EDUCATIONAL PROGRAM

6B07223 Food processing technologies (by industry)
code and name of the educational program

Level: *Bachelor's*

Approved
by the Board of Directors of JSC
«K.Kulazhanov KazUTB» "22" 04 2025
protocol No. 8

Recommended
by the Academic Council of JSC
«K.Kulazhanov KazUTB» "28" 05 2025
protocol No. 8

Астана-2025

CONTENT

Preface

The educational program "6B07223 Food processing technologies (by industry)" was developed in accordance with the State Compulsory Standard of Higher Education / Postgraduate Education, approved by the order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 No. 2, as well as on the basis of professional standards.

The educational program "6B07223 Food processing technologies (by industry)" was approved at the meeting of the Council on Academic Quality on "27" 03 2025, protocol No. 4
Chairman L.K. Baibolova

The educational program "6B07223 Food processing technologies (by industry)" was approved at the meeting of the Commission on Academic Quality of the Faculty of Technology on "29" 11 2024, protocol No. 2
Chairman G.S. Zhunusova

The educational program "6B07223 Food processing technologies (by industry)" was developed and discussed at the meeting of the department " Technology and standardization" dated "21" 10 2024, protocol No. 3
Head of the department S.B. Baitukenova

Approval sheet

Educational program 6B07223 Food processing technologies (by industry)

AGREED:

Vice-Rector for Administrative Affairs		E.Askarbekov	"27" 03 2025year
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Acting Director of Astana branch of «Kazakh Research Institute of Processing and Food Industry» LLP	PP	N. Alzhaksina	"21" 10 2024year
Chairman of the Association of Halal Industry of Kazakhstan	PP	M. Sarsenbayev	"21" 10 2024year
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Student of the FPT-231 group		B. Kalmakan	"21" 10 2024year

1 Passport of the educational program

International Standard Classification of Education (ISCED) level	6
National Qualification Framework (NQF) level	6
Sectoral Qualifications Framework (SQF) level	6
Code and name of the field of education	6B07 Engineering, manufacturing and construction industries
Direction of training	6B072 Industrial and manufacturing branches
Number and name of the group of educational programs	B068 Food production
Code and name of the educational program (EP	6B07223 Food processing technologies (by industry)
Educational program profile	Higher engineering education
Goal of the educational program	Training of highly qualified personnel for food and processing industries with professional competencies that contribute to their social mobility and sustainability in the labor market.
Completion criterion of an educational program	240 academic credits
Language of instruction of the educational program	Russian, kazakh
Distinctive features of the educational program	No
Partner University	No

2 Qualification characteristics of a graduate of an educational program

Degree awarded	Bachelor of engineering and technology in the educational program «6B07223 Food processing technologies (by industry)»
Field of professional activity	- organizational and managerial - production and technological - scientific research - project information
Types of professional activities	Production and technological - organization and improvement of technological processes for the production of bakery, confectionery and pasta products, as well as the production of flour and cereals; analysis of the technical equipment and production activities of processing enterprises, taking into account the requirements of environmental safety, labor protection, fire, explosion safety and industrial sanitation; analysis of technical and economic indicators of enterprises and marketing activities; standardization work and certification of processed food products; Organizational and managerial - organization of work of labor collectives, making managerial decisions;

	Project information - development and design of technological schemes of processing industry enterprises; reconstruction of existing enterprises; Scientific research - study and analysis of scientific and technical information, domestic and foreign experience in the food and processing industries; - work in the field of education.
Object of professional activity	production (technology, organization, management and control) for the production of raw materials and foodstuffs (bakery, confectionery, pasta, cereals, etc.), machinery and equipment of elevators, mills, grain mills, pasta and confectionery factories
Functions of professional activity	- organization and control of technological processes for the production of bakery and flour confectionery, pasta, as well as the production of flour and cereals; -management of technological processes in food processing in bakeries, pasta and confectionery factories, flour mills and cereal factories; -control of compliance with the existing technology of product processing; -control over the correctness of packaging, labeling and storage conditions of products; -monitoring compliance with the correct operation of technological equipment; - ensuring the introduction of new machinery and technologies at processing plants; -development of technical control methods; -organization of quality control and safety control of raw materials, semi-finished products, finished products; -drawing up plans to improve the technical and economic efficiency of production; -development of technological documentation; -development of technologies for new types of products in accordance with the state policy of the Republic of Kazakhstan in the field of healthy nutrition of the population; -ensuring the necessary level of technical preparation of production and its continuous growth; - interaction with business units, design and research organizations, and customer representatives on issues within its competence; -management of project work aimed at improving production; -providing microbiological control of basic and auxiliary materials, containers, equipment and premises, and conducting microbiological operations; -analysis of problematic production situations; - team management; -compliance with the rules and regulations of occupational safety, industrial sanitation and fire protection; -monitoring compliance with occupational safety regulations;

	-management of the company's technical services, monitoring the results of their work, the state of labor and industrial discipline in subordinate units; -ensuring control over compliance with the environmental cleanliness of production processes; -preparation of documentation on product certification.

3 Requirements for the content of the educational program

Name of cycles and disciplines	Workload in academic credits
Cycle of general education disciplines (GED)	**56**
Required component	51
University component	5
Cycle of basic disciplines (BD)	**94**
University component	33
Component of choice	54
Professional practice	7
Cycle of major disciplines (MD)	**82**
University component	10
Component of choice	60
Professional practice	12
Final assessment	**8**
Total	**240**

4 Additional educational programs (minor)

4.1 Minor «Modern aspects of the application of artificial intelligence»

Name of disciplines	Workload in academic credits
Introduction to Artificial Intelligence	5
Development of artificial neural networks	5
Artificial intelligence in the management of object	5
Total	15

5 Competency map of the educational program «6B07223 Food processing technologies (by industry)»

Competence map of the educational program	Learning outcome code	Learning Outcome (according to Bloom's Taxonomy)
Behavioral skills and personality traits (Softskills)	LO_{GED1}	Forms a system of general competencies that ensure the socio-cultural development of the future specialist's personality, based on the formation of their worldview, civic, and moral stance, oriented towards a healthy lifestyle.
	LO_{GED2}	Capable of communication in both oral and written forms in Kazakh, Russian, and foreign languages to

		solve tasks related to interpersonal, intercultural, and professional communication
	LO_1	Develops competencies in the field of economics, law, the basics of anti-corruption culture, as well as entrepreneurship skills and financial literacy in professional activities
	LO_2	Uses methods of mathematical analysis, basic laws of physics, mechanics, heat engineering, techniques for working with modern computer programs and equipment when solving engineering problems in professional activities
	LO_3	Uses modern physical-chemical, microbiological and biochemical methods of analysis to study the composition, properties of raw materials and finished products of processing industries
	LO_4	Solves problems of efficient planning of technological production lines using innovative technological equipment and artificial intelligence tools in the design/reconstruction of enterprises in the processing industries
	LO_5	Applies physical methods of processing raw materials and semi-finished products to improve the quality of storage of finished products at processing plants
	LO_6	Assesses the quality and properties of raw materials and finished products, taking into account the optimization of technological production processes
Digital competencies (Digital skills)	LO_{GED3}	Promotes the development of information literacy through the mastery and use of modern in-formation and communication technologies in all areas of activ-ity.
Professional skills (Hardskills)	LO_7	Ensures the improvement of manufacturing technology for grain processing products, as well as the introduction of the latest achievements in science and technology in the field of developing new functional food products
	LO_8	Apply professional engineering solutions in the design of processing industries, taking into account the management of work on the organization of new production workshops and sections
	LO_9	Organizes a comprehensive analysis and control of the safety of raw materials and finished products using standards, sanitary and hygienic norms and the implementation of QMS at food processing enterprises
	LO 10	Develops technologies for the complex processing of plant materials, taking into account the efficient use of secondary raw materials

6 Learning outcomes of the educational program and modules

Key competencies	Learning Outcomes (LO) for the educational program	Name of module	Learning outcomes for the module	Name of disciplines that form learning outcomes
Behavioral skills and personality traits (Softskills)	LO$_{GED1}$ Forms a system of general competencies that ensure the socio-cultural development of the future specialist's personality, based on the formation of their worldview, civic, and moral stance, oriented towards a healthy lifestyle.	Man and Society – the foundation of worldview and socio-political knowledge	Applies the fundamental laws of Kazakhstan's history, philosophy, and socio-political knowledge for effective socialization and adaptation in changing socio-cultural conditions, shaping a personality capable of mobility in the modern world, critical thinking, and physical self-improvement.	History of Kazakhstan Philosophy Physical Culture Module of socio-political knowledge (political science, sociology, cultural studies, psychology)
	LO$_{GED2}$ Capable of communication in both oral and written forms in Kazakh, Russian, and foreign languages to solve tasks related to interpersonal, intercultural, and professional communication	Information and Communication Module	Capable of interpersonal social and professional communication in Kazakh, Russian, and foreign languages.	Foreign language Kazakh (Russian) language
	LO$_{GED3}$ Promotes the development of information literacy through the mastery and use of modern information and communication technologies in all areas of activity.		Possesses various types of information and communication technologies for searching, storing, processing, protecting, and disseminating information.	Information and communication technologies
	LO1 Develops competencies in the field of economics, law, the basics of anti-corruption culture, as well as entrepreneurship skills and financial literacy in professional activities	Man and Society – the foundation of worldview and socio-political knowledge	He applies knowledge of economics and law, as well as business and financial literacy skills in his professional activities.	Module of economic, legal and environmental knowledge (Fundamentals of Economics and Entrepreneurship. Ecology and life safety. Fundamentals of law and anti-corruption culture. Methods of scientific research)
	LO 2 Uses methods of mathematical analysis, basic laws of physics, mechanics, heat engineering,	Naturally scientific	Uses knowledge of physical and mathematical laws to solve problems and applies the rules of execution of drawing and design documentation in professional activities.	Higher mathematics Physics Engineering Computer Graphics

	techniques for working with modern computer programs and equipment when solving engineering problems in professional activities		Applies the laws of mechanics to successfully study the relevant disciplines.	Theoretical and applied mechanics / Heat engineering
			Has a general understanding of the structure, the raw material area and the organization of the technological process of an industrial enterprise	Educational practice
	LO 3 Uses modern physical-chemical, microbiological and biochemical methods of analysis to study the composition, properties of raw materials and finished products of processing industries		Demonstrates knowledge of the theoretical foundations of inorganic, organic, analytical and physico-colloidal, food chemistry, their basic concepts and laws, also applies the laws of physics and chemistry, processes, phenomena, theories and complex dependencies between them in food production enterprises	General chemistry / Physcolloidal and analytical chemistry
				Food chemistry / Food biochemistry /
			Evaluates the technical criteria for the safety of raw materials, semi-finished products and finished products. Applies knowledge about microbiological processes occurring in processed raw materials and finished products.	Technical microbiology / Microbiology in the processing industry
			Demonstrates knowledge of the fundamentals of scientific research. Uses genres of academic writing to present various practical information.	Basics of research
	LO 4 Solves problems of efficient planning of technological production lines using innovative technological equipment and artificial intelligence tools in the design/reconstruction of enterprises in the processing industries	Engineering	Applies knowledge of the basic technological processes of food production from raw materials to finished products. Possesses independent work skills for further improvement of professional knowledge	Industrial practice 1
			Demonstrates knowledge of the principles of operation and operation of technological equipment of processing plants, as well as the basics of using artificial intelligence technologies to control technological processes.	Processes and vehicles of food productions / Ventilation units and air conditioning systems for food production / Introduction to Artificial Intelligence
				Technological equipment for bakery enterprises / Technological equipment of grain processing enterprises / Development of artificial neural networks
				Technological equipment for confectionery enterprises /

				Technological equipment for flour-grinding industries / Artificial intelligence in the management of object
	LO 5 Applies physical methods of processing raw materials and semi-finished products to improve the quality of storage of finished products at processing plants	Technological	Evaluates the effect of food additives, justifies the storage methods of crop production, and explores fermentation processes to produce high-quality food products.	Food additives technologies for bakery, pasta and confectionery production / Processing and storage of crop production
				Theoretical foundations of fermentation production
			It applies the physical, technological, and chemical properties of processing products, as well as the main technological operations in its production activities, and develops technologies and technological schemes for processing industries	Physical methods of processing bakery and confectionery products / Technology of production of biologically active additives
				General technology of processing industries
	LO 6 Assesses the quality and properties of raw materials and finished products, taking into account the optimization of technological production processes	Technological	Characterizes the properties of food products, their changes during the movement of goods	Commodity science of bakery and confectionery products / Commodity science of grain and its processed products
			Evaluates automation processes in the production of bakery and confectionery products, as well as grain drying modes, taking into account quality	Automation of technological processes for the production of bakery and confectionery products / Grain drying
		Engineering	Evaluates the influence of grain properties and rheological parameters on the efficiency of processing and the quality of final products	Food Rheology / Grain science with basics of plant growing
Professional skills (Hardskills)	LO 7 Ensures the improvement of manufacturing technology for grain processing products, as well as the introduction of the latest achievements in science and technology in the field of developing new functional food products	Technological	It applies various technologies for deep processing of raw materials, as well as uses technological schemes and processes of its processing in the production of finished products in processing plants.	Functional food technology / Technology for the production of specialty products
				Technology of bakery and confectionery production / Technology of flour-grinding and pasta production
				Technology of cereal production / Technology of grain processing industries
			Applies knowledge of the organization and management of technological processes of various branches of the food industry in professional activities	Industrial practice 2
	LO 8 Apply professional engineering solutions in the design of processing	Economy and production	Evaluates the economic efficiency of enterprises, taking into account the principles of sustainable development, environmental safety and labor	Economics and enterprise planning
				Sustainable development, ecology and life safety

	industries, taking into account the management of work on the organization of new production workshops and sections		protection.	
			Demonstrates knowledge in the field of design, reconstruction and equipment of processing enterprises	Design of processing plants / Design of grain processing enterprises
				Design of enterprises of the bakery and confectionery industry / Design of flour mills
			Demonstrates and applies acquired skills and knowledge at a professional level; knows the basics of technology and technological processes of processing industries; solves problems of improving quality and developing competitive products	Pre-graduate practice / Industrial practice
	LO 9 Organizes a comprehensive analysis and control of the safety of raw materials and finished products using standards, sanitary and hygienic norms and the implementation of QMS at food processing enterprises	Security, standardization and control	Applies theoretical and practical knowledge on control, assessment, expertise, quality and safety testing of raw materials and products in accordance with the requirements of enterprise standards and other regulatory documentation	Examination of bakery and confectionery products / Examination of grain and its processed products
				Standardization and confirmation of conformity
				Food safety / Sanitation and hygiene in processing plants
				Food quality and safety / Food tasting
			Demonstrates knowledge and practical skills in the field of modern quality management systems based on international standards	Quality management system in processing plants / Quality management in processing plants
	LO 10 Develops technologies for the complex processing of plant materials, taking into account the efficient use of secondary raw materials	Technological	Evaluates technologies for the storage, processing and use of vegetable raw materials and secondary resources; selects methods for the production of food concentrates and vegetable fats, taking into account the preservation of quality and nutritional value.	Technology of food concentrates / Technology for processing secondary raw materials of crop production
				Technology of storage and processing of fruits and vegetables / Technology of production of vegetable fats
	LO11 Applies theoretical and practical learning skills to independently solve professional tasks at the exit and while continuing education at subsequent levels, as well as in professional activities in the food industry.	Final assessment	Understands the goals, methodology and methods of professional activity of a technologist, engineer and head of a food production and also applies scientific research in the field of improving food production technologies. Applies the acquired skills in preparation for continuing further education in the profile of the educational program being studied.	Final assessment

7 The relationship between the attainability of the formed learning outcomes according to the educational program and academic disciplines

№	Name of the discipline	Brief description of the discipline	Number of credits	Formed learning outcomes (codes)												
				LO GED1	LO GED2	LO GED3	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Cycle of general education disciplines Required component																
1	History of Kazakhstan	The program consists of five thematic blocks: Ancient people, the formation of nomadic civilization, Turkic civilization and the Great Steppe, Kazakhstan in a new era (XVIII - early XX centuries), Kazakhstan in the Soviet period, Independent Kazakhstan. The purpose of the discipline is to provide objective knowledge about the main stages in the development of the history of Kazakhstan from ancient times to the present.	5	+												
2	Philosophy	The program consists of five thematic blocks: Ancient people, the formation of nomadic civilization, Turkic civilization and the Great Steppe, Kazakhstan in a new era (XVIII - early XX centuries), Kazakhstan in the Soviet period, Independent Kazakhstan. The purpose of the discipline is to provide objective knowledge about the main stages in the development of the history of	5	+												

		Kazakhstan from ancient times to the present.															
3	Foreign language	This curriculum shall be designed to train students on general education discipline "Foreign language" as one of the compulsory subjects of general education course. The goal of the curriculum shall be the formation of intercultural communicative competence of students in the process of foreign language education at a sufficient level (A2, common European framework) and the level of basic sufficiency (B1, common European framework). Depending on the level of training, the student, at the time of completion of the course, shall reach the level B2 of common European framework of reference if the student, at the start, has the level of common European framework of reference above B1	10		+												
4	Kazakh (Russian) language	This curriculum for general education discipline "Kazakh language" shall be aimed at a new format of study of language and formation of social and humanitarian outlook in the framework of the national idea of spiritual modernization. This curriculum shall be intended for development of language personality of a student capable to perform cognitive and communicative activity in the Russian language in the spheres of	10		+												

		interpersonal, social, professional and intercultural communication in the context of implementation of the state programs of trilingualism, and spiritual modernization of the national consciousness.															
5	Information and communication technologies	The program is aimed at studying the updated content of the general educational discipline "Information and Communication Technologies" (hereinafter referred to as the Discipline), developing the ability to critically understand the role and significance of modern information and communication technologies in the era of digital globalization, forming a new "digital" thinking, acquiring knowledge and skills use of modern information and communication technologies in various activities	5			+											
6	Module of socio-political knowledge (political science, sociology, cultural studies, psychology)	This curriculum shall suggest the study of four scientific disciplines – sociology, political science, cultural studies, psychology, each of which has its own subject, terminology, and research methods. The interaction between these scientific disciplines shall be based on the principles of informational complementarity; integrity; methodological integrity of the research approaches of these disciplines; the result-oriented unity of education methodology; a single	8	+													

		system perspective of the typology of learning outcomes as the formed abilities															
7	Physical Culture	This curriculum shall be aimed at the study of the general education discipline "Physical culture", providing for physical training in accordance with international standards of education. The curriculum shall determine the joint cooperation of the teacher and the student in the process of physical education throughout the training in the context of the requirements to the level of mastering of the discipline.	8	+													
Cycle of general education disciplines University component																	
8	Module of economic, legal and environmental knowledge (Fundamentals of Economics and Entrepreneurship. Ecology and life safety. Fundamentals of law and anti-corruption culture. Methods of scientific research)	Integrated discipline covers the fundamentals of economics, entrepreneurship, law and financial literacy. Examines key economic concepts, business principles, legal aspects of business and the basics of anti-corruption culture. Examines basic principles of financial planning, personal finance and investment management. Develops skills for effective economic decision-making, legal defense, building sustainable business competences and personal financial management	5				+										
Cycle of basic disciplines University component																	
9	Higher mathematics	The discipline is aimed at studying the mathematical apparatus that allows you	5					+									

		to model and solve mathematical problems, practical problems of elements of linear and vector algebra, mathematical analysis, probability theory. After mastering the discipline, students will be able to apply mathematical methods to solve problems in their professional activities.														
10	Engineering Computer Graphics	The discipline is aimed at studying the main topics related to the creation and processing of graphic images used in engineering and technical fields. The main components of graphics systems, Hardware and software for working with graphics. Students master the theoretical knowledge and practical skills necessary to work with graphical systems in the mode of solving engineering problems.	6					+								
11	General technology of processing industries	The purpose of the discipline: the formation of professional knowledge and skills in the field of basic methods of processing and production technology of grain, flour, cereals, compound feed, bread, pasta and confectionery products, with the introduction of basic concepts and principles of using artificial intelligence to optimize and improve technological processes. Students will draw up technological schemes for the processing, placement and storage of grain and products of processing	5								+					

		enterprises. They will acquire decision-making skills for organizing and conducting the technological process of processing raw materials into semi-finished and finished products, taking into account the use of artificial intelligence															
12	Basics of research	It is studied in order to form knowledge about the methodological foundations of scientific knowledge, methods of theoretical and empirical research, as well as the metatheoretical level, about the elements of the theory and methodology of scientific and technical creativity, the choice of the direction of scientific research and the stages of research work, the disclosure of the main stages in the work under study and methods of organization of scientific research	5						+								
13	Sustainable development, ecology and life safety	The course is aimed at forming a systemic understanding of the principles of ensuring balance between economy, social development of society, preservation of environment, protection of life and human health. Develops skills of effective management of energy and waste in the circular economy in the development of national strategies and implementation of business processes; analysis, forecasting and minimization of technological, natural and social risks; Sustainable lifestyle and responsible	5												+		

		attitude to one's own security.															
14	Physics	The discipline studies fundamental physical laws and their application in technology. The sections of physics such as mechanics, molecular physics, thermodynamics, electromagnetism and optics are considered. Measurement methods in experimental studies are being studied. As a result, students gain an understanding of physical processes and their application in the development and analysis of technical systems and devices.	4					+								
15	Economics and enterprise planning	The course is aimed at studying the basics of economics and enterprise planning, developing skills to assess the technical and economic level of production, analyzing product quality indicators and the effectiveness of the enterprise. Students master the methods of planning resource and labor costs, as well as develop strategies to increase productivity, optimize business processes and increase competitiveness in order to achieve maximum efficiency and sustainability of the enterprise in market conditions	3												+		
Cycle of basic disciplines Component of choice																	
16	Automation of technological processes for the production of bakery and	The purpose of the discipline is to study methods and means of automating production processes in processing industries. This course is aimed at studying the principles and methods of	5									+					

	confectionery products	automating technological processes in the production of bakery and confectionery products. During the training, students will master methods of programming and setting up equipment, and acquire skills for the effective use of automated systems in the production of bakery and confectionery products														
17	Physcolloidal and analytical chemistry	The purpose of the discipline is to master modern methods of substance analysis, to study the directions and speed of chemical processes. Students can analyze chemicals, calculate chemical formulas and reaction equations, use the properties of dispersed and colloidal systems to optimize the technological process, mathematical processing and generalization of data	4						+							
18	Food biochemistry	The discipline is studied in order to form a system of knowledge, skills and abilities among students on the issues of biochemical processes associated with human nutrition, and the characteristic transformations occurring in plant and animal organisms, as well as in the process of their life, storage and processing of agricultural products. Result of the discipline:	5						+							
19	Ventilation units and air conditioning systems for food	The purpose of the discipline: the formation of knowledge about the basic principles of ventilation and air conditioning, as well as specific	5							+						

	production	problems that arise during the reconstruction and operation of ventilation and air conditioning systems at enterprises in the main branches of the food industry, equipment for aspiration, workshop and baking systems in agricultural complexes. The student will gain skills in using methods for installation, operation and maintenance of ventilation and air conditioning systems in food production															
20	Grain science with basics of plant growing	The purpose of the discipline is to obtain theoretical knowledge and practical skills about the biological characteristics and technological properties of grain crops. Students will analyze the characteristics of grain raw materials, classification of the main grains and leguminous crops, sowing methods, care of crops, pest control and diseases of grain crops. They will acquire skills in drawing up technological schemes for the production of products from vegetable raw materials	5										+				
21	Grain drying	The goal of the discipline is to provide students with knowledge about grain drying processes, methods, and technologies used to preserve its quality and extend its shelf life. The course focuses on studying the optimal conditions for efficient and energy-saving grain drying, considering	5										+				

		modern technical solutions and safety requirements. Students will acquire skills in applying various drying methods, assessing grain quality, as well as developing and optimizing drying technological processes in real production conditions															
22	Microbiology in the processing industry	The purpose of this discipline is to study questions about the importance of microbiology in the production of livestock and crop products, opportunistic and sanitary pathogenic microorganisms, causative agents of food poisoning, infections and toxicosis, and their biological characteristics. Students will acquire skills in using microbiological research methods in the analysis of food raw materials and products	5						+								
23	Processing and storage of crop production	The purpose of the discipline: to study the issues of processing and storage principles of crop products, their classification, the characteristics of the grain mass as an object of storage, the properties of raw materials and finished products. Students will gain skills in determining the basic modes and methods of storing raw materials and products, and will master methods that increase the durability and quality of products during storage.	5								+						
24	General chemistry	The purpose of studying the discipline is to form systematic knowledge about the properties, structure and chemical	4						+								

		behavior of compounds, about the quantum-mechanical structure of atoms and molecules, about the nature of chemical bonding in compounds, as well as modern ideas about the nature of chemical bonding. The discipline covers the theoretical foundations of chemistry and how to use them in solving specific chemical and material science problems.														
25	Food chemistry	The discipline is studied in order to deepen students" knowledge, which forms the theoretical and practical basis for special food technology courses in accordance with modern scientific achievements and the study of the main groups of food substances, physico-chemical properties and changes.	5						+							
26	Food additives technologies for bakery, pasta and confectionery production	The purpose of the discipline: the formation of the necessary theoretical knowledge about food additives used in the food industry. Students will study their modern classification, safety requirements, information about the main groups of food additives that provide the appearance, texture, taste and aroma, and safety of food products. They will acquire the skills to substantiate the role of biologically active additives in modern nutrition and in the creation of functional food products, and methods of their application	5								+					
27	Processes and	It is studied with the aim of teaching the	5							+						

	vehicles of food productions	student the rational choice of structures, the calculation of machines and apparatus for certain technological processes, as well as the method of expedient industrial operation of them, aimed at achieving maximum productivity at minimum cost and high quality of finished products, as well as to study the basic processes, apparatus and machines of food technologies.															
28	Food Rheology	The purpose of the discipline: the formation of theoretical and practical knowledge in the field of rheology of fluid systems in relation to the processing of raw materials from plant origin. Students will study fluidity, viscosity, elasticity, plasticity and other properties of products, the basic laws of rheology, methods and instruments for studying the rheological properties of products. They will acquire skills to apply methods for determining the structural and mechanical characteristics of food products.	5										+				
29	Theoretical and applied mechanics	The purpose of the discipline is to study the knowledge and skills of the basic laws of mechanics, general laws of mechanical motion of material points and mechanical systems. Students have basic skills in methods of studying the equilibrium and motion of mechanical systems, the principles of mechanics in building computational circuits that allow analyzing, modeling and solving	5					+									

		production tasks														
30	Heat engineering	The purpose of the discipline is aimed at developing the ability to master and apply methods of obtaining, converting, transferring and using heat, as well as the principle of operation and design features of thermal machines, units and devices of thermal and steam generators. The discipline contributes to the development of students" skills in solving modern heat exchange problems, conducting thermal calculations, and solving practical problems.	5					+								
31	Technical microbiology	The discipline is formed with the aim of studying microorganisms in production processes and in the transformation of substances in nature, the causes of human alimentary diseases and the organization of measures for their prevention, the development of effective sanitary control methods, as well as the development of simple and differential staining methods, methods of cultivating microorganisms.	5						+							
32	Technological equipment for flour-grinding industries	The purpose of the discipline is to study the basic and modern trends in the technology and technique of flour production. Students will study the design, principles of operation, coordination and regulation of technical machines used in flour-grinding production. They will acquire the skills to analyze the technical processes of	5							+						

		grinding and milling grain, and will be able to present general milling tasks, theoretical principles, and practical techniques for automating and controlling basic technical processes.															
33	Technological equipment for confectionery enterprises	The purpose of the discipline: the formation of knowledge about the production lines of machines and equipment for the production of sugar and flour confectionery products, the technical features of the equipment and the configuration of machines and equipment, including the latest equipment for confectionery production. Students will gain skills in operating machines and equipment for the production of sugar and flour confectionery products.	5							+						
34	Technological equipment for bakery enterprises	The purpose of the discipline: to develop in students a system of professional knowledge on the structure and principle of operation, operation of technological equipment for the production of bakery products. In the process of teaching the discipline, students will study the classification, devices and principles of operation, rules of operation and maintenance. They will acquire skills in choosing optimal technological operating modes for production equipment, their control and regulation	5							+						
35	Technological equipment of grain	The purpose of the discipline: mastering knowledge on the	5							+						

	processing enterprises	technological equipment of grain receiving elevators, warehouses for grain processing products, base and transshipment, production, port elevators and sales bases. During the training process, students will study the issues of access roads of elevator industry enterprises and their farms. They will acquire skills in analyzing the operation of technological equipment, developing its structural diagrams, ensuring the optimal implementation of grain processing and storage tasks														
36	Commodity science of grain and its processed products	The purpose of the discipline: to study the basic principles of classification of grain crops, methods of testing grain quality used in its processing. Students will gain skills in analyzing the main indicators of the quality of grain and its processed products, commodity losses, as well as factors that ensure the commodity characteristics of grain and its processed products.	5									+				
37	Commodity science of bakery and confectionery products	Purpose of the discipline: study of the chemical composition, nutritional and biological value, physico-chemical, organoleptic and technological properties of bakery and confectionery products. Students will study issues related to mastering the modes of technological operations, processing methods used in the production of certain groups of goods. They will acquire skills to justify changes in the	5									+				

		chemical composition and properties of certain groups of bakery and confectionery products															
Cycle of major disciplines University component																	
38	Standardization and confirmation of conformity	The aim of the discipline is to study the fundamentals of developing regulatory documents (standards, instructions, rules) and technical regulations that govern the quality and safety of products, as well as the application of international and national standards. The course covers methods of control and analysis of production processes and product conformity assessment. Particular attention is paid to the requirements for products, production processes, and laboratory research that ensure food safety.	5													+	
39	Theoretical foundations of fermentation production	Purpose of the discipline: study of the theoretical foundations of fermentation technology. Students will study the characteristics of raw materials, the pattern of reproduction and growth of yeast and other microorganisms. They will acquire skills in analyzing the technology of fermentation production, the production of which is based on fermentation, requirements for the quality of raw materials, materials, components and finished products.	5									+					
Cycle of major disciplines Component of choice																	
40	Food safety	The course program consists of	5													+	

		developing knowledge, skills and abilities in assessment safety and quality of raw materials, materials, finished animal products and of plant origin at the stages of production and storage, as well as the study of the main legislative acts determining food safety products.															
41	Food tasting	The discipline is studied in order to form students' theoretical and practical knowledge and master the basic techniques of scientifically based tasting analysis to ensure objective and reproducible results in the sensory evaluation of food, as well as to have a holistic understanding of the methods of sensory, organoleptic analysis of food.	5													+	
42	Food quality and safety	The purpose of the discipline: the formation of knowledge about the organization of quality control of finished products (basic concepts, terms and definitions; forms and types of control). Students will master methods for assessing product quality and its individual indicators, the procedure for sampling and preparing them for analysis, methods for quality control of incoming raw materials, organoleptic, physical and chemical analysis of products. Students will acquire the skills to conduct quality control of finished products, evaluate and manage product quality in	5													+	

		accordance with the requirements of standards and consumer needs.														
43	Design of flour mills	The purpose of the discipline: the formation of knowledge on the study of the structures and principles of design of the preparatory and grinding departments of a flour mill. Students will be able to analyze the organizational and economic part of a flour milling enterprise, internal plant communications, taking into account the problems and future tasks of developing flour milling production technology. They will acquire skills in designing a technological scheme for cleaning and preparing grain for grinding, and master methods for calculating and selecting technological equipment for the grain cleaning department of a flour mill.	5											+		
44	Design of grain processing enterprises	The purpose of the discipline: obtaining knowledge and skills in developing technological process diagrams for receiving, processing, processing and storing grain. Students will be able to select the type of granaries and calculate the production capacity of cereal plants. They will acquire skills in designing a master plan, calculating equipment for grain processing, receiving and loading devices, space-planning and design solutions for enterprises.	5											+		
45	Design of	The purpose of the discipline: the	5											+		

	processing plants	formation of knowledge about the design and reconstruction of processing enterprises based on the study of the achievements of science and technology in the field of food production from plant materials. Students will study the sequence of design and construction of processing plants, methods of calculation and selection of effective technological equipment. They will acquire skills in the basics of designing processing enterprises, master methods for calculating the main parameters of processing enterprises and hardware and technological schemes of production															
46	Design of enterprises of the bakery and confectionery industry	The objective of the course: to develop knowledge on the study of general rules for designing bakery and confectionery industry enterprises, the main calculation criteria and principles of enterprise planning, taking into account the use of artificial intelligence to optimize processes. Students will be able to analyze feasibility studies of projects and technical calculations, as well as apply AI to improve the accuracy of calculations, forecast the need for raw materials and capacity, and optimize the selection of equipment and the layout of premises for storing finished products..	5												+		
47	Sanitation and	The purpose of the discipline: the	5													+	

	hygiene in processing plants	formation of knowledge of sanitary and epidemiological surveillance, characteristics of intestinal infections, food poisoning, helminthiases and a list of measures for their prevention. Students will study sanitary and hygienic requirements for the improvement of food facilities in the food and processing industry. They will acquire skills in ensuring and managing sanitary conditions at processing plants.														
48	Quality management system in processing plants	The purpose of the discipline: to study the processes of the quality management system (QMS) as a tool for increasing the efficiency of processing industries. Students use international standards for QMS, draw up technological diagrams, control QMS processes, and analyze the results of output data for QMS management. They will acquire skills in conducting QMS analysis and optimizing processes	5												+	
49	Technology of grain processing industries	The purpose of the discipline: the study of theoretical knowledge about grain crops as objects of processing, their structure and classification, characteristics of final products and the purpose of equipment in various technical processes. Students will analyze the technical processes of processing grain into flour, cereals and grain products, and the production of compound feed. They will acquire skills in creating a technological line for	5										+			

		grain processing plants															
50	Technology of cereal production	The purpose of the discipline: the formation of skills and knowledge in cereal production technology. Students will consider the processes of preparing various cereal raw materials for the production of cereals, study technology and production techniques. They will acquire the skills to study and analyze cereal production processes in order to make independent decisions on issues requiring technical knowledge	5										+			
51	Technology of flour-grinding and pasta production	The purpose of the discipline is to develop knowledge about the technology of flour milling and pasta production. Students will study the basics of flour milling (characteristics of raw materials; preparing rye for sifting varietal flour; creating a milling batch from grain of various qualities; preparing grain for flour processing; chemical composition of wheat and rye flour), pasta production (assortment; set quality requirements; quality of raw materials ; storage conditions and periods; change in product strength).	5										+			
52	Technology for processing secondary raw materials of crop production	The purpose of the discipline: the formation of knowledge and practical skills in the storage and processing of crop products. Students will study the characteristics, properties, basic modes and methods of storing raw materials and finished products. They will acquire skills in analyzing the reduction	5														+

		of product losses during storage and processing, increasing the efficiency of storage and processing, and expanding the range of products														
53	Technology of food concentrates	The purpose of the discipline: the formation of knowledge in the field of technology of food concentrates, the acquisition of professional skills necessary to improve production technology. Students will study the characteristics of raw materials, basic technological processes, calculation of recipes for food concentrates and the rate of consumption of raw materials. They will acquire skills in identifying defects, the causes of their occurrence, the ability to eliminate defects, identifying technological losses and the causes of their occurrence.	5													+
54	Technology of production of biologically active additives	The purpose of the discipline: to study the main aspects of the production of biologically active additives (BAA). Students will study the principles of obtaining, storing, standardizing and quality control of BAA, as well as their effect on the human body. They will acquire skills in analyzing safety issues and regulating the production of BAA, taking into account the current legislation of the Republic of Kazakhstan.	5								+					
55	Technology for the production of specialty products	The purpose of the discipline: the formation of theoretical and practical knowledge about food products for	5										+			

		special purposes, their classification, features of the chemical composition and technological processes. Students will gain knowledge of the theory of technology of food products for special purposes, including concepts about the category of products, their classification, and functional additives. They develop skills in the use of technological processes, rules for adding components that ensure the functionality of the resulting products and quality control of the finished product.														
56	Technology of production of vegetable fats	The goal of the discipline is to study the technologies of vegetable oil production, their classification, properties, and application in the food and industrial sectors. Extraction, refining, and confectionery processing processes are examined. Students will acquire skills in producing vegetable oils with consideration for product quality and safety.	5													+
57	Functional food technology	The purpose of the discipline: the formation of theoretical and practical knowledge about the technology of functional food products. Students will study the features of the technology of functional products, the concept and meaning of a functional product, features of the chemical composition and technological processes, acquire skills in analyzing the composition of	5										+			

		food products, the proportion of ingredients in the product, the required daily composition of consumed ingredients, and master the rules for quality control of raw materials and finished products														
58	Technology of bakery and confectionery production	The purpose of the discipline: to study the basic technological processes in the production of bakery and confectionery products. Students will study the classification and range of products, new types of recipes for bakery and confectionery products, regulatory documentation, characteristics of raw materials, requirements for production technology, quality and storage conditions for various semi-finished and finished products. Students will acquire skills in developing recipes, quality control and organizing the production of bakery and confectionery products.	5										+			
59	Technology of storage and processing of fruits and vegetables	The goal of the discipline is to study modern technologies for storing and processing fruits and vegetables, ensuring their quality and safety. It covers preservation methods, packaging, and quality control. Students will acquire skills in handling, storing, and processing products in compliance with regulatory requirements and enhancing their market value.	5													+
60	Quality	The purpose of the discipline: the	5												+	

	management in processing plants	formation of theoretical and practical knowledge of quality management in food and processing industry organizations. Students will examine the concept of quality as a fundamental product characteristic and the concept of total quality management. They will acquire skills to participate in quality control processes and optimize control to improve the quality of finished products.															
61	Physical methods of processing bakery and confectionery products	The purpose of the discipline: to provide students with general information and classification of physical methods for processing bakery and confectionery products. Students will master physical methods of processing with infrared radiation, methods of processing bakery and confectionery products in an electrostatic field, and will also gain skills in analyzing electrical contact, high-frequency and microwave methods of processing bakery and confectionery products	5									+					
62	Examination of grain and its processed products	The purpose of the discipline: the formation of knowledge on the examination of the quality of flour milling and pasta production: grain, cereals, flour, pasta and grain-based food concentrates. Students will master detailed characteristics of products, factors that shape their quality in the process of production, distribution,	5													+	

		storage and sales, and will acquire skills in conducting examinations of grain and its processed products.															
63	Examination of bakery and confectionery products	The purpose of the discipline: to develop in student's theoretical knowledge and practical skills in the examination of bakery and confectionery products, methods of studying raw materials, auxiliary materials and finished products. Students will study the principles of examination, analysis of various types of defects and deviations from standards. Will acquire skills in assessing product quality to make an informed decision on suitability for consumption.	5													+	
Minor																	
64	Introduction to Artificial Intelligence	The discipline is aimed at studying the basic concepts, methods and technologies used in modern artificial intelligence systems. The course covers artificial neural networks, machine learning, deep learning, as well as applied algorithms and models used in various fields such as computer vision, natural language processing, robotics, and game art. At the end of the course, students are able to analyze and solve problems using artificial intelligence methods.	5								+						
65	Artificial intelligence in the management of	The discipline studies the basic concepts and principles of artificial intelligence systems, as well as their	5								+						

	object	application in object management. Methods and technologies of artificial intelligence for effective management of objects. Upon completion of the course, students gain the skills and knowledge necessary for successful management of facilities using															
66	Development of artificial neural networks	The discipline focuses on the study of methods for creating and training neural networks, which are mathematical models that mimic the work of the human brain. During the course of studying this discipline, students will learn about various types of neural networks, their structures and learning algorithms. Upon completion of the course, students will be able to create, train and apply neural networks to solve various tasks in the field of artificial intelligence and machine learning.	5							+							

8 Alignment of planned learning outcomes with assessment technologies and teaching methods within the module

Learning Outcomes (LO) Number	Planned learning outcomes for the module	Assessment technologies (tools)	Methods of learning and teaching
LO_{GED1}	Applies the fundamental laws of Kazakhstan's history, philosophy, and socio-political knowledge for effective socialization and adaptation in changing socio-cultural conditions, shaping a personality capable of mobility in the modern world, critical thinking, and physical self-improvement.	Abstract, report, creative work, testing, etc.	Interactive lecture, interactive seminar, etc.
LO_{GED2}	Capable of interpersonal social and professional communication in Kazakh, Russian, and foreign languages.	Simulator, case task, creative task, abstract, report, testing, etc.	Interactive lecture, interactive seminar, etc.
LO_{GED3}	Possesses various types of information and communication technologies for searching, storing, processing, protecting, and disseminating information.	Abstract, report, creative work, testing, control work, presentation, business game, etc.	The communicative-activity approach to language acquisition, the project method, etc.
LO 1	He applies knowledge of economics and law, as well as business and financial literacy skills in his professional activities.	Business and/or role-playing, creative assignment, testing, educational and research project, etc.	Case study, interactive lecture, interactive seminar, etc.
LO 2	Uses knowledge of physical and mathematical laws to solve problems and applies the rules of execution of drawing and design documentation in professional activities.	Laboratory work, colloquium, educational and research project, testing, etc.	Interactive lecture, interactive seminar, etc.
	Applies the laws of mechanics to successfully study the relevant disciplines.		
	Has a general understanding of the structure, the raw material area and the organization of the technological process of an industrial enterprise		
LO 3	Demonstrates knowledge of the theoretical foundations of inorganic, organic, analytical and physico-colloidal, food chemistry, their basic concepts and laws, also applies the laws of physics and chemistry, processes, phenomena, theories and complex dependencies between them in food production enterprises	Abstract, testing, colloquium, presentation, multi-level tasks and assignments, etc.	Technological process management and interactive lecture, interactive seminar, etc.
	Evaluates the technical criteria for the safety of raw materials, semi-finished products and finished products. Applies knowledge about microbiological processes occurring in processed raw materials and finished products.		
	Demonstrates knowledge of the fundamentals of scientific research. Uses genres of academic writing to present various practical information.		
LO 4	Applies knowledge of the basic technological processes of food production from raw materials to finished products. Possesses independent work skills for further improvement of professional knowledge	Educational and research project, abstract, testing, colloquium, presentation, etc.	Interactive lecture, interactive seminar, etc.
	Demonstrates knowledge of the principles of operation and operation of technological equipment of processing plants, as well as the basics of using artificial intelligence technologies to control		

	technological processes.		
LO 5	Evaluates the effect of food additives, justifies the storage methods of crop production, and explores fermentation processes to produce high-quality food products.	Calculation and graphic work, project, testing. Business and/or role-playing game, creative assignment, business project, testing, etc.	Interactive method, project method, etc.
	It applies the physical, technological, and chemical properties of processing products, as well as the main technological operations in its production activities, and develops technologies and technological schemes for processing industries		
LO 6	Characterizes the properties of food products, their changes during the movement of goods	Oral survey, abstract, problem solving, practical laboratory work, etc.	Blitz survey, interactive method, etc.
	Evaluates automation processes in the production of bakery and confectionery products, as well as grain drying modes, taking into account quality		
	Evaluates the influence of grain properties and rheological parameters on the efficiency of processing and the quality of final products		
LO 7	It applies various technologies for deep processing of raw materials, as well as uses technological schemes and processes of its processing in the production of finished products in processing plants.	Project, laboratory work with physical or virtual equipment, colloquium, tests, etc.	Project method, case analysis, etc.
	Applies knowledge of the organization and management of technological processes of various branches of the food industry in professional activities		
LO 8	Evaluates the economic efficiency of enterprises, taking into account the principles of sustainable development, environmental safety and labor protection.	Project, laboratory work with physical or virtual equipment, testing, etc.	Blitz survey, project method, case analysis, etc.
	Demonstrates knowledge in the field of design, reconstruction and equipment of processing enterprises		
	Demonstrates and applies acquired skills and knowledge at a professional level; knows the basics of technology and technological processes of processing industries; solves problems of improving quality and developing competitive products		
LO 9	Applies theoretical and practical knowledge on control, assessment, expertise, quality and safety testing of raw materials and products in accordance with the requirements of enterprise standards and other regulatory documentation	Practical laboratory work, colloquium, testing, abstract, presentation, etc.	Demonstration, interactive lecture, interactive seminar, etc.
	Demonstrates knowledge and practical skills in the field of modern quality management systems based on international standards		
LO 10	Evaluates technologies for the storage, processing and use of vegetable raw materials and secondary resources; selects methods for the production of food concentrates and vegetable fats, taking into account the preservation of quality and nutritional value.	Practical laboratory work, colloquium, testing, abstract, presentation, etc.	Design method, lecture-explanatory method, practical method, laboratory method
LO 11	Understands the goals, methodology and methods of professional activity of a technologist, engineer and head of a food production and also applies scientific research in the field of improving food production technologies. Applies the acquired skills in preparation for continuing further education in the profile of the educational program being studied.	Report, communication, educational and research project, creative work, research project, and others.	Case analysis, analytical review, testing.

9 Correlation of learning outcomes of the educational program with the labor functions of professional standards

Name of the professional standards used	Professions at level 6 and/or 7 of the SQF	Labor functions	Tasks	Learning outcomes for the educational program
Manufacture of macaroni №263, 26.12.2019 г.	Chief technologist of pasta production	LF1. Production and technological	Task 1: The introduction of progressive, economically sound, modern technologies and production modes	LO4 Solves problems of efficient planning of technological production lines using innovative technological equipment and artificial intelligence tools in the design/reconstruction of enterprises in the processing industries
		LF2. Organizational and managerial	Task 1: Planning of production activities and management of a team of performers	LO7 Ensures the improvement of manufacturing technology for grain processing products, as well as the introduction of the latest achievements in science and technology in the field of developing new functional food products
		Personal competence requirements: Responsibility, conflict management, and situation forecasting.		LO8 Apply professional engineering solutions in the design of processing industries, taking into account the management of work on the organization of new production workshops and sections
Production of bakery and flour confectionery products №195, 02.12.2021 г.	Chief Technologist	LF1. Organizational and technological support of production	Task 2: Ensure product quality and safety management	LO3 Uses modern physical-chemical, microbiological and biochemical methods of analysis to study the composition, properties of raw materials and finished products of processing industries
				LO9 Organizes a comprehensive analysis and control of the safety of raw materials and finished products using standards, sanitary and hygienic norms and the implementation of QMS at food processing enterprises
		Personal competence requirements: Development and decision-making, result orientation, control of the implementation of tasks, analytical thinking.		LO9 Organizes a comprehensive analysis and control of the safety of raw materials and finished products using standards, sanitary and hygienic norms and the implementation of QMS at food processing enterprises
Production of cereals №100, 30.05.2023 г.	Chief technologist of cereal production	LF1. Production and technological	Task 1: The introduction of progressive, economically sound, modern technologies and production modes	LO4 Solves problems of efficient planning of technological production lines using innovative technological equipment and artificial intelligence tools in the design/reconstruction of enterprises in the processing industries
		LF2. Organizational and managerial	Task 1: Planning of production activities and management of a team of performers	LO7 Ensures the improvement of manufacturing technology for grain processing products, as well as the introduction of the latest achievements in science and technology in the field of developing new functional food products
		LF3. Experimental and experimental	Task 1: Review of projects, proposals and inventions and determine their compliance with production requirements	LO8 Apply professional engineering solutions in the design of processing industries, taking into account the management of work on the organization of new production workshops and sections
		Personal competence requirements: Conflict management and situation forecasting, responsibility for one's own actions		LO8 Apply professional engineering solutions in the design of processing industries, taking into account the management of work on the organization of new production workshops and sections

10 Graduate model

GRADUATE MODEL			
	Competencies (soft skills, digital skills)		
	Attributes of a graduate	Knowledge	Skills
Professional standard Production of bakery and flour confectionery products; Manufacture of macaroni; Production of cereals	Strives to introduce innovations and use modern technological solutions; Demonstrates systematic and analytical thinking in solving production tasks; He works effectively in a team and interacts with representatives of various professional fields.; He is proficient in digital technologies necessary for the management and analysis of production processes; Able to develop and optimize technological schemes of food production; Owns the regulatory framework in the field of food production; Conducts research according to a given methodology and analyzes the experimental data obtained;	Technologies and organization of technological processes of bakery and confectionery production. Indicators of the efficiency of technological processes of bakery and confectionery production. Quality requirements for the technological operations of bakery and confectionery production in accordance with the technological instructions. Methods of planning, monitoring, and evaluating the quality of manufacturing operations in accordance with technological instructions. Production facilities, technical characteristics, design features and operating modes of technological equipment, rules of its operation. Rules of document management, accounting and reporting in the production of products. Regulations, instructions and other guidance materials on the development of technological documentation. Methods and means of collecting, processing, storing and transmitting information using basic system software products and application software packages.	Manage the activities of production, technological and microbiological laboratories, ensure the implementation of technochemical and microbiological quality control of basic and additional raw materials and finished products for compliance with the requirements of regulatory documentation. Monitor the implementation of the process control plan on the lines, workshops and sites. To make decisions on the implementation of corrective and preventive actions in cases of detection of inconsistencies or violations in the quality control of raw materials, finished products and processes. To organize trial production baking in order to clarify the yield rates of finished products, indicators of the technological process of production when production conditions change, and the quality of raw materials. Ensure that established changes are made to the technological documentation with subsequent approval. Monitor the sanitary and hygienic condition of production, develop recommendations. Monitor compliance with safety and fire safety regulations in the company's laboratories.

	Professional skills (Hardskills)
	Organizes and coordinates the technological processes of food and processing industries, ensuring the rational use of equipment, resources and personnel in accordance with regulatory requirements and the production plan. Monitors the execution of technological operations, ensures compliance with regimes, quality standards and sanitary and hygienic standards at all stages of processing raw materials and production. Conducts pilot work on the development and implementation of new technological solutions, analyzes the results obtained and adapts technological processes in order to improve the quality and efficiency of production. Applies comprehensive professional and scientific knowledge to solve practical problems in the field of technology and organization of food production, ensuring the sustainability of processes, high product quality, safety and efficiency of food processing enterprises.

Типтік оқу жоспары/ Типичный учебный план/ Typical curriculum

6B07223 Өңдеу өндірістерінің технологиясы (салалар бойынша) / 6B07223 Технология перерабатывающих производств (по отраслям) / 6B07223 Food processing technologies (by industry)

Модуль № / Module №	Пәндердің № / Discipline №	ОҚУ ПӘНДЕРІНІҢ АТАУЫ / НАИМЕНОВАНИЕ УЧЕБНЫХ ДИСЦИПЛИН / NAME OF TEACHING DISCIPLINES	Оқу пәндерінің циклы / Цикл учебных дисциплин / Educational disciplines cycle	Оқу пәндерінің коды / Код учебной дисциплины / Educational discipline code	Семестр / semester	Кредиттер саны / Количество кредитов / Number of credits	Курстық жұмыс / Курсовая работа / Course work (project)	Барлық сағат / Всего часов / Total hours	Барлық аудит. сағат / Всего аудит. часов / Total classroom hours	Д/ЛК/Lec	СПС/СПЗ/SPL	ЗС/ЛЗ/LC	ОБӨЖ/СРОП/IWST	БӨЖ/СРО/IWS	1 курс, 1 академиялық кезең / Academic period (15)	1 курс, 2 академиялық кезең / Academic period (15)	2 курс, 3 академиялық кезең / Academic period (15)	2 курс, 4 академиялық кезең / Academic period (15)	3 курс, 5 академиялық кезең / Academic period (15)	3 курс, 6 академиялық кезең / Academic period (15)	4 курс, 7 академиялық кезең / Academic period (15)	4 курс, 8 академиялық кезең / Academic period (15)	Оқыту тілі / Язык обучения / Language of education
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Ақпараттық-коммуникативтік / Информационно- коммуникационный / Information and Communication																					
Модуль / Module № 1	1	Шетел тілі Иностранный язык Foreign language	ЖБП (МК) ООД (ОК) GED (CC)	IYa 1104-25 (1) IYa 1104-25 (1) IYa 1104-25 (1)	1	5		150	45		45		15	90	0 + 3 + 0								Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	2	Қазақ (Орыс) тілі Казахский (Русский) язык Kazakh (Russian) language	ЖБП (МК) ООД (ОК) GED (CC)	K(R)Ya 1105-25 (1) K(R)Ya 1105-25 (1) K(R)Ya 1105-25 (1)	1	5		150	45		45		15	90	0 + 3 + 0								Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	3	Ақпараттық-коммуникациялық технологиялар Информационно-коммуникационные технологии Information and communication technologies	ЖБП (МК) ООД (ОК) GED (CC)	IKT 1108-25 IKT 1108-25 IKT 1108-25	1	5		150	45	15		30	15	90	1 + 0 + 2								Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	4	Шетел тілі Иностранный язык Foreign language	ЖБП (МК) ООД (ОК) GED (CC)	IYa 1104-25 (2) IYa 1104-25 (2) IYa 1104-25 (2)	2	5		150	45		45		15	90		0 + 3 + 0							Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	5	Қазақ (Орыс) тілі Казахский (Русский) язык Kazakh (Russian) language	ЖБП (МК) ООД (ОК) GED (CC)	K(R)Ya 1105-25 (2) K(R)Ya 1105-25 (2) K(R)Ya 1105-25 (2)	2	5		150	45		45		15	90		0 + 3 + 0							Білім алушының таңдауы бойынша По выбору обучающегося By student's option
Барлығы модуль бойынша / Итого по модулю / Total for module						**25**		**750**	**225**	**15**	**180**	**30**	**75**	**450**									
		Адам және қоғам – дүниетанымның және қоғамдық-саяси білімнің негізі / Человек и общество- основа мирозрен-ческих и социально- политических знаний / Man and Society – the foundation of worldview and socio-																					
Модуль / Module № 2	1	Дене шынықтыру Физическая культура Physical Culture	ЖБП (МК) ООД (ОК) GED (CC)	FK 1106-25 (1) FK 1106-25 (1) FK 1106-25 (1)	1	2		60	30		30			30	0 + 2 + 0								Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	2	Экономика, кәсіпкерлік, құқық және қаржылық сауаттылық модулі (экономика және кәсіпкерліктің негіздері, құқық негіздері және сыбайлас жемқорлыққа қарсы мәдениет, қаржылық сауаттылық негіздері) Модуль экономики, предпринимательства, права и финансовой грамотности (основы экономики и предпринимательства, основы права и антикоррупционная культура, основы финансовой грамотности) Module of economics, entrepreneurship, law and financial literacy (fundamentals of economics and entrepreneurship, basics of law and anti-corruption culture, basics of financial literacy)	ЖБП (ЖК) ООД (ВК) GED (UC)	MEPPFG 1107-25 MEPPFG 1107-25 MEPPFG 1107-25	2	5		150	45	30	15		15	90		2 + 1 + 0							Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	3	Қазақстан тарихы История Казахстана History of Kazakhstan	ЖБП (МК) ООД (ОК) GED (CC)	IK 1101-25 IK 1101-25 IK 1101-25	2	5		150	45	30	15		15	90		2 + 1 + 0							Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	4	Дене шынықтыру Физическая культура Physical Culture	ЖБП (МК) ООД (ОК) GED (CC)	FK 1106-25 (2) FK 1106-25 (2) FK 1106-25 (2)	2	2		60	30		30			30		0 + 2 + 0							Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	5	Әлеуметтік-саясаттану білім модулі (әлеуметтану, саясаттану, мәдениеттану, психология) Модуль социально-политических знаний (политология, социология, культурология, психология) Module of socio-political knowledge (political science, sociology, cultural studies, psychology)	ЖБП (МК) ООД (ОК) GED (CC)	MSPZ 2103-25 MSPZ 2103-25 MSPZ 2103-25	3	8		240	120	60	60		15	105			4 + 4 + 0						Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	6	Дене шынықтыру Физическая культура Physical Culture	ЖБП (МК) ООД (ОК) GED (CC)	FK 1106-25 (3) FK 1106-25 (3) FK 1106-25 (3)	3	2		60	30		30			30			0 + 2 + 0						Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	7	Философия Философия Philosophy	ЖБП (МК) ООД (ОК) GED (CC)	Fil 2102-25 Fil 2102-25 Fil 2102-25	4	5		150	45	30	15		15	90				2 + 1 + 0					Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	8	Дене шынықтыру Физическая культура Physical Culture	ЖБП (МК) ООД (ОК) GED (CC)	FK 1106-25 (4) FK 1106-25 (4) FK 1106-25 (4)	4	2		60	30		30			30				0 + 2 + 0					Білім алушының таңдауы бойынша По выбору обучающегося By student's option
Барлығы модуль бойынша / Итого по модулю / Total for module						**31**		**930**	**375**	**150**	**225**	**0**	**60**	**495**									
		Жаратылыстану ғылыми / Естественно научный / Naturally scientific																					
	1	Физика Физика Physics	БП (ЖК) БД (ВК) BD (UC)	Fiz 1202-25 Fiz 1202-25 Fiz 1202-25	1	4		120	45	15	15	15	15	60	1 + 1 + 1								Білім алушының таңдауы бойынша По выбору обучающегося By student's option

Модуль / Module № 3	2	Жоғары математика Высшая математика Higher mathematics	БП (ЖК) БД (ВК) BD (UC)	V mat 1201-25 V mat 1201-25 V mat 1201-25	1	5		150	45	15	30		15	90	1 + 2 + 0								Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	3	Аналитикалық және физколлоидтық химия Аналитическая и физколлоидная химия Physcolloidal and analytical chemistry	БП (ТК) БД (КВ) BD (EC)	AFH 1201-25 AFH 1201-25 AFH 1201-25	1	4		120	45	15	15	15	15	60	1 + 1 + 1								Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	4	Жалпы химия Общая химия General chemistry		OH 1201-25 OH 1201-25 OH 1201-25																			
	5	Инженерлік және компьютерлік графика Инженерная и компьютерная графика Engineering Computer Graphics	БП (ЖК) БД (ВК) BD (UC)	IKG 2210-25 IKG 2210-25 IKG 2210-25	2	6		180	60	30	30		15	105		2 + 2 + 0							Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	6	Оқу практикасы Учебная практика Educational practice	БП (ЖК) БД (ВК) BD (UC)	UP 25 (TPP) UP 25 (TPP) UP 25 (TPP)	2	2		60	0							2 апта недель weeks							Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	7	Ғылыми зерттеу негіздері Основы научных исследований Basics of research	БП (ЖК) БД (ВК) BD (UC)	ONI 2204-25 ONI 2204-25 ONI 2204-25	3	5		150	45	15	30		15	90			1 + 2 + 0						Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	8	Теориялық және қолданбалы механика Теоретическая и прикладная механика Theoretical and applied mechanics	БП (ТК) БД (КВ) BD (EC)	TPM 2202-25 TPM 2202-25 TPM 2202-25	3	5		150	45	15	30		15	90			1 + 2 + 0						Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	9	Жылу техникасы Теплотехника Heat engineering		T 2202-25 T 2202-25 T 2202-25																			
	10	Техникалық микробиология Техническая микробиология Technical microbiology	БП (ТК) БД (КВ) BD (EC)	TM 2203-25 TM 2203-25 TM 2203-25	3	5		150	45	15	30		15	90			1 + 2 + 0						Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	11	Қайта өңдеу өнеркәсібіндегі микробиология Микробиология в перерабатывающем производстве Microbiology in the processing industry		MPP 2203-25 MPP 2203-25 MPP 2203-25																			
	12	Тамақ биохимиясы Биохимия пищевых продуктов Food biochemistry	БП (ТК) БД (КВ) BD (EC)	BPP 2205-25 BPP 2205-25 BPP 2205-25	6	5		150	45	30	15		15	90						2 + 1 + 0			Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	13	Тағам химиясы Пищевая химия Food chemistry		PH 2205-25 PH 2205-25 PH 2205-25																			
Барлығы модуль бойынша / Итого по модулю / Total for module						**41**		**1230**	**375**	**150**	**195**	**30**	**120**	**675**									
		Технологиялық / Технологический / Technological																					
Модуль № 4	1	Нан-тоқаш және кондитерлік өнімдердің тауартануы Товароведение хлебобулочных и кондитерских изделий Commodity science of bakery and confectionery products	БП (ТК) БД (КВ) BD (EC)	THKI 2204-25 THKI 2204-25 THKI 2204-25	3	5		150	45	15	30		15	90			1 + 2 + 0						Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	2	Астық және оны қайта өңдеу өнімдерін тауартану Товароведение зерна и продуктов его переработки Commodity science of grain and its processed products		TZPP 2204-25 TZPP 2204-25 TZPP 2204-25																			
	3	Қайта өңдеу өндірістерінің жалпы технологиясы Общая технология перерабатывающих производств General technology of processing industries	БП (ЖК) БД (ВК) BD (UC)	OTPP 2205-25 OTPP 2205-25 OTPP 2205-25	4	5		150	45	30	15		15	90				2 + 1 + 0					Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	4	Нан-тоқаш және кондитерлік өнімдер өндірісінің технологиялық процестерін автоматтандыру Автоматизация технологических процессов производства хлебобулочных и кондитерских изделий Automation of technological processes for the production of bakery and confectionery products	БП (ТК) БД (КВ) BD (EC)	ATPPHKI 3209-25 ATPPHKI 3209-25 ATPPHKI 3209-25	5	5		150	45	15	30		15	90					1 + 2 + 0				Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	5	Астық кептіру Зерносушение Grain drying		Z 3209-25 Z 3209-25 Z 3209-25																			
	6	Наубайхана, макарон және кондитер өнімдерін өндіруге арналған тағамдық қоспалар технологиясы Пищевые добавки технологии хлебопекарных, макаронных и кондитерских производств Food additives technologies for bakery, pasta and confectionery production	БП (ТК) БД (КВ) BD (EC)	PDTHMKP 3210-25 PDTHMKP 3210-25 PDTHMKP 3210-25	5	5		150	45	15	30		15	90					1 + 2 + 0				Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	7	Өсімдік шаруашылығы өнімдерін өңдеу және сақтау Обработка и хранение продукции растениеводства Processing and storage of crop production		OHPR 3210-25 OHPR 3210-25 OHPR 3210-25																			
	8	Биологиялық белсенді қоспаларды өндіру технологиясы Технология производства биологически активных добавок Technology of production of biologically active additives	БеП (ТК) ПД (КВ) PD (EC)	TPBAD 3302-25 TPBAD 3302-25 TPBAD 3302-25	5	5		150	45	15	30		15	90					1 + 2 + 0				Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	9	Нан-тоқаш және кондитерлік өнімдерді өңдеудің физикалық әдістері Физические методы обработки хлебобулочных и кондитерских изделий Physical methods of processing bakery and confectionery products		FMOHKI 3302-25 FMOHKI 3302-25 FMOHKI 3302-25																			

Модуль / Modu																							
	10	Функционалды тағам өнімдерінің технологиясы Технология функциональных пищевых продуктов Functional food technology	БеП (ТК) ПД (КВ) PD (EC)	TFPP 3303-25 TFPP 3303-25 TFPP 3303-25	5	5		150	45	30	15		15	90					2 + 1 + 0				Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	11	Арнайы мақсаттағы өнімдерді өндіру технологиясы Технология производства продуктов специального назначения Technology for the production of specialty products		TPPSN 3303-25 TPPSN 3303-25 TPPSN 3303-25																			
	12	Өндірістік практика 2 Производственная практика 2 Industrial practice 2	БеП (ЖК) ПД (ВК) PD (UC)	PP 2-25 (TPP) PP 2-25 (TPP) PP 2-25 (TPP)	6	5		150	0										5 апта недель weeks				Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	13	Ашыту өндірісінің теориялық негіздері Теоретические основы бродильных производств Theoretical foundations of fermentation production	БеП (ЖК) ПД (ВК) PD (UC)	TOBP 4302-25 TOBP 4302-25 TOBP 4302-25	7	5		150	45	30	15		15	90							2 + 1 + 0		Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	14	Ұн тарту және макарон өнімдерін өндіру технологиясы Технология мукомольного и макаронного производства Technology of flour-grinding and pasta production	БеП (ТК) ПД (КВ) PD (EC)	TMMP 4305-25 TMMP 4305-25 TMMP 4305-25	7	5		150	45	15	30		15	90							1 + 2 + 0		Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	15	Нан-тоқаш және кондитерлік өнімдер өндірісінің технологиясы Технология хлебобулочного и кондитерского производства Technology of bakery and confectionery production		THKP 4305-25 THKP 4305-25 THKP 4305-25																			
	16	Астық өңдеу өнеркәсібінің технологиясы Технология зерноперерабатывающих производств Technology of grain processing industries	БеП (ТК) ПД (КВ) PD (EC)	TZP 4306-25 TZP 4306-25 TZP 4306-25	7	5		150	45	15	30		15	90							1 + 2 + 0		Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	17	Дәнді дақылдарды өндіру технологиясы Технология крупяного производства Technology of cereal production		TKP 4306-25 TKP 4306-25 TKP 4306-25																			
	18	Өсімдік майларын өндіру технологиясы Технология производства растительных жиров Technology of production of vegetable fats	БеП (ТК) ПД (КВ) PD (EC)	TPRZH 4307-25 TPRZH 4307-25 TPRZH 4307-25	7	5		150	45	30	15		15	90							2 + 1 + 0		Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	19	Жемістер мен көкөністерді сақтау және өңдеу технологиясы Технология хранения и переработки плодов и овощей Technology of storage and processing of fruits and vegetables		THPPO 4307-25 THPPO 4307-25 THPPO 4307-25																			
	20	Өсімдік шаруашылығының екінші реттік шикізатын өңдеу технологиясы Технология переработки вторичного сырья продукции растениеводства Technology for processing secondary raw materials of crop production	БеП (ТК) ПД (КВ) PD (EC)	TPVSPR 4312-25 TPVSPR 4312-25 TPVSPR 4312-25	8	5		150	45	30	15		15	90								2 + 1 + 0	Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	21	Азық-түлік концентратының технологиясы Технология пищевых концентратов Technology of food concentrates		TPK 4312-25 TPK 4312-25 TPK 4312-25																			
Барлығы модуль бойынша / Итого по модулю / Total for module						**60**		**1800**	**495**	**240**	**255**	**0**	**165**	**990**									
Экономика және өндіріс / Экономика и производство / Economy and production																							
Модуль / Module № 5	1	Кәсіпорындағы экономика және жоспарлау Экономика и планирование на предприятии Economics and enterprise planning	БП (ЖК) БД (ВК) BD (UC)	EPP 2205-25 EPP 2205-25 EPP 2205-25	4	3		90	30	15	15		15	45				1 + 1 + 0					Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	2	Тұрақты даму, экология және тіршілік қауіпсіздігі Устойчивое развитие, экология и безопасность жизнедеятельности Sustainable development, ecology and life safety	БП (ЖК) БД (ВК) BD (UC)	UREBZh 3207-25 UREBZh 3207-25 UREBZh 3207-25	6	5		150	45		45		15	90					0 + 3 + 0			Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	3	Астық өңдеу өндірістерінің кәсіпорындарын жобалау Проектирование предприятий зерноперерабатывающих производств Design of grain processing enterprises	БеП (ТК) ПД (КВ) PD (EC)	PPZP 4308-25 PPZP 4308-25 PPZP 4308-25	7	5		150	45	30	15		15	90							2 + 1 + 0		Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	4	Қайта өңдеу кәсіпорындарын жобалау Проектирование предприятий перерабатывающих производств Design of processing plants		PPPP 4308-25 PPPP 4308-25 PPPP 4308-25																			
	5	Диплом алдындағы практика. Өндірістік практика Преддипломная практика.Производственная практика Pre-graduate practice. Industrial practice	БеП (ЖК) ПД (ВК) PD (UC)	PP PP 25 (TPP) PP PP 25 (TPP) PP PP 25 (TPP)	8	7		210	0													7 апта недель weeks	Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	6	Ұн тарту кәсіпорындарын жобалау Проектирование мукомольных производств Design of flour mills	БеП (ТК) ПД (КВ) PD (EC)	PMP 4310-25 PMP 4310-25 PMP 4310-25	8	5		150	45	15	30		15	90								1 + 2 + 0	Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	7	Нан пісіру және кондитерлік өнеркәсіп кәсіпорындарын жобалау Проектирование хлебопекарных и кондитерских предприятий Design of enterprises of the bakery and confectionery industry		PHKP 4310-25 PHKP 4310-25 PHKP 4310-25																			
Барлығы модуль бойынша / Итого по модулю / Total for module						**25**		**750**	**165**	**60**	**105**	**0**	**60**	**315**									
Инженерлік / Инженерный / Engineering																							
	1	Өндірістік практика 1 Производственная практика 1 Industrial practice 1	БП (ЖК) БД (ВК) BD (UC)	PP 1-25 (TPP) PP 1-25 (TPP) PP 1-25 (TPP)	4	5		150	0								5 апта недель weeks					Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	2	Азық-түлік өнімдерінің реологиясы Реология пищевых продуктов Food Rheology	БП (ТК) БД (КВ) BD (EC)	RPP 2205-25 RPP 2205-25 RPP 2205-25	4	5		150	45	15	30		15	90			1 + 2 + 0					Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	3	Өсімдік шаруашылығы негіздерімен астық ғылымы Зерноведение с основами растениеводства Grain science with basics of plant growing		ZOR 2205-25 ZOR 2205-25 ZOR 2205-25																			

Модуль / Module № 6	4	Тамақ өнімдерін өндіруге арналған желдету кондиртқылары мен кондиционерлік жүйелер Вентиляционные установки и системы кондиционирования воздуха пищевых производств Ventilation units and air conditioning systems for food production	БП (ТК) БД (КВ) BD (EC)	VUSKVPP 2204-25 VUSKVPP 2204-25 VUSKVPP 2204-25	4	5		150	45	30	15		15	90				2 - 1 - 0					Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	5	Тағам өндірісінің үрдістері және аппараттары Процессы и аппараты пищевых производств Processes and vehicles of food productions		PAPP 2204-25 PAPP 2204-25 PAPP 2204-25																			
	6	Жасанды интеллектке кіріспе Введение в Искусственный интеллект Introduction to Artificial Intelligence		VII 2204-25 VII 2204-25 VII 2204-25																			
	7	Наубайхана кәсіпорындарының технологиялық жабдықтары Технологические оборудование предприятий хлебопекарных производств Technological equipment for bakery enterprises	БП (ТК) БД (КВ) BD (EC)	TOPHP 3207-25 TOPHP 3207-25 TOPHP 3207-25	5	5		150	45	15	30		15	90					1 + 2 + 0				Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	8	Астықты қайта өңдеу өнеркәсібі кәсіпорындарының технологиялық жабдықтары Технологическое оборудование предприятий зерноперерабатывающей промышленности Technological equipment of grain processing enterprises		TOPZP 3207-25 TOPZP 3207-25 TOPZP 3207-25																			
	9	Жасанды нейрондық желілерді әзірлеу Разработка искусственных нейронных сетей Development of artificial neural networks		RINS 3207-25 RINS 3207-25 RINS 3207-25																			
	10	Кондитерлік кәсіпорындардың технологиялық жабдықтары Технологические оборудование предприятий кондитерских производств Technological equipment for confectionery enterprises	БП (ТК) БД (КВ) BD (EC)	TOPKP 3211-25 TOPKP 3211-25 TOPKP 3211-25	6	5		150	45	15	30		15	90						1 - 2 - 0			Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	11	Ұн тарту кәсіпорындарының технологиялық жабдықтары Технологические оборудование мукомольных производств Technological equipment for flour-grinding industries		TOMP 3211-25 TOMP 3211-25 TOMP 3211-25																			
	12	Объектілерді басқарудағы жасанды интеллект Искусственный интеллект в управлении объектами Artificial intelligence in the management of object		IIUO 3211-25 IIUO 3211-25 IIUO 3211-25																			
Барлығы модуль бойынша / Итого по модулю / Total for module						**25**		**750**	**180**	**75**	**105**	**0**	**60**	**360**									
Қауіпсіздік, стандарттау және бақылау / Безопасность, стандартизация и контроль / Security, standardization and control																							
Модуль / Module № 7	1	Нан-тоқаш және кондитерлік өнімдерді сараптау Экспертиза хлебобулочных и кондитерских изделий Examination of bakery and confectionery products	БеП (ТК) ПД (КВ) PD (EC)	EHKI 3301-25 EHKI 3301-25 EHKI 3301-25	5	5		150	45	15	30		15	90					1 + 2 + 0				Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	2	Астық және оны қайта өңдеу өнімдерін сараптау Экспертиза зерна и продуктов его переработки Examination of grain and its processed products		EZPP 3301-25 EZPP 3301-25 EZPP 3301-25																			
	3	Стандарттау және сәйкестікті растау Стандартизация и подтверждение соответствия Standardization and confirmation of conformity	БеП (ЖК) ПД (ВК) PD (UC)	SPS 3301-25 SPS 3301-25 SPS 3301-25	6	5		150	45	30	15		15	90						2 - 1 - 0			Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	4	Азық-түлік қауіпсіздігі Безопасность пищевых продуктов Food safety	БеП (ТК) ПД (КВ) PD (EC)	BPP 3304-25 BPP 3304-25 BPP 3304-25	6	5		150	45	15	30		15	90						1 - 2 - 0			Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	5	Қайта өңдеу кәсіпорындарындағы санитария және гигиена Санитария и гигиена на перерабатывающих предприятиях Sanitation and hygiene in processing plants		SGPP 3304-25 SGPP 3304-25 SGPP 3304-25																			
	6	Азық-түлік сапасы мен қауіпсіздігі Качество и безопасность пищевых продуктов Food quality and safety	БеП (ТК) ПД (КВ) PD (EC)	KBPP 4309-25 KBPP 4309-25 KBPP 4309-25	7	5		150	45	15	30		15	90							1 + 2 + 0		Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	7	Дәм сараптау Дегустация пищевых продуктов Food tasting		DPP 4309-25 DPP 4309-25 DPP 4309-25																			
	8	Қайта өңдеу өндірістерінде сапаны басқару Управление качеством на перерабатывающих производствах Quality management in processing plants	БеП (ТК) ПД (КВ) PD (EC)	UKPP 4311-25 UKPP 4311-25 UKPP 4311-25	8	5		150	45	30	15		15	90								2 + 1 + 0	Білім алушының таңдауы бойынша По выбору обучающегося By student's option
	9	Қайта өңдеу өндірістерінде сапа менеджменті жүйесі Система менеджмента качества на перерабатывающих производствах Quality management system in processing plants		SMKPP 4311-25 SMKPP 4311-25 SMKPP 4311-25																			
Барлығы модуль бойынша / Итого по модулю / Total for module						**25**		**750**	**225**	**105**	**120**	**0**	**75**	**450**									
Қорытынды аттестация / Итоговая аттестация / Final assessment																							
Модуль / Module № 8	1	Қорытынды аттестаттау Итоговая аттестация Final assessment			8	8		240														8 апта / недель / weeks	
Барлығы модуль бойынша / Итого по модулю / Total for module						**8**		**240**	**0**	**0**	**0**	**0**	**0**	**0**									
БАРЛЫҒЫ МОДУЛЬДАР БОЙЫНША / ИТОГО ПО МОДУЛЯМ / TOTAL FOR MODULES						**240**		**7200**	**2040**	**795**	**1185**	**60**	**615**	**3735**									

Экспертное заключение
на образовательную программу бакалавриата
«6В07223 Технология перерабатывающих производств
(по отраслям)» АО «Казахский университет технологии и бизнеса
имени К. Кулажанова» 2025-2026 учебный год

На экспертизу представлена ОП по направлению подготовки «6В07223 Технология перерабатывающих производств (по отраслям)».

Образовательная программа зарегистрирована в Реестре ОП «Единая платформа высшего образования» с регистрационным номером 6В07200128 от 11.09.2019 (дата обновления 23.08.2024).

Имеет лицензию на направление подготовки № KZ43LAM00000589 от 19.02.2025 г.

Данная ОП «6В07223 Технология перерабатывающих производств (по отраслям)» соответствует основным требованиям Государственного общеобразовательного стандарта высшего образования, утвержденного приказом Министра образования и науки Республики Казахстан от 20 июля 2022 года №2.

Целью образовательной программы является подготовка высококвалифицированных кадров для пищевых и перерабатывающих производств, обладающих профессиональными компетенциями, способствующими их социальной мобильности и устойчивости на рынке труда.

Объем кредитов ОП, выделяемый на изучение учебных дисциплин, достаточен для формирования компетенции бакалавра техники и технологии направления «6В07223 Технология перерабатывающих производств (по отраслям)» и предполагает обеспечение достаточных теоретических знаний и практического навыка по выбранной образовательной программе. Трудоемкость ОП составляет 240 кредитов.

Образовательная программа разработана с учетом применения следующих Профессиональных стандартов:

- «Производство хлебобулочных и мучных кондитерских изделий» от 02.12.2021;
- «Производство макаронных изделий» от 26.12.2019;
- «Производство круп» от 30.05.2023

Учебный план ОП разработан на основании модульной системы изучения дисциплин, включающих в себя обязательные, базовые и профилирующие дисциплины, и формирующих общекультурные и профессиональные компетенции.

Результаты обучения (всего 9) соответствует Болонской системе образования и охватывают следующие такие компетенции как поведенческие навыки и личностные качества (Softskills), цифровые компетенции (Digital skills), профессиональные навыки (Hardskills).

Описание дисциплин представлено для 55 наименований базовых и профильных дисциплин. Согласно актуализации основных требований

Государственного общеобразовательного стандарта высшего образования, утвержденного приказом Министра образования и науки Республики Казахстан от 20 июля 2022 года №2 (с изменениями на 2024 год) включены дисциплины как «Основы научных исследований», «Основы финансовой грамотности».

Актуальность представляют профильные дисциплины по выбору, которые представлены в образовательной программе с учетом состоянии и развития перерабатывающей промышленности в Казахстане.

Рекомендации:

- согласно актуализации основных требований Государственного общеобразовательного стандарта высшего образования, утвержденного приказом Министра образования и науки Республики Казахстан от 20 июля 2022 года №2 (с изменениями на 2025 год) https://adilet.zan.kz/rus/docs/V2200028916:

1) согласно пункта 20 пересмотреть описания дисциплин (где это может быть применимо) с целью освоения компетенций по применению искусственного интеллекта.

2) согласно пункта 22 рассмотреть внедрение в ОП микроквалификаций, нано-кредитов и наращиваемых степеней с возможностью признания путем их сертификации в соответствии с Законом Республики Казахстан "О профессиональных квалификациях" с учетом Атласа новых профессий и компетенций, востребованных на рынке труда Казахстана и Регионального стандарта.

- актуализировать и пересмотреть использование Профессиональных стандартов по данной отрасли https://atameken.kz/ru/services/16-professionalnyye-standarty-i-tsentry-sertifikatsii-nsk в разработке ОП.

На основании проведенного анализа можно сделать заключение о том, что ОП высшего образования по направлению «6В07223 Технология перерабатывающих производств (по отраслям)» АО «Казахский университет технологии и бизнеса имени К. Кулажанова», в целом, соответствует требованиям ГОСО РК, требованиям рынка труда и позволит выпускникам реализовать приобретенные знания в дальнейшей профессиональной деятельности.

Эксперт,
магистр, старший преподаватель
кафедры «Биотехнология»
Торайгыров Университета А. Мухамеджанова

Торайгыров университетінің коммерциялық емес акционерлік қоғамының HR-қызметі
қолын растаймын
подпись Мухамеджанова Д.С. заверяю
HR-қызметі
Некоммерческое акционерное общество «Торайгыров университет»

«Қ. Құлажанов атындағы Қазақ технология және бизнес университеті» АҚ

6В07223 «Өңдеу өндірістерінің технологиясы (салалар бойынша)» білім беру бағдарламасы бойынша

САРАПТАМА

Жалпы білім беру бағдарламасының сипаттамасы

6В07223 «Өңдеу өндірістерінің технологиясы (салалар бойынша)» білім беру бағдарламасы Қазақстан Республикасының жоғары білім беру стандарттарына сәйкес әзірленген және Ұлттық біліктілік шеңбері, салалық біліктілік шеңбері және кәсіби стандарттарға толық сәйкестендірілген. Бағдарлама ауыл шаруашылығы және азық-түлік өндірісін қайта өңдеу саласында жоғары білікті мамандарды даярлауға бағытталған. Бұл салада еліміздің агроөнеркәсіп кешені үшін қажетті кадрлар тапшылығы мен өндірістік технологиялардың жаңару үрдісі байқалады, сондықтан білім беру бағдарламасының өзектілігі айқын.

Қазақстанның азық-түлік және қайта өңдеу өнеркәсібінің дамуымен қатар, әлемдік тәжірибелер мен жаңа технологиялар да тұрақты түрде өзгеруде. Бағдарлама соларға бейімделіп, ауыл шаруашылығындағы инновациялық әдістерді, экологиялық қауіпсіздік және тиімді өндіріс технологияларын қолдануға ерекше көңіл бөледі. Оның басты мақсаты – ауыл шаруашылығының шикізаттарын өңдеу саласында жоғары білікті мамандарды даярлау және еліміздің қайта өңдеу өнеркәсібін дамытуға үлес қосу.

Білім беру бағдарламасы Қазақстанның агроөнеркәсіп кешенінің аймақтық ерекшеліктерін ескере отырып әзірленген. Бұл мүмкіндік студенттерге еліміздің әртүрлі аймақтарының қажеттіліктерін түсінуге, сондай-ақ, өндірістегі нақты жағдайларға сәйкес дағдыларды меңгеруге мүмкіндік береді. Сонымен қатар, бағдарлама өндірістік процестердің экологиялық қауіпсіздігі мен тиімділігіне баса назар аударады, бұл оқу үрдісінің заманауи талаптарына сәйкес келуін қамтамасыз етеді.

Бағдарлама жоғары білім беру саласының заманауи тенденцияларына және жұмыс берушілердің қажеттіліктеріне сай құрастырылған. Өндірістік және ғылыми-техникалық прогрессті ескере отырып, бағдарлама жұмыс берушілердің талаптарына сәйкес келетін мамандарды дайындауға бағытталған. Оқушылар үшін бағдарлама теориялық білім мен практикалық дағдыларды үйлестіре отырып, еңбек нарығында бәсекеге қабілетті және инновациялық көзқарасы бар мамандарды тәрбиелеуді көздейді.

Білім беру бағдарламасының құрылымын сипаттау және бағалау

Білім беру бағдарламасының құрылымы жалпы құзыреттерді қалыптастыруға бағытталған базалық пәндер мен қайта өңдеу технологиялары саласындағы мамандарды даярлауға арналған профильдік пәндерді қамтиды. Профильдік пәндер қатарында келесілерді атап өтуге болады:

- Өсімдік майларын өндіру технологиясы;
- Жеміс-жидек пен көкөністерді сақтау және қайта өңдеу технологиясы.

Бұл пәндер түлектерге азық-түлік және қайта өңдеу өнеркәсібінің әртүрлі сегменттерінде жұмыс істеуге қажетті білім мен дағдыларды береді, соның ішінде өсімдік

майларын өндіру, жемістер мен көкөністерді консервілеу, сондай-ақ ауыл шаруашылығы шикізатын қайта өңдеумен байланысты басқа да бағыттар.

Оқыту процесі теория мен практиканың байланысын қамтамасыз ететін практикалық сабақтар, зертханалық жұмыстар мен кәсіби тәжірибелерді қамтиды. Тәжірибелер мен олардың мазмұны кәсіби қызмет түрлеріне сәйкес келеді, бұл студенттерге өндірістік ортаға бейімделуге мүмкіндік береді.

Жалпы қорытынды

Білім беру бағдарламасы еңбек нарығының қазіргі талаптарына, ғылымның, техниканың және технологияның даму үрдістеріне толық жауап береді. Қазақстанның азық-түлік және қайта өңдеу өнеркәсібінің белсенді дамуы жағдайында бағдарлама жоғары білікті мамандарды даярлауға бағытталған, олар өндірістік процестерге оңай бейімделіп, саланың дамуына үлес қоса алады.

Бағдарлама ұлттық және аймақтық деңгейде сұранысқа ие. Бұл бағдарламаны аяқтаған түлектер тек терең теориялық біліммен емес, сондай-ақ еңбек нарығында бәсекеге қабілеттілікті қамтамасыз ететін практикалық дағдылармен де қамтамасыз етіледі.

6В07223 «Өңдеу өндірістерінің технологиясы (салалар бойынша)» білім беру бағдарламасы Қ. Құлажанов атындағы Қазақ технология және бизнес университетінде жүзеге асырылып, қазіргі заманғы білім беру талаптарына сәйкес келеді. Ол жоғары білікті мамандар даярлауға бағытталған және оқу үдерісінде қолдануға ұсынылады.

Білім беру бағдарламасын пайдалану немесе жетілдіру жөніндегі ұсыныстар

- Цифрлық технологиялар мен автоматтандырылған басқару жүйелерінің енгізілуі жөнінде қосымша курстар енгізу.
- Кәсіпкерлік және инновацияларды дамытуға арналған қосымша модульдерді әзірлеу, бұл студенттерге өнеркәсіпте ғана емес, сонымен қатар өз бизнесін дамытуға мүмкіндік береді.

Сын-пікір беруші:

"ФИРМА "SAPA-A""ЖШС басшысы

ТОО Фирма "SAPA-A"

А.Б. Туйгумбаева

Экспертное заключение
на образовательную программу 6В07223 «Технология перерабатывающих производств (по отраслям)»

АО «Казахский университет технологии и бизнеса имени К. Кулажанова»

Оценка образовательной программы (далее - ОП)

А) Соответствие ОП нормативным правовым актам МОН РК, регламентирующим академическую деятельность

Образовательная программа 6В07223 «Технология перерабатывающих производств (по отраслям)» разрабатывалась с учетом норм Государственного общеобязательного стандарта высшего и послевузовского образования Республики Казахстан, утвержденного приказом Министра науки и высшего образования от 20 июля 2022 года №2. В процессе формирования содержания учитывались профессиональные стандарты, одобренные Национальной палатой предпринимателей "Атамекен".

Б) Соответствие ОП нормативным правовым актам, регламентирующим профессиональную деятельность: НРК, ОРК, ПС, соответствие результатов обучения трудовым функциям (при отсутствии ПС)

Данная образовательная программа полностью отвечает установленным нормативным требованиям, включая Национальную рамку квалификаций (НРК), Отраслевую рамку квалификаций (ОРК) и утвержденные профессиональные стандарты "Атамекен". Учебный план разработан с учетом потребностей рынка труда и перспективных направлений развития отрасли.

В) Соответствие содержания ОП современному уровню развития отраслей экономики, сфер жизнедеятельности общества, уровню и достижениям современной науки, запросам и потребностям работодателей

Содержание образовательной программы 6В07223 «Технология перерабатывающих производств (по отраслям)» отражает актуальные тенденции в перерабатывающей промышленности, учитывает современные научные достижения, технологические инновации и запросы работодателей. ОП ориентирована на развитие компетенций, необходимых для профессионального роста выпускников.

Рекомендации по улучшению образовательной программы

Для повышения качества подготовки специалистов предлагается усилить внимание к следующим дисциплинам:

Пищевые добавки технологии хлебопекарных, макаронных и кондитерских производств; Зерноведение с основами растениеводства.

Выводы:

Образовательная программа 6В07223 «Технология перерабатывающих производств (по отраслям)» реализуемая АО "КазУТБ им. К. Кулажанова", соответствует установленным стандартам и обеспечивает подготовку высококвалифицированных специалистов. Она рекомендуется для внедрения в образовательный процесс в целях *подготовки бакалавров в области перерабатывающих технологий.*

Экспертизу провели:

доктор PhD, и.о доцента, Института ветеринарии и агротехнологии, Западно-Казахстанский аграрно-технический университет имени Жангир хана — А.К. Жумаева

Персоналмен жұмыс жөніндегі бөлімінің бастығы

қолын куәландырамын
ПЖЖ басқармасының бастығы
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