MINISTRY OF AGRICULTURE OF THE REPUBLIC OF KAZAKHSTAN
"NJSC "S. SEIFULLIN KAZAKH AGROTECHNICAL UNIVERSITY"

Approve
NJSC "Saken Seifullin Kazakh
Deputy Chairman of the Management
Board Academic Activity-Rector
_____ A.M Abdyrov.
«_____» _____ 2021.

CATALOG OF ELECTIVE COURSES

For students in groups of educational programs

Food Technology.

Nur-Sultan, 2021

MINISTRY OF AGRICULTURE OF THE REPUBLIC OF KAZAKHSTAN
"NJSC "S. SEIFULLIN KAZAKH AGROTECHNICAL UNIVERSITY"

Brief description of elective disciplines of the educational program

Business communications

1	Name of course	Technology of vegetable oils
2	Code of course	TRM 3326
3	Cycle of course	AS
4	Amount of credits	2
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Equipment for deep processing of raw materials and production of biofuels, Processes and devices of processing industries, Grain science and theoretical foundations of processing industries, Fundamentals of technologies for deep processing of raw materials and production of biofuels.
9	Postrequisites	Technochemical control of grain processing enterprises; Design of enterprises for the processing of plant raw materials and the production of biofuels; Technology of flour, cereals and mixed feeds.
10	Course summary	Formation of ideas, knowledge, skills in the field of production of vegetable oil from crop production (oilseeds) for the most rational use of grown products, taking into account its quality, reducing product losses during storage and processing(production of vegetable oil), improving the efficiency of storage and processing, expanding the range of products.
11	Learning outcomes	Features of oilseed and oilseed raw materials as an object of storage and processing – - the main storage modes of oilseed and oilseed raw materials and factors affecting their effectiveness; - the main factors affecting the quality of oilseed and oilseed raw materials during storage, the main ways to reduce losses and improve the quality of crop production in agriculture: Choose the most rational storage modes of oilseed and oilseed raw materials, taking into account its quality and purpose; - to determine the possible purpose of oilseed and oilseed raw materials for the most rational use and sale; to carry out quantitative and qualitative accounting of oilseed and oilseed raw materials during storage; - to make a plan for the placement of products during storage; - to evaluate the effectiveness of the technology of post-harvest processing and storage of oilseed and oilseed raw materials, to determine the unit costs of refining and storage of products; - to evaluate the efficiency of the main technological equipment; Special commodity, technical and technological terminology in the production of vegetable oil; - the main methods for evaluating the efficiency of the main technological equipment, - modern methods for evaluating the quality of oilseed and oilseed raw materials and vegetable oil

1	Name of course	Technology of vegetable oils
2	Code of course	TRM 4313
3	Cycle of course	AS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Equipment for deep processing of raw materials and production of biofuels, Processes and devices of processing industries, Grain science and theoretical foundations of processing industries, Fundamentals of technologies for deep processing of raw materials and production of biofuels
9	Postrequisites	Technochemical control of grain processing enterprises; Design of enterprises for processing plant raw materials and production of biofuels; Technology of flour, cereals and mixed feeds
10	Course summary	Formation of ideas, knowledge, skills in the field of production of vegetable oil from crop production (oilseeds) for the most rational use of grown products, taking into account its quality, reducing product losses during storage and processing(production of vegetable oil), improving the efficiency of storage and processing, expanding the range of products.
11	Learning outcomes	Features of oilseed and oilseed raw materials as an object of storage and processing – - the main storage modes of oilseed and oilseed raw materials and factors affecting their effectiveness; - the main factors affecting the quality of oilseed and oilseed raw materials during storage, the main ways to reduce losses and improve the quality of crop production in agriculture: Choose the most rational storage modes of oilseed and oilseed raw materials, taking into account its quality and purpose; - to determine the possible purpose of oilseed and oilseed raw materials for the most rational use and sale; to carry out quantitative and qualitative accounting of oilseed and oilseed raw materials during storage; - to make a plan for the placement of products during storage; - to evaluate the effectiveness of the technology of post-harvest processing and storage of oilseed and oilseed raw materials, to determine the unit costs of refining and storage of products; - to evaluate the efficiency of the main technological equipment; Special commodity, technical and technological terminology in the production of vegetable oil; - the main methods for evaluating the efficiency of the main technological equipment, - modern methods for evaluating the quality of oilseed and oilseed raw materials and vegetable oil

1	Name of course	Technology of milk and dairy products
2	Code of course	TMMP 3301
3	Cycle of course	AS
4	Amount of credits	2
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Commodity science of food products, Theoretical foundations of food technologies, Chemistry and biochemistry of food products, Technology of public catering products.
9	Postrequisites	Technochemical control, quality assessment and safety of meat and dairy products; Design of food production enterprises, Diploma project (work).
10	Course summary	Microbiology of milk and dairy products: general microbiology: morphology and physiology of microorganisms; the influence of the external environment on the development of microorganisms; the spread of microorganisms in nature; the role of microorganisms in the transformation of substances in nature; special microbiology: microorganisms used in the production of dairy products; pathogens of spoilage (defects) of milk and dairy products; the basics of industrial hygiene and sanitation at dairy production enterprises; microbiology of raw, drinking milk, sourdough, microbiology of fermented milk products, butter, cheese, canned milk and ice cream, dairy by-products. Biochemistry of milk and dairy products. Technology and organization of milk and dairy products production.
11	Learning outcomes	To know:- general and special microbiology, organization of sanitary and hygienic control of milk and dairy products production;– biochemical and physico-chemical processes occurring during the storage and processing of milk; - characteristics of the main and additional raw materials, auxiliary materials;– technology and organization of milk and dairy products production;– the methodology of technological calculations; - technological machines, devices and production lines of food production;– rational technological modes of operation of the equipment;– organization of technochemical control of production;– quality indicators of the main raw materials, semi-finished products, finished products and methods of their determination – - methods and criteria for assessing the nutritional value, safety of raw materials and food products; - causes of defects and defects in the products produced. Be able to: - determine the morphological, cultural, and biochemical properties of various groups of microorganisms;– conduct microbiological studies of milk and dairy products and evaluate the results obtained;– determine the chemical composition and properties of milk and dairy products in the process of their production;– select the necessary raw materials and equipment, parameters for a given technological process according to reference materials;– to carry out technological calculations for the production of milk and dairy products; - to control technological processes at all stages of production;– conduct tests to determine the organoleptic, physico-chemical quality indicators of raw materials, semi-finished products, finished products; - use the results of control of raw materials, technological process, finished products to optimize the production of milk and dairy products. Have the skills to: - work with the main technological equipment of the dairy industry; - develop technological schemes and recipes for dairy products; - solve the main scientific and technical problems and prospects for the development of milk and dairy products production.

1	Name of course	Technology of meat and meat products

2	Code of course	TMMP 3302
3	Cycle of course	AS
4	Amount of credits	2
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Chemistry, Microbiology, Chemistry and biochemistry of food products, Food production equipment, Theoretical foundations of food technologies, Physical methods of processing meat and dairy products.
9	Postrequisites	Design of food production enterprises; Diploma project (work).
10	Course summary	Improving the knowledge and professional competence of future specialists, as well as expanding the horizons about the technology of meat and meat products, the technology of production of semi-finished products, managing existing technological processes, mastering the technique of economic calculations in the design of enterprises.
11	Learning outcomes	"Know: - methods of analyzing the properties, composition and nutritional value of meat and meat products;- methods of theoretical and experimental research in the field of technology of production and processing of meat and meat products using computer technology; - optimal and rational technological modes of equipment operation;- methods of analyzing the processes of raw materials storage, production and processing in order to find out promising technological solutions for the construction, reconstruction or technical re-equipment of industry enterprises;be able to: - to improve and optimize the existing technological processes based on a systematic approach to the analysis of the quality of raw materials, the technological process and the requirements for the final product;- to analyze technological processes based on the use of a data bank of trends in the development of these processes;- to carry out technological design using CAD, which ensures the receipt of effective design developments that meet the requirements of the future development of the industry;- develop technological and technical tasks for new construction, expansion, reconstruction and technical re-equipment of the enterprise with the receipt of a given range of products, justification of the technological scheme of production, cargo flows, space-planning solutions, evaluation of technical solutions with from the point of view of technical and economic indicators, the level of unification and standardization, the level of mechanization and automation of production and labor protection;- develop monthly production programs and shift-daily planned tasks for production sites and analyze their implementation;own:- methods of technical and microbiological quality control of raw materials and finished products; - methods of managing existing technological processes of meat processing, ensuring the production of products that meet the requirements of standards;- statistical methods of processing experimental data for the analysis of technological processes in the production of various types of meat and meat products; - economic and mathematical methods and computers when performing economic calculations in the management process;have experience:- organization of production and effective work of the labor collective on the basis of modern management methods;- implementation of technical control, development of technological documentation on compliance with technological discipline in the conditions of existing production and understanding: demonstrate knowledge of technological methods of processing raw meat and semi-finished products; the main characteristics of raw materials and finished products; methods of cooling and freezing meat products;- apply the acquired knowledge on acceptance and sampling methods for quality control of meat products.

1	Name of course	Technology of meat and meat products
2	Code of course	TMMP 4307
3	Cycle of course	AS

4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Chemistry, Microbiology, Chemistry and biochemistry of food products, Food production equipment, Theoretical foundations of food technologies, Physical methods of processing meat and dairy products.
9	Postrequisites	Design of food production enterprises; Diploma project (work).
10	Course summary	Improving the knowledge and professional competence of future specialists, as well as expanding the horizons about the technology of meat and meat products, the technology of production of semi-finished products, managing existing technological processes, mastering the technique of economic calculations in the design of enterprises.
11	Learning outcomes	"Know: - methods of analyzing the properties, composition and nutritional value of meat and meat products;- methods of theoretical and experimental research in the field of technology of production and processing of meat and meat products using computer technology; - optimal and rational technological modes of equipment operation;- methods of analyzing the processes of raw materials storage, production and processing in order to find out promising technological solutions for the construction, reconstruction or technical re-equipment of industry enterprises;be able to: - to improve and optimize the existing technological processes based on a systematic approach to the analysis of the quality of raw materials, the technological process and the requirements for the final product;- to analyze technological processes based on the use of a data bank of trends in the development of these processes;- to carry out technological design using CAD, which ensures the receipt of effective design developments that meet the requirements of the future development of the industry;- develop technological and technical tasks for new construction, expansion, reconstruction and technical re-equipment of the enterprise with the receipt of a given range of products, justification of the technological scheme of production, cargo flows, space-planning solutions, evaluation of technical solutions with from the point of view of technical and economic indicators, the level of unification and standardization, the level of mechanization and automation of production and labor protection;- develop monthly production programs and shift-daily planned tasks for production sites and analyze their implementation;own:- methods of technical and microbiological quality control of raw materials and finished products; - methods of managing existing technological processes of meat processing, ensuring the production of products that meet the requirements of standards;- statistical methods of processing experimental data for the analysis of technological processes in the production of various types of meat and meat products; - economic and mathematical methods and computers when performing economic calculations in the management process;have experience:- organization of production and effective work of the labor collective on the basis of modern management methods;- implementation of technical control, development of technological documentation on compliance with technological discipline in the conditions of existing production and understanding: demonstrate knowledge of technological methods of processing raw meat and semi-finished products; the main characteristics of raw materials and finished products; methods of cooling and freezing meat products;- apply the acquired knowledge on acceptance and sampling methods for quality control of meat products.

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Brief description of elective disciplines of the educational program

Business process analysis

1	Name of course	Grain science and theoretical foundations of processing industries
2	Code of course	ZTOPP 2201
3	Cycle of course	BS
4	Amount of credits	4
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	2
8	Prerequisites	Chemistry and biochemistry of food
9	Postrequisites	Flour technology cereals and feed
10	Course summary	To be able to take a sample of grain, to make combined and daily samples of grain; to determine the quality of grain and products of its processing; to determine the content of weed and grain impurities, moisture, nature, size, uniformity of glassy, contamination and other indicators; to conduct analyses to determine the mandatory General, additional and special indicators of the quality of finished products of grain processing enterprises.
11	Learning outcomes	Uses the basics of processing technology, storage and processing of products in order to increase its efficiency in industry and production

1	Name of course	Grain science and theoretical foundations of processing industries
2	Code of course	ZTOPP 2204
3	Cycle of course	BS
4	Amount of credits	6
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	2
8	Prerequisites	Chemistry and biochemistry of food
9	Postrequisites	Flour technology cereals and feed
10	Course summary	To be able to take a sample of grain, to make combined and daily samples of grain; to determine the quality of grain and products of its processing; to determine the content of weed and grain impurities, moisture, nature, size, uniformity of glassy, contamination and other indicators; to conduct analyses to determine the mandatory General, additional and special indicators of the quality of finished products of grain processing enterprises.
11	Learning outcomes	Uses the basics of processing technology, storage and processing of products in order to increase its efficiency in industry and production

1	Name of course	Theoretical foundations of food products technologies
2	Code of course	TOTPP 2202
3	Cycle of course	BS
4	Amount of credits	4
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	2
8	Prerequisites	Chemistry and biochemistry of food
9	Postrequisites	The technology of public catering
10	Course summary	Formation of students ' General ideas about food technology. Acquisition of the necessary skills in the use of raw material processing methods in the production of meat and dairy products. Ability to make General technological schemes of production of meat and dairy products, to be competent in the production of food products from raw materials of animal and vegetable origin.
11	Learning outcomes	Uses the basics of processing technology, storage and processing of products in order to increase its efficiency in industry and production

1	Name of course	Theoretical foundations of food products technologies

2	Code of course	TOTPP 2206
3	Cycle of course	BS
4	Amount of credits	6
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	2
8	Prerequisites	Chemistry and biochemistry of food
9	Postrequisites	The technology of public catering
10	Course summary	Formation of students ' General ideas about food technology. Acquisition of the necessary skills in the use of raw material processing methods in the production of meat and dairy products. Ability to make General technological schemes of production of meat and dairy products, to be competent in the production of food products from raw materials of animal and vegetable origin
11	Learning outcomes	Uses the basics of processing technology, storage and processing of products in order to increase its efficiency in industry and production

1	Name of course	Elevator-warehousing, processing and storage of crop production
2	Code of course	ESHOHPR 3212
3	Cycle of course	BS
4	Amount of credits	3

5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Grain science and theoretical foundations of processing industries
9	Postrequisites	Lifting and transporting equipment and ventilation systems for grain storage and processing enterprises
10	Course summary	The ability to correctly assess the physical,chemical and technological advantages of crop production; to develop technological methods for the organization and conduct of post-harvest processing; to observe the modes of storage of crop production; to evaluate the effectiveness of the equipment at all stages of the process. Making a judgment and possession of a certain opinion in the field of Elevator and warehouse management, technology of storage of crop production.
11	Learning outcomes	Uses the basics of processing technology, storage and processing of products in order to increase its efficiency in industry and production

1	Name of course	Commodity of food products
2	Code of course	TPP 3211
3	Cycle of course	BS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Theoretical foundations of food products technologies
9	Postrequisites	Physico-chemical methods of processing dairy products

10	Course summary	The student must know the basics and methods of commodity science, methods of quality control of goods, chemical composition, consumer merits of food products, physical properties of food products, food storage conditions, classification and range of food products; possess the skills of organization and conduct of commodity assessment of food products, based on the use of modern methods and technologies.
11	Learning outcomes	Is able to organize technological process at the enterprises of food and processing branch, to make organizational and administrative decisions, to carry out works on standardization and preparation of production for carrying out procedure of confirmation of compliance in the sphere of professional activity

1	Name of course	Fundamentals of technologies for deep processing of vegetable raw materials
2	Code of course	OTPGPRS 3242
3	Cycle of course	BS
4	Amount of credits	2
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Elevator-warehousing, processing and storage of crop production
9	Postrequisites	Equipment for deep processing of raw materials and biofuels production
10	Course summary	The student must be able to make technological schemes, layout of equipment and carry out calculations taking into account the peculiarities of production technologies for deep processing of raw materials and biofuels. The student must have the skills for self-preparation of technological schemes and rational organization of production, development of recommendations to improve the profitability of products for deep processing of plant raw materials and biofuel production.
11	Learning outcomes	Uses the basics of processing technology, storage and processing of products in order to increase its efficiency in industry and production

1	Name of course	Fundamentals of technologies for deep processing of vegetable raw materials
2	Code of course	OTPGPRS 3243
3	Cycle of course	BS
4	Amount of credits	4
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Theoretical foundations of food products technologies
9	Postrequisites	Design of food production enterprises
10	Course summary	The student must be able to make technological schemes, layout of equipment and carry out calculations taking into account the peculiarities of production technologies for deep processing of raw materials and biofuels. The student must have the skills for self-preparation of technological schemes and rational organization of production, development of recommendations to improve the profitability of products for deep processing of plant raw materials and biofuel production.
11	Learning outcomes	Uses the basics of processing technology, storage and processing of products in order to increase its efficiency in industry and production

1	Name of course	Fundamentals of technologies for deep processing of raw materials of animal origin
2	Code of course	OTPGPSZhP 3242
3	Cycle of course	BS
4	Amount of credits	2
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Theoretical foundations of food products technologies
9	Postrequisites	Equipment for deep processing of raw materials and biofuels production
10	Course summary	The student must be able to make technological schemes, layout of equipment and carry out calculations taking into account the peculiarities of production technologies for deep processing of raw materials and biofuels. The student must have the skills for self-preparation of technological schemes and rational organization of production, development of recommendations to improve the profitability of products for deep processing of plant raw materials and biofuel production.
11	Learning outcomes	Uses the basics of processing technology, storage and processing of products in order to increase its efficiency in industry and production

1	Name of course	Fundamentals of technologies for deep processing of raw materials of animal origin
2	Code of course	OTPGPSZhP 3243
3	Cycle of course	BS
4	Amount of credits	4
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Theoretical foundations of food products technologies
9	Postrequisites	Design of food production enterprises
10	Course summary	The student must be able to make technological schemes, layout of equipment and carry out calculations taking into account the peculiarities of production technologies for deep processing of raw materials and biofuels. The student must have the skills for self-preparation of technological schemes and rational organization of production, development of recommendations to improve the profitability of products for deep processing of plant raw materials and biofuel production.
11	Learning outcomes	Uses the basics of processing technology, storage and processing of products in order to increase its efficiency in industry and production

1	Name of course	Physico-chemical methods of processing dairy products
2	Code of course	FHMOPP 3240
3	Cycle of course	BS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Grain science and theoretical foundations of processing industries
9	Postrequisites	Designing plants for the processing of vegetable raw materials and the production of biofuels
10	Course summary	The student must know the electrophysical, structural,mechanical and thermal properties; features of the use of modern physical processing methods in various processes; installation and apparatus for physical processing of food raw materials and finished products. To have the skills to choose physical methods of processing meat and dairy products, determine the properties, the influence of technological factors on the properties of the finished product.
11	Learning outcomes	Able to organize and carry out quality control, process parameters and methods of processing of raw materials and finished products

1	Name of course	Physico-chemical methods of processing dairy products
2	Code of course	FHMOPP 3241
3	Cycle of course	BS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Theoretical foundations of food products technologies
9	Postrequisites	Flour technology cereals and feed
10	Course summary	The student must know the electrophysical, structural,mechanical and thermal properties; features of the use of modern physical processing methods in various processes; installation and apparatus for physical processing of food raw materials and finished products. To have the skills to choose physical methods of processing meat and dairy products, determine the properties, the influence of technological factors on the properties of the finished product.
11	Learning outcomes	Able to organize and carry out quality control, process parameters and methods of processing of raw materials and finished products

1	Name of course	The technology of public catering
2	Code of course	TPOP 3325

3	Cycle of course	AS
4	Amount of credits	2
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Chemistry, Microbiology, Chemistry and biochemistry of food products, Theoretical foundations of food technologies.
9	Postrequisites	Technology of meat and meat products; Technology of milk and dairy products; Design of food production enterprises; Diploma project (work).
10	Course summary	Folk cuisine and professional cooking. Modern trends in the development of public catering. Development of the theoretical foundations of the technology of public catering products. Technological properties of raw materials, Methods of culinary processing of food products, Classification and assortment of culinary products. Menu. Organization of production work in restaurants and bars. Types and characteristics of retail premises of restaurants and bars. Tableware, appliances and linen. Purpose and use. Processes that form the quality of public catering products. Regulatory documentation at public catering enterprises, technological maps, collections of recipes, brackerage. Vegetables, their primary processing and technological use. Changes in the storage of vegetables. Processing of vegetables, fruits, mushrooms. Technological properties of vegetables. Centralized production of vegetable semi-finished products. Processing of fish and non-fish water raw materials. Characteristics, structure and composition of fish muscle tissue. Processing and preparation of semi-finished products, the requirement for the quality of semi-finished products. The processes that occur during the heat treatment of fish. Meat processing. Characteristics, structure and composition of the muscle tissue of meat. Butchering of carcasses. The importance of meat dishes in the diet.
11	Learning outcomes	To know: modern ideas about the technology of cooking; about the cuisine of the peoples of the world, the peculiarities of children's, school, dietary and therapeutic-preventive nutrition; methods of culinary processing of various types of raw materials; classification, assortment, recipe, quality requirements; technological processes of production of culinary products; rules for registration, vacation, storage, sale of dishes and culinary products; processes that form the quality of products; types and methods for determining the falsification of raw materials and finished products; rules of labor protection and safety at work in the laboratory.Be able to:evaluate the quality of raw materials and culinary products at all stages of the technological process; organize the effective work of production workshops; prepare a range of culinary products taking into account the requirements of regulatory documentation; apply waste-free and low-waste technologies; identify falsification of raw materials; apply rational methods of control and evaluation of the quality of food raw materials.Have the following skills: organization of production and customer service; preparation of a wide range of culinary products; work with regulatory documents.

1	Name of course	The technology of public catering
2	Code of course	TPOP 4310
3	Cycle of course	AS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products

7	Year	4
8	Prerequisites	Chemistry, Microbiology, Chemistry and biochemistry of food products, Theoretical foundations of food technologies.
9	Postrequisites	Technology of meat and meat products; Technology of milk and dairy products; Design of food production enterprises; Diploma project (work).
10	Course summary	Folk cuisine and professional cooking. Modern trends in the development of public catering. Development of the theoretical foundations of the technology of public catering products. Technological properties of raw materials, Methods of culinary processing of food products, Classification and assortment of culinary products. Menu. Organization of production work in restaurants and bars. Types and characteristics of retail premises of restaurants and bars. Tableware, appliances and linen. Purpose and use. Processes that form the quality of public catering products. Regulatory documentation at public catering enterprises, technological maps, collections of recipes, brackerage. Vegetables, their primary processing and technological use. Changes in the storage of vegetables. Processing of vegetables, fruits, mushrooms. Technological properties of vegetables. Centralized production of vegetable semi-finished products. Processing of fish and non-fish water raw materials. Characteristics, structure and composition of fish muscle tissue. Processing and preparation of semi-finished products, the requirement for the quality of semi-finished products. The processes that occur during the heat treatment of fish. Meat processing. Characteristics, structure and composition of the muscle tissue of meat. Butchering of carcasses. The importance of meat dishes in the diet.
11	Learning outcomes	To know: modern ideas about the technology of cooking; about the cuisine of the peoples of the world, the peculiarities of children's, school, dietary and therapeutic-preventive nutrition; methods of culinary processing of various types of raw materials; classification, assortment, recipe, quality requirements; technological processes of production of culinary products; rules for registration, vacation, storage, sale of dishes and culinary products; processes that form the quality of products; types and methods for determining the falsification of raw materials and finished products; rules of labor protection and safety at work in the laboratory.Be able to:evaluate the quality of raw materials and culinary products at all stages of the technological process; organize the effective work of production workshops; prepare a range of culinary products taking into account the requirements of regulatory documentation; apply waste-free and low-waste technologies; identify falsification of raw materials; apply rational methods of control and evaluation of the quality of food raw materials.Have the following skills: organization of production and customer service; preparation of a wide range of culinary products; work with regulatory documents.

1	Name of course	The technology of public catering
2	Code of course	TPOP 4314
3	Cycle of course	AS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Chemistry, Microbiology, Chemistry and biochemistry of food products, Theoretical foundations of food technologies.
9	Postrequisites	Technology of meat and meat products; Technology of milk and dairy products; Design of food production enterprises; Diploma project (work).

10	Course summary	Folk cuisine and professional cooking. Modern trends in the development of public catering. Development of the theoretical foundations of the technology of public catering products. Technological properties of raw materials, Methods of culinary processing of food products, Classification and assortment of culinary products. Menu. Organization of production work in restaurants and bars. Types and characteristics of retail premises of restaurants and bars. Tableware, appliances and linen. Purpose and use. Processes that form the quality of public catering products. Regulatory documentation at public catering enterprises, technological maps, collections of recipes, brackerage. Vegetables, their primary processing and technological use. Changes in the storage of vegetables. Processing of vegetables, fruits, mushrooms. Technological properties of vegetables. Centralized production of vegetable semi-finished products. Processing of fish and non-fish water raw materials. Characteristics, structure and composition of fish muscle tissue. Processing and preparation of semi-finished products, the requirement for the quality of semi-finished products. The processes that occur during the heat treatment of fish. Meat processing. Characteristics, structure and composition of the muscle tissue of meat. Butchering of carcasses. The importance of meat dishes in the diet.
11	Learning outcomes	To know: modern ideas about the technology of cooking; about the cuisine of the peoples of the world, the peculiarities of children's, school, dietary and therapeutic-preventive nutrition; methods of culinary processing of various types of raw materials; classification, assortment, recipe, quality requirements; technological processes of production of culinary products; rules for registration, vacation, storage, sale of dishes and culinary products; processes that form the quality of products; types and methods for determining the falsification of raw materials and finished products; rules of labor protection and safety at work in the laboratory.Be able to:evaluate the quality of raw materials and culinary products at all stages of the technological process; organize the effective work of production workshops; prepare a range of culinary products taking into account the requirements of regulatory documentation; apply waste-free and low-waste technologies; identify falsification of raw materials; apply rational methods of control and evaluation of the quality of food raw materials.Have the following skills: organization of production and customer service; preparation of a wide range of culinary products; work with regulatory documents.

1	Name of course	Electrical engineering and bases of electronics
2	Code of course	EOE 2225
3	Cycle of course	BS
4	Amount of credits	4
5	Level of preparation	Undergraduate studies
6	Department	The Department of Electric Power Supply
7	Year	2
8	Prerequisites	Physics
9	Postrequisites	Equipments for food products
10	Course summary	Linear electrical circuit and its components. Basic laws and methods for calculating electrical circuits. Electromagnetic calculations of magnetic circuits with constant magnetomotive force. Features of the operation of magnetic circuits with variable magnetomotive force. An idealized and real-life inductor with a ferromagnetic core. Parallel operation of synchronous generators. Modes of operation and calculation of the main parameters of synchronous machines. Semiconductor element base of modern electronic devices: diodes, transistors, thyristors. Single-phase half-wave and full-wave rectifiers. Sources of secondary power supply. Amplifier stages on transistors. DC amplifiers. Operational amplifiers. Basic logical elements of a computer and logical functions.

11	Learning outcomes	Knows how to read and draw up electrical diagrams of electrical substations and networks; Knows the principles of choosing electrical and electronic devices and devices; Knows the principles of operation, the device, the main characteristics of electrical and electronic devices and devices; Knows how to perform the main types of work on the maintenance of transformers and converters of electrical energy. To carry out the main types of work on the maintenance of equipment for switchgears of electrical installations, relay protection systems and automated systems; Knows how to perform the main types of work on the maintenance of air and cable power supply lines. Knows how to properly operate electrical equipment and mechanisms for transmitting the movement of technological machines and apparatus, knows how to take readings and use electrical measuring instruments and devices He is able to organize and carry out the main types of work on the maintenance of equipment for switchgears of electrical installations, relay protection systems and automated systems using the basics of electrical engineering and electronics.

1	Name of course	Thermal and refrigerating equipment of food production
2	Code of course	THOPP 2227
3	Cycle of course	BS
4	Amount of credits	4
5	Level of preparation	Undergraduate studies
6	Department	The Department of Electric Power Supply
7	Year	2
8	Prerequisites	Physics
9	Postrequisites	Equipments for food products
10	Course summary	Classification of equipment for processes and apparatuses used for primary and deep processing of grain. Theory of hydro and pneumatic processes and design features, principle of operation, basic calculations of devices for the implementation of these processes. Theory of hydromechanical processes and design features, principle of operation, basic calculations of devices for the implementation of these processes Theory of heat and mass transfer processes and design features, principle of operation, basic calculations of devices for the implementation of these processes Theory of mechanical and biochemical processes and design features, principle of operation, basic calculations devices for the implementation of these processes.
11	Learning outcomes	Knows how to ensure the rational selection and correct operation of technological equipment Knows how to assess the efficiency of using technological equipment; Knows how to work with technical, operational and technical documentation; Knows how to operate technological equipment in compliance with safety rules; Knows about the latest achievements of scientific and technological progress in the industry; Knows the regulations governing the use of heating and refrigeration equipment. Knows the classification, types, purpose, arrangement of the main units and the principle of operation of heating and refrigeration equipment; Knows the safety rules for the operation of the equipment; Knows the competitiveness and principles of selection of modern equipment.

1	Name of course	Fundamentals of Scientific Research Food products
2	Code of course	ONIPP 3214
3	Cycle of course	BS
4	Amount of credits	6
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Theoretical foundations of food products technologies
9	Postrequisites	Design of food production enterprises
10	Course summary	Ability to work with scientific,technical and reference literature; use the latest scientific achievements to carry out research on the problems of the food industry. To have information on new developments in the field of food technologies; on technologies for obtaining raw materials and finished food products; issues of modeling of technological processes. Acquisition of research skills in the field of food technology.
11	Learning outcomes	Demonstrates the ability to develop measures to improve the technological processes of production and is able to use the laws of mathematical modeling of processes in the design and research

1	Name of course	Lifting and transporting equipment and ventilation systems for grain storage and processing enterprises
2	Code of course	PTUVUPPHPZ 3215
3	Cycle of course	BS
4	Amount of credits	6
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Grain science and theoretical foundations of processing industries
9	Postrequisites	Design of food production enterprises
10	Course summary	Be able to apply knowledge and understanding in the calculation of the main ventilation, pneumatic transport and handling equipment in the design of networks in the flour, cereals and feed mills. Know the technical documentation about the possibilities of using a particular ventilation, pneumatic transport and lifting and transport installation, justify the choice of lifting vehicles for the mechanization of labor-intensive processes in grain processing plants.
11	Learning outcomes	Ability to work with various types of equipment in accordance with safety requirements

1	Name of course	Technology of post-harvest processing of grain and grain drying
2	Code of course	TPOZZ 3218
3	Cycle of course	BS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Grain science and theoretical foundations of processing industries
9	Postrequisites	Design of food production enterprises
10	Course summary	The ability to correctly assess the physical,chemical and technological advantages of grain and finished products; to develop technological methods for the organization and conduct of post-harvest processing and drying of grain; to comply with the storage and drying of grain and its products for maximum safety of quality; to evaluate the effectiveness of the equipment at all stages of the process.
11	Learning outcomes	Uses the basics of processing technology, storage and processing of products in order to increase its efficiency in industry and production

1	Name of course	Technology of post-harvest processing of grain and grain drying
2	Code of course	TPOZZ 3222
3	Cycle of course	BS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Grain science and theoretical foundations of processing industries
9	Postrequisites	Design of food production enterprises
10	Course summary	The ability to correctly assess the physical,chemical and technological advantages of grain and finished products; to develop technological methods for the organization and conduct of post-harvest processing and drying of grain; to comply with the storage and drying of grain and its products for maximum safety of quality; to evaluate the effectiveness of the equipment at all stages of the process.
11	Learning outcomes	Uses the basics of processing technology, storage and processing of products in order to increase its efficiency in industry and production

1	Name of course	Technology of bread and pasta products
2	Code of course	THMI 3303
3	Cycle of course	AS

4	Amount of credits	2
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Grain science and theoretical foundations of processing industries, Technology of post-harvest grain processing and grain drying, Technology of flour, cereals and mixed feeds
9	Postrequisites	Design of plants for the processing of plant raw materials and the production of biofuels
10	Course summary	Technology of bread, flour confectionery and pasta: theoretical knowledge in the field of technology of bakery, confectionery and pasta production; analysis of modern technologies and evaluation of their effectiveness; chemical composition, organoleptic and physico-chemical properties of raw materials and its baking qualities; modern methods of quality of finished products; ways to improve the quality and nutritional value of products; the range of bread and pasta, their nutritional value; technological processes for obtaining products of bakery and pasta production; features of the technological process of preparing various types of confectionery products; interchangeability of various types of raw materials and replacement rules; accounting and analysis of the consumption of raw materials and packaging materials
11	Learning outcomes	"to know: - methods of theoretical and experimental research in the field of chemistry of bread, confectionery and pasta, technologies of their production and processing using computer technology; - optimal and rational technological modes of equipment operation;- methods of analyzing the processes of raw material storage, production and processing of products in order to find out promising technological solutions for the construction, reconstruction or technical re-equipment of industry enterprises;be able to: - to improve and optimize the existing technological processes based on a systematic approach to the analysis of the quality of raw materials, the technological process and the requirements for the final product; - to analyze technological processes based on the use of a data bank of trends in the development of these processes;- to carry out technological design using CAD, which ensures the receipt of effective design developments that meet the requirements of the future development of the industry;- to develop technological processes characterized by the absence of harmful substances released into the environment, improvement of the air and water purification system from harmful impurities, the use of automatic environmental monitoring tools; - develop measures to prevent the occurrence of defects and defects of manufactured products; - develop monthly production programs and shift-daily planned tasks for production sites and analyze their implementation. own:- methods of managing existing technological processes production of bread, confectionery and pasta, ensuring the production of products that meet the requirements of standards; - statistical methods of processing experimental data for the analysis of technological processes in the production of bread, confectionery and pasta; - progressive methods of operation of technological equipment for the storage of raw materials, production of bread, confectionery and pasta; - economic and mathematical methods and computers when performing economic calculations in the management process; have experience in: - conducting standard tests to determine the physical and chemical properties of raw materials, bread, confectionery and pasta products; - evaluating the operational capabilities of technological equipment;- implementation of technical control, development of technological documentation on compliance with technological discipline in the conditions of existing production.- organization of production and effective work of the labor collective on the basis of modern management methods. "

1	Name of course	Technology of bread and pasta products
2	Code of course	THMI 4308
3	Cycle of course	AS
4	Amount of credits	3

5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Grain science and theoretical foundations of processing industries, Technology of post-harvest grain processing and grain drying, Technology of flour, cereals and mixed feeds
9	Postrequisites	Design of plants for the processing of plant raw materials and the production of biofuels
10	Course summary	Technology of bread, flour confectionery and pasta: theoretical knowledge in the field of technology of bakery, confectionery and pasta production; analysis of modern technologies and evaluation of their effectiveness; chemical composition, organoleptic and physico-chemical properties of raw materials and its baking qualities; modern methods of quality of finished products; ways to improve the quality and nutritional value of products; the range of bread and pasta, their nutritional value; technological processes for obtaining products of bakery and pasta production; features of the technological process of preparing various types of confectionery products; interchangeability of various types of raw materials and replacement rules; accounting and analysis of the consumption of raw materials and packaging materials
11	Learning outcomes	"to know: - methods of theoretical and experimental research in the field of chemistry of bread, confectionery and pasta, technologies of their production and processing using computer technology; - optimal and rational technological modes of equipment operation;- methods of analyzing the processes of raw material storage, production and processing of products in order to find out promising technological solutions for the construction, reconstruction or technical re-equipment of industry enterprises;be able to: - to improve and optimize the existing technological processes based on a systematic approach to the analysis of the quality of raw materials, the technological process and the requirements for the final product; - to analyze technological processes based on the use of a data bank of trends in the development of these processes;- to carry out technological design using CAD, which ensures the receipt of effective design developments that meet the requirements of the future development of the industry;- to develop technological processes characterized by the absence of harmful substances released into the environment, improvement of the air and water purification system from harmful impurities, the use of automatic environmental monitoring tools; - develop measures to prevent the occurrence of defects and defects of manufactured products; - develop monthly production programs and shift-daily planned tasks for production sites and analyze their implementation. own:- methods of managing existing technological processes production of bread, confectionery and pasta, ensuring the production of products that meet the requirements of standards; - statistical methods of processing experimental data for the analysis of technological processes in the production of bread, confectionery and pasta; - progressive methods of operation of technological equipment for the storage of raw materials, production of bread, confectionery and pasta; - economic and mathematical methods and computers when performing economic calculations in the management process; have experience in: - conducting standard tests to determine the physical and chemical properties of raw materials, bread, confectionery and pasta products; - evaluating the operational capabilities of technological equipment;- implementation of technical control, development of technological documentation on compliance with technological discipline in the conditions of existing production.- organization of production and effective work of the labor collective on the basis of modern management methods. "

1	Name of course	Flour technology cereals and feed
2	Code of course	TMKK 3304
3	Cycle of course	AS
4	Amount of credits	2
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products

7	Year	3
8	Prerequisites	Equipment for deep processing of raw materials and production of biofuels, Grain science and theoretical foundations of processing industries, Fundamentals of technologies for deep processing of raw materials and production of biofuels, Elevator and warehouse management and storage of crop production,
9	Postrequisites	Technochemical control of grain processing enterprises; Design of enterprises for the processing of plant raw materials and the production of biofuels; Diploma project (work).
10	Course summary	The purpose of teaching the discipline "Technology of flour, cereals and mixed feeds" provides for the acquisition by students of theoretical knowledge and practical skills in the technology of processing grain into flour, cereals and mixed feeds. When studying the discipline, special attention should be paid to the principles and methods of flour, cereals and mixed feeds technology, theoretical provisions on which engineering variants of technological operations of the processes of cleaning, preparing and grinding grain and peeling grain of cereals are based, which can be used in their subsequent work. Modes of cleaning and preparing grain for processing. Requirements of flour and grain mills for raw materials. Rules for the organization and management of technological processes at mills, cereals and feed mills. To study traditional and non-traditional types of raw materials for the production of compound feeds, the rules for their reception, placement and storage. Technological lines of feed mills. Classic and other schemes of mixed feed production
11	Learning outcomes	As a result of studying this course, students should: Know: types and features of raw materials for the production of flour, cereals and mixed feeds; features of making grinding batches of grain in the production of flour and cereals; principles of constructing technological schemes for preparing raw materials for the production of flour, cereals and mixed feeds; principles of constructing schemes of the grinding department of mills and the peeling department of grain mills; rules for receiving, processing and storing raw materials of mixed feed production; principles of constructing technological lines of mixed feed production; qualitative characteristics of finished products of flour mills, cereals and feed mills; new technologies and equipment of flour mills,cereals and feed mills. Be able to:the ability to use in practice the main technological properties of grain of various crops in the production of flour, cereals and all types of raw materials in the production of compound feeds: At the same time, take into account the following properties of grain: moisture, nature, vitreous, the amount and quality of gluten, the content of various impurities, structural and mechanical properties, flour and baking properties, etc. Be able to set the modes of GTO of grain, the modes of grinding and sieving of grinding products, the modes of dry and wet processing of grain, the modes of peeling, fractionation, steaming, etc. Have the following skills: acquisition of practical skills in the production of various types of compound feeds; acquisition of practical skills in the processing of grain into cereals; acquisition of practical skills in the processing of grain into flour. The ability to compare, formulate conclusions, build their own arguments, express their position on the conduct of technological processes for the production of mixed feeds, flour and cereals.

1	Name of course	Flour technology cereals and feed
2	Code of course	TMKK 4309
3	Cycle of course	AS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Equipment for deep processing of raw materials and production of biofuels, Grain science and theoretical foundations of processing industries, Fundamentals of technologies for deep processing of raw materials and production of biofuels, Elevator and warehouse management and storage of crop production,

9	Postrequisites	Technochemical control of grain processing enterprises; Design of enterprises for the processing of plant raw materials and the production of biofuels; Diploma project (work).
10	Course summary	The purpose of teaching the discipline "Technology of flour, cereals and mixed feeds" provides for the acquisition by students of theoretical knowledge and practical skills in the technology of processing grain into flour, cereals and mixed feeds. When studying the discipline, special attention should be paid to the principles and methods of flour, cereals and mixed feeds technology, theoretical provisions on which engineering variants of technological operations of the processes of cleaning, preparing and grinding grain and peeling grain of cereals are based, which can be used in their subsequent work. Modes of cleaning and preparing grain for processing. Requirements of flour and grain mills for raw materials. Rules for the organization and management of technological processes at mills, cereals and feed mills. To study traditional and non-traditional types of raw materials for the production of compound feeds, the rules for their reception, placement and storage. Technological lines of feed mills. Classic and other schemes of mixed feed production
11	Learning outcomes	As a result of studying this course, students should: Know: types and features of raw materials for the production of flour, cereals and mixed feeds; features of making grinding batches of grain in the production of flour and cereals; principles of constructing technological schemes for preparing raw materials for the production of flour, cereals and mixed feeds; principles of constructing schemes of the grinding department of mills and the peeling department of grain mills; rules for receiving, processing and storing raw materials of mixed feed production; principles of constructing technological lines of mixed feed production; qualitative characteristics of finished products of flour mills, cereals and feed mills; new technologies and equipment of flour mills,cereals and feed mills. Be able to:the ability to use in practice the main technological properties of grain of various crops in the production of flour, cereals and all types of raw materials in the production of compound feeds: At the same time, take into account the following properties of grain: moisture, nature, vitreous, the amount and quality of gluten, the content of various impurities, structural and mechanical properties, flour and baking properties, etc. Be able to set the modes of GTO of grain, the modes of grinding and sieving of grinding products, the modes of dry and wet processing of grain, the modes of peeling, fractionation, steaming, etc. Have the following skills: acquisition of practical skills in the production of various types of compound feeds; acquisition of practical skills in the processing of grain into cereals; acquisition of practical skills in the processing of grain into flour. The ability to compare, formulate conclusions, build their own arguments, express their position on the conduct of technological processes for the production of mixed feeds, flour and cereals.

1	Name of course	Flour technology cereals and feed
2	Code of course	TMKK 4312
3	Cycle of course	AS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Grain science and theoretical foundations of processing industries
9	Postrequisites	Designing plants for the processing of vegetable raw materials and the production of biofuels
10	Course summary	Know the technology of production of flour, cereals, animal feed. Gain practical skills in the production of various types of feed; acquire skills in the processing of grain into cereals, flour. Have knowledge of methods for determining the physical and chemical properties of flour, cereals and animal feed, be able to use the regulatory and technical documentation for the industry.
11	Learning outcomes	Based on the latest scientific trends can implement new technologies to ensure the rational use of raw materials, a wide range of new food products

1	Name of course	Equipments for food products
2	Code of course	OPPP 3207
3	Cycle of course	BS
4	Amount of credits	7
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Physics
9	Postrequisites	Processes and devices of food products
10	Course summary	To be able to control the operation of the machine and apparatus and process lines as a whole; to assess the technical condition of the machine; to perform basic calculations and make the necessary technical documentation; to design and construct technological equipment; to confirm by engineering calculations the compliance of the equipment with the conditions of the technological process and production requirements. Be able to analyze the conditions, adjust the mode of operation of technological equipment;
11	Learning outcomes	Ability to work with various types of equipment in accordance with safety requirements

1	Name of course	Processes and devices of processing industries
2	Code of course	PAPP 3208
3	Cycle of course	BS
4	Amount of credits	6
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Physics
9	Postrequisites	Equipment for deep processing of raw materials and biofuels production
10	Course summary	Processes of production of products of primary and deep processing of grain are studied. Information on hydraulic, hydro-mechanical, thermal, mass transfer, physico-chemical and mechanical processes and their classification is given. The theory of the main processes, methods of calculation of devices and machines, devices and the principle of operation of various devices intended for the implementation of the production of primary and deep processing of grain.
11	Learning outcomes	Demonstrates the ability to develop measures to improve the technological processes of production and is able to use the laws of mathematical modeling of processes in the design and research

1	Name of course	Processes and devices of food products
2	Code of course	PAPP 3209
3	Cycle of course	BS
4	Amount of credits	6
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Physics
9	Postrequisites	Equipment for deep processing of raw materials and biofuels production
10	Course summary	The processes of production of meat and dairy products, different chemical nature and physical properties of the starting substances, intermediate and final products, as well as the nature and conditions of the flow of technological parameters are studied. For its intended purpose, the course logically connects General chemical, General engineering disciplines and courses of meat and milk production technology.
11	Learning outcomes	Demonstrates the ability to develop measures to improve the technological processes of production and is able to use the laws of mathematical modeling of processes in the design and research

1	Name of course	Equipment for deep processing of raw materials and biofuels production
2	Code of course	ODGPSPB 3210
3	Cycle of course	BS
4	Amount of credits	7
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Processes and devices of food products
9	Postrequisites	Design of food production enterprises
10	Course summary	The student must be able to independently study the design, the basic elements, the principle of operation, the advantages and disadvantages of equipment for deep processing of plant raw materials and the production of biofuels for their rational use in technological schemes of production. The student must have the skills of rational use of equipment for deep processing of plant raw materials and production of biofuels in technological schemes in compliance with the requirements of technology
11	Learning outcomes	Ability to work with various types of equipment in accordance with safety requirements

1	Name of course	Technology of vegetable oils
2	Code of course	TRM 4305
3	Cycle of course	AS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Equipment for deep processing of raw materials and production of biofuels, Processes and devices of processing industries, Grain science and theoretical foundations of processing industries, Fundamentals of technologies for deep processing of raw materials and production of biofuels
9	Postrequisites	Technochemical control of grain processing enterprises; Design of enterprises for processing plant raw materials and production of biofuels; Technology of flour, cereals and mixed feeds
10	Course summary	Formation of ideas, knowledge, skills in the field of production of vegetable oil from crop production (oilseeds) for the most rational use of grown products, taking into account its quality, reducing product losses during storage and processing(production of vegetable oil), improving the efficiency of storage and processing, expanding the range of products.
11	Learning outcomes	Features of oilseed and oilseed raw materials as an object of storage and processing – - the main storage modes of oilseed and oilseed raw materials and factors affecting their effectiveness; - the main factors affecting the quality of oilseed and oilseed raw materials during storage, the main ways to reduce losses and improve the quality of crop production in agriculture: Choose the most rational storage modes of oilseed and oilseed raw materials, taking into account its quality and purpose; - to determine the possible purpose of oilseed and oilseed raw materials for the most rational use and sale; to carry out quantitative and qualitative accounting of oilseed and oilseed raw materials during storage; - to make a plan for the placement of products during storage; - to evaluate the effectiveness of the technology of post-harvest processing and storage of oilseed and oilseed raw materials, to determine the unit costs of refining and storage of products; - to evaluate the efficiency of the main technological equipment; Special commodity, technical and technological terminology in the production of vegetable oil; - the main methods for evaluating the efficiency of the main technological equipment, - modern methods for evaluating the quality of oilseed and oilseed raw materials and vegetable oil

1	Name of course	Technochemical control, quality assessment and safety of meat and dairy products

2	Code of course	TKOKBMMP 3219
3	Cycle of course	BS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Theoretical foundations of food products technologies
9	Postrequisites	Design of food production enterprises
10	Course summary	Ability to use methods of technochemical quality control of raw materials and finished products in practice; to use theoretical knowledge in the production of food. Skills in determining various indicators of quality and safety of raw materials and finished products; control of the main indicators of quality and food safety
11	Learning outcomes	Able to organize and carry out quality control, process parameters and methods of processing of raw materials and finished products

1	Name of course	Technochemical control, quality assessment and safety of meat and dairy products
2	Code of course	TKOKBMMP 4223
3	Cycle of course	BS
4	Amount of credits	6
5	Level of preparation	Undergraduate studies

6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Theoretical foundations of food products technologies
9	Postrequisites	Design of food production enterprises
10	Course summary	Ability to use methods of technochemical quality control of raw materials and finished products in practice; to use theoretical knowledge in the production of food. Skills in determining various indicators of quality and safety of raw materials and finished products; control of the main indicators of quality and food safety.
11	Learning outcomes	Able to organize and carry out quality control, process parameters and methods of processing of raw materials and finished products

1	Name of course	Technology of milk and dairy products
2	Code of course	TMMP 4306
3	Cycle of course	AS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Commodity science of food products, Theoretical foundations of food technologies, Chemistry and biochemistry of food products, Technology of public catering products.
9	Postrequisites	Technochemical control, quality assessment and safety of meat and dairy products; Design of food production enterprises, Diploma project (work).

10	Course summary	Microbiology of milk and dairy products: general microbiology: morphology and physiology of microorganisms; the influence of the external environment on the development of microorganisms; the spread of microorganisms in nature; the role of microorganisms in the transformation of substances in nature; special microbiology: microorganisms used in the production of dairy products; pathogens of spoilage (defects) of milk and dairy products; the basics of industrial hygiene and sanitation at dairy production enterprises; microbiology of raw, drinking milk, sourdough, microbiology of fermented milk products, butter, cheese, canned milk and ice cream, dairy by-products. Biochemistry of milk and dairy products. Technology and organization of milk and dairy products production.
11	Learning outcomes	To know:- general and special microbiology, organization of sanitary and hygienic control of milk and dairy products production;– biochemical and physico-chemical processes occurring during the storage and processing of milk; - characteristics of the main and additional raw materials, auxiliary materials;– technology and organization of milk and dairy products production;– the methodology of technological calculations; - technological machines, devices and production lines of food production;– rational technological modes of operation of the equipment;– organization of technochemical control of production;– quality indicators of the main raw materials, semi-finished products, finished products and methods of their determination – - methods and criteria for assessing the nutritional value, safety of raw materials and food products; - causes of defects and defects in the products produced. Be able to: - determine the morphological, cultural, and biochemical properties of various groups of microorganisms;– conduct microbiological studies of milk and dairy products and evaluate the results obtained;– determine the chemical composition and properties of milk and dairy products in the process of their production;– select the necessary raw materials and equipment, parameters for a given technological process according to reference materials;– to carry out technological calculations for the production of milk and dairy products; - to control technological processes at all stages of production;– conduct tests to determine the organoleptic, physico-chemical quality indicators of raw materials, semi-finished products, finished products; - use the results of control of raw materials, technological process, finished products to optimize the production of milk and dairy products. Have the skills to: - work with the main technological equipment of the dairy industry; - develop technological schemes and recipes for dairy products; - solve the main scientific and technical problems and prospects for the development of milk and dairy products production.

1	Name of course	Technology of milk and dairy products
2	Code of course	TMMP 4316
3	Cycle of course	AS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Commodity science of food products, Theoretical foundations of food technologies, Chemistry and biochemistry of food products, Technology of public catering products.
9	Postrequisites	Technochemical control, quality assessment and safety of meat and dairy products; Design of food production enterprises, Diploma project (work).

10	Course summary	Microbiology of milk and dairy products: general microbiology: morphology and physiology of microorganisms; the influence of the external environment on the development of microorganisms; the spread of microorganisms in nature; the role of microorganisms in the transformation of substances in nature; special microbiology: microorganisms used in the production of dairy products; pathogens of spoilage (defects) of milk and dairy products; the basics of industrial hygiene and sanitation at dairy production enterprises; microbiology of raw, drinking milk, sourdough, microbiology of fermented milk products, butter, cheese, canned milk and ice cream, dairy by-products. Biochemistry of milk and dairy products. Technology and organization of milk and dairy products production.
11	Learning outcomes	To know:- general and special microbiology, organization of sanitary and hygienic control of milk and dairy products production;– biochemical and physico-chemical processes occurring during the storage and processing of milk; - characteristics of the main and additional raw materials, auxiliary materials;– technology and organization of milk and dairy products production;– the methodology of technological calculations; - technological machines, devices and production lines of food production;– rational technological modes of operation of the equipment;– organization of technochemical control of production;– quality indicators of the main raw materials, semi-finished products, finished products and methods of their determination – - methods and criteria for assessing the nutritional value, safety of raw materials and food products; - causes of defects and defects in the products produced. Be able to: - determine the morphological, cultural, and biochemical properties of various groups of microorganisms;– conduct microbiological studies of milk and dairy products and evaluate the results obtained;– determine the chemical composition and properties of milk and dairy products in the process of their production;– select the necessary raw materials and equipment, parameters for a given technological process according to reference materials;– to carry out technological calculations for the production of milk and dairy products; - to control technological processes at all stages of production;– conduct tests to determine the organoleptic, physico-chemical quality indicators of raw materials, semi-finished products, finished products; - use the results of control of raw materials, technological process, finished products to optimize the production of milk and dairy products. Have the skills to: - work with the main technological equipment of the dairy industry; - develop technological schemes and recipes for dairy products; - solve the main scientific and technical problems and prospects for the development of milk and dairy products production.

1	Name of course	Technochemical control, quality assessment and safety of crop products
2	Code of course	TKOKBPR 3220
3	Cycle of course	BS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	3
8	Prerequisites	Grain science and theoretical foundations of processing industries
9	Postrequisites	Designing plants for the processing of vegetable raw materials and the production of biofuels
10	Course summary	The student must know the technical requirements for grain processing enterprises; indicators of quality and safety of agricultural raw materials and products of its processing; own methods of quality control of raw materials and processed products at all stages of the process; methods of improving existing processes based on the analysis of the quality of raw materials and requirements for the final product;
11	Learning outcomes	Able to organize and carry out quality control, process parameters and methods of processing of raw materials and finished products

1	Name of course	Technochemical control, quality assessment and safety of crop products
2	Code of course	TKOKBPR 4223
3	Cycle of course	BS
4	Amount of credits	6
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Grain science and theoretical foundations of processing industries
9	Postrequisites	Designing plants for the processing of vegetable raw materials and the production of biofuels
10	Course summary	The student must know the technical requirements for grain processing enterprises; indicators of quality and safety of agricultural raw materials and products of its processing; own methods of quality control of raw materials and processed products at all stages of the process; methods of improving existing processes based on the analysis of the quality of raw materials and requirements for the final product;
11	Learning outcomes	Able to organize and carry out quality control, process parameters and methods of processing of raw materials and finished products

1	Name of course	Design of food production enterprises
2	Code of course	PPPP 4318
3	Cycle of course	AS
4	Amount of credits	8
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Equipments for food products
9	Postrequisites	Scientifically research
10	Course summary	To possess methods of product calculation in production; skills of calculations of need for the processing equipment; ability to apply normative and technical documentation and reference literature at design of the enterprises of food productions; to possess skills of engineering graphics and bases of industrial construction, methods of improvement and optimization of the operating technological processes on the basis of the system analysis of quality of raw materials and requirements to final products.
11	Learning outcomes	Able to assess the quality of services in the field of design and reconstruction of food industry

1	Name of course	Designing plants for the processing of vegetable raw materials and the production of biofuels
2	Code of course	PPPPRSPB 4317
3	Cycle of course	AS
4	Amount of credits	8
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Equipments for food products
9	Postrequisites	Scientifically research
10	Course summary	The student must be able to use in practice the knowledge and ability to select the methods of buildings and structures, their placement on the master plan; knowledge of the feasibility study of construction or reconstruction and determine the economic efficiency, be able to assemble the equipment, its interconnection on the plans and sections of the building processing plants.
11	Learning outcomes	Able to assess the quality of services in the field of design and reconstruction of food industry

1	Name of course	Technology of meat and meat products
2	Code of course	TMMP 4315
3	Cycle of course	AS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Theoretical foundations of food products technologies
9	Postrequisites	Design of food production enterprises
10	Course summary	To have skills of work with the main technological equipment of the meat industry; development of technological schemes and recipes of meat products; solutions of the main scientific and technical problems and prospects of development of production of meat and meat products. Possession of methods of management of the operating technological processes of processing of meat providing production meeting the requirements of standards
11	Learning outcomes	Based on the latest scientific trends can implement new technologies to ensure the rational use of raw materials, a wide range of new food products

MINISTRY OF AGRICULTURE OF THE REPUBLIC OF KAZAKHSTAN
"NJSC "S. SEIFULLIN KAZAKH AGROTECHNICAL UNIVERSITY"

Brief description of elective disciplines of the educational program

1C: Accounting: Enterprise management

1	Name of course	Technology of bread and pasta products
2	Code of course	THMI 4311
3	Cycle of course	AS
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Food Technology and Processing Products
7	Year	4
8	Prerequisites	Grain science and theoretical foundations of processing industries, Technology of post-harvest grain processing and grain drying, Technology of flour, cereals and mixed feeds
9	Postrequisites	Design of plants for the processing of plant raw materials and the production of biofuels
10	Course summary	Technology of bread, flour confectionery and pasta: theoretical knowledge in the field of technology of bakery, confectionery and pasta production; analysis of modern technologies and evaluation of their effectiveness; chemical composition, organoleptic and physico-chemical properties of raw materials and its baking qualities; modern methods of quality of finished products; ways to improve the quality and nutritional value of products; the range of bread and pasta, their nutritional value; technological processes for obtaining products of bakery and pasta production; features of the technological process of preparing various types of confectionery products; interchangeability of various types of raw materials and replacement rules; accounting and analysis of the consumption of raw materials and packaging materials

11	Learning outcomes	"to know: - methods of theoretical and experimental research in the field of chemistry of bread, confectionery and pasta, technologies of their production and processing using computer technology; - optimal and rational technological modes of equipment operation;- methods of analyzing the processes of raw material storage, production and processing of products in order to find out promising technological solutions for the construction, reconstruction or technical re-equipment of industry enterprises;be able to: - to improve and optimize the existing technological processes based on a systematic approach to the analysis of the quality of raw materials, the technological process and the requirements for the final product; - to analyze technological processes based on the use of a data bank of trends in the development of these processes;- to carry out technological design using CAD, which ensures the receipt of effective design developments that meet the requirements of the future development of the industry;- to develop technological processes characterized by the absence of harmful substances released into the environment, improvement of the air and water purification system from harmful impurities, the use of automatic environmental monitoring tools; - develop measures to prevent the occurrence of defects and defects of manufactured products; - develop monthly production programs and shift-daily planned tasks for production sites and analyze their implementation. own:- methods of managing existing technological processes production of bread, confectionery and pasta, ensuring the production of products that meet the requirements of standards; - statistical methods of processing experimental data for the analysis of technological processes in the production of bread, confectionery and pasta; - progressive methods of operation of technological equipment for the storage of raw materials, production of bread, confectionery and pasta; - economic and mathematical methods and computers when performing economic calculations in the management process; have experience in: - conducting standard tests to determine the physical and chemical properties of raw materials, bread, confectionery and pasta products; - evaluating the operational capabilities of technological equipment;- implementation of technical control, development of technological documentation on compliance with technological discipline in the conditions of existing production.- organization of production and effective work of the labor collective on the basis of modern management methods. "