge of the basic theory of chemical processes necessary in the study and deeper understanding of all subsequent special disciplines, also give students scientific and practical training in the basics of analytical chemistry.

Learning Outcomes

ON3 To use the basics of natural science knowledge and methodology to identify production problems and solve professional problem

Learning outcomes by discipline

- possess fundamental chemical concepts, theories, laws and patterns.
- describe the main methods of scientific knowledge used in chemistry, such as observation, description, measurement, experiments.
- be able to give quantitative estimates and make calculations using chemical formulas and equations.

Prerequisites

School course

Postrequisites

Biochemistry

Biochemistry

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

Short description of discipline

The discipline is aimed at studying the laws of the main biochemical processes, determining the relationship between the functions of

biomolecules and the structure involved in the reactions of cellular metabolism; studying the main classes of biological substances (structure, properties and mechanism of their functioning), biological and physico-chemical properties of natural compounds, the main pathways of metabolism, the relationship of regulatory mechanisms, metabolic processes; understanding the essence of the mutual transformations of substances in various technological processing.

Purpose of studying of the discipline

cognition of the molecular foundations of life, its main task is to clarify the relationship between the biological function and the molecular structure of substances of living nature

Learning Outcomes

ON4 To apply scientific knowledge gained during general engineering training to improve technological processes

Learning outcomes by discipline

- 1) To determine the structure, biological role and metabolic pathways of the main biomolecules that make up animal and plant cells, methods of storing and transmitting genetic information, principles of energy transformation in biological systems, basic methods of synthesis of biologically active substances derived from secondary metabolites, their use in industry and medicine, environmental problems in synthesis technology these substances and the possibility of waste disposal during their production;
- 2) To solve problems and issues related to the establishment of the amino acid sequence of protein structures, the active center of enzymes, the biological action of coenzymes and other biomolecules;
- 3) To analyze the synthesis, separation and identification of biologically active compounds, use the accumulated and acquired knowledge to solve theoretical and practical problems

Prerequisites

Chemistry

Postrequisites

Basic and profile disciplines of the EP

Production practice I

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

Short description of discipline

Consolidation of theoretical knowledge gained from the study of basic disciplines, the study of job responsibilities of engineering and technical workers. Application of knowledge of the basic general technological processes of food production, basic indicators of the quality of raw materials, acceptance of raw materials and compliance with its quality.

Technological processes, storage of raw materials, finished products, quality control of products at the enterprise (technochemical and microbiological control at production), characteristics of equipment, its performance are studied at the enterprise.

Purpose of studying of the discipline

Study of technological equipment, basic technological processes, familiarity with the structure of the enterprise

Learning Outcomes

ON5 To apply knowledge of general methods of exposure to raw materials in professional activities

Learning outcomes by discipline

- 1) To name the raw materials, the range of products at the enterprise; - equipment; quality indicators of products and the procedure for technical control; the work of technical control departments;
- 2) To apply the basics of quality control of raw materials and finished products, compliance with the correctness of technological operations at all stages of the technological process;
- 3) To apply the skills of working with control and measuring laboratory equipment of food laboratories in practice

Prerequisites

General technology of processing industries General technology of food production

Postrequisites

Technological equipment of meat, dairy industry and public catering enterprises Technological equipment of the baking, macaroni and confectionery industry

Scientific basis of food production research

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

Short description of discipline

In the course of the discipline, the processes of organizing research work at the university are studied, analyzed, students search for scientific and technical literature, experimental research, are engaged in the selection of research methods, process data, information on special programs. The discipline involves drawing up a report on the student's scientific work, getting acquainted with the rules for the formation of applications for filing a patent for an invention, utility model. Physicochemical, microbiological changes in food products during production and storage are investigated.

Purpose of studying of the discipline

Study of the theoretical foundations of scientific research in food production

Learning Outcomes

ON6 To ensure the production of high-quality food products in accordance with the requirements of regulatory documents and modern nutrition science

Learning outcomes by discipline

- 1) To conduct scientific experimental research, process research results using mathematical statistics methods;
- 2) To plan experimental research, select research methods, compile a report on research work;

3) To use scientific knowledge to improve product quality and production efficiency at food industry enterprises.

Prerequisites

General technology of processing industries General technology of food production

Postrequisites

Technology of functional foods production

Production practice II

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

Short description of discipline

Consolidation and deepening of the theoretical training of the student and the acquisition of practical skills and competencies in the field of professional activity, purposeful and active work of the student to collect the necessary material for the implementation of the course project: the raw material base of the enterprise, study of the main and auxiliary workshops of the enterprise, organization of the technological flow, production technology, layout of workshops, measures for the reconstruction and expansion of production.

Purpose of studying of the discipline

Mastering of technological processes, requirements for the quality of raw materials and finished products, principles of operation of technological equipment, organization of the work of the enterprise and the work of enterprise structures

Learning Outcomes

ON7 To organize the technological process of production at the enterprises of the food industry

ON8 To organize the technological process of production at the enterprises of the food industry

Learning outcomes by discipline

- 1) To describe the organizational and functional structure of the enterprise, requirements for raw materials, the raw material zone of the enterprise, assortment composition, food production technology
- 2) To classify technological equipment, explain safety when working on technological equipment;
- 3) To use techniques for working with control, measuring and testing equipment of laboratories of the enterprise; apply the procedure for product quality control.

Prerequisites

General technology of processing industries Technological equipment of meat, dairy industry and public catering enterprises
Technological equipment of the baking, macaroni and confectionery industry General technology of food production

Postrequisites

Final examination

Technology of functional foods production

Discipline cycle	Basic disciplines
Course	4
Credits count	6
Knowledge control form	Examination

Short description of discipline

In the course of the discipline, the role of food products, the importance of nutrition of various age groups is studied, analyzed, nutrition theories and classification are considered. Modern trends applied in innovation, the formation of a cluster of functional products in different countries, types of raw materials and ingredients, features, technological modes and formulations, methods of processing raw materials, food additives, biologically active substances used in the technology of functional products, the quality of finished products, product control are studied.

Purpose of studying of the discipline

To master the theoretical foundations of functional food technology, the practical application of knowledge in the production process.

Learning Outcomes

ON7 To organize the technological process of production at the enterprises of the food industry

ON8 To organize the technological process of production at the enterprises of the food industry

Learning outcomes by discipline

- 1) To understand the role of functional foods in the nutrition of various population groups, classify raw materials for the production of functional foods, describe the technological processes of the production of functional foods;
- 2) To make recipes and technological schemes for the production of functional foods;
- 3) To distinguish methods of quality control of functional foods

Prerequisites

Scientific basis of food production research

Postrequisites

Final examination