SHAKARIM UNIVERSITY
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Environmental Sustainability Courses

1.	Геоинформационные системы Geographic Information Systems	The discipline studies the phenomena, processes of natural components in geographical complexes of different ranks; types, structure and functions of geoinformation systems; software tools; ways to create a digital basis; bindings and vectorization of the raster layer; visualization and publication of materials; geological maps of various complexity; instrumental and aerospace surveys of the area
2.	Цифровизация лесного хозяйства Digitalization in forestry	The discipline studies an automated forest resource management system, the development of digital infrastructure; an automated workplace; methods of obtaining and processing digital spatial information; independent control of forest management processes; laser scanning of wood; remote sensing; unmanned aerial vehicles; digital sustainability environment; infocommunication and web technologies; multispectral satellite images for assessing forest plantations.
3.	Аэрокосмические методы в лесном хозяйстве Aerospace methods in forestry	The discipline studies methods of taxation, measurement decoding; creation of forest maps; field, aerial, desk decoding; technogenic impact on forest ecosystems and sustainability; pyrologic monitoring; creation of forest maps, aerial, space photography; aircraft of their types, types; principles of landscape planning; natural, anthropogenic formations; decoding of the composition of the stand; spectral reflectivity of wood rocks; forest phototones.
4.	Лесопользование Forest management	The discipline studies the methods of calculating the permissible volumes of use; the impact of the intensity of forest use on the quality of forest resources, sustainability, ecosystem services of the forest; the state; organization, provision of technological processes of logging, wood processing industries; modern machines, mechanisms for logging; requirements of the forest legislation of the Republic of Kazakhstan.
5.	Рациональное природопользование Rational use of natural resources	The discipline studies the types, forms, methods, specifics of rational nature management (sustainability); forestry; global, regional, local nature management; mineral and raw materials, forest management; regulation of natural, natural, anthropogenic processes; negative changes in the natural environment; internal dynamic equilibrium; local transformation of nature; holistic geosystem, taking into account the real socio-ecological, economic situations.
6.	Заповедное дело Reserved business	The discipline studies the categories, systems, structure of the reserve fund in the world; management and analysis of the activities of reserves; ecologization of nature management; development and design of projects of reserve objects; model of the biosphere reserve; the importance of conservation for the water management complex; problems of conservation in the world, region.
7.	Национальные природные парки Казахстана National natural parks and reserves of Kazakhstan	The discipline studies a set of measures for the development and conservation of biodiversity; planning measures to control the number of harmful fauna; conservation of rare animals, birds and plants; aesthetic advantages of the surrounding landscape; scientific, pragmatic, aesthetic forecast of approaches to the organization of national parks; objects of historical and cultural heritage; ecological tourism.
8.	Озеленение населенных мест	The discipline studies methods, methods, types of creation and operation of plantings; aesthetic, sanitary and hygienic and functional qualities of systems; engineering and agrotechnical preparation of

	Landscaping of populated areas	green construction territories; the role of green spaces in the formation of the external environment; design of territories for landscaping settlements; operation of green spaces in settlements.
9.	Лесоустройство Forest Management	The discipline studies the determination of quantitative, qualitative characteristics of forest resources; the performance of topographic, geodetic works, special mapping; models for the construction of forestry, forest management; ensuring the optimization of forestry in a particular region; forest management on the lands of the forest fund, as well as the design of forest park zones, green zones.
10.	Лесоуправление Forest management	The discipline studies the management, planning of forestry development; the structure of forest management bodies; calculation of the permissible amount of forest use; land, property relations; cadastral valuation and registration of real estate; land monitoring; conservation of valuable natural objects; preservation of the forest environment; forest dynamics in the conduct of economic activity; legal regulation of forest use.
11.	Инспекторская деятельность в охотоведении Inspection activities in hunting science	The discipline studies methods of preserving the biological properties of land; calculations of use and determination of the specific direction of the economy; determination of the carrying capacity of the territory; preparation of a hunting map of the object; conditions, regime of humidification; regulation of drainage of forests, swamps; laying of fodder fields; security, economic measures.
12.	Ведение охотничьего хозяйства в современных условиях Hunting management in modern conditions	The discipline studies the classification of hunting farms; features of commercial, sports farms; gross, marketable products; about the hunting service of hunting farms; creation of favorable conditions for habitat in the grounds; organization of certain types of hunting; methods of combined hunting; legislative acts in the field of hunting, safety at accounting work, various types of hunting.
13.	Нормирование использования охотничьих ресурсов Rationing the use of hunting resources	The discipline studies the management of hunting animal populations; natural productivity of hunting grounds; organizational, economic and biological features; systems of rational use of hunting animal resources; interests of hunters; controlled hunting withdrawal of animals; obtaining the maximum amount of products; the size of biological and economic gains; the dynamism of the hunting fauna and fishing standards.
14.	Экология промысловых зверей и птиц Ecology of game animals and birds	The discipline studies the structure, physiology, behavior, ecology of commercial species; classification of ecological features of commercial animals; zoogeographic distribution of representatives of hunting commercial animals, birds; seasonal hunting activities; daily biorhythms, seasonal phenomena in the life, reproduction of commercial animals; legislative framework in the field of protection, reproduction of hunting commercial animals; artificial wild breeding.
15.	Охотничье-промысловые биоресурсы Hunting and commercial bioresources	The discipline studies production and technological biological work; methods of accounting for the number of commercial animals; methods of studying wild game; habitats of terrestrial vertebrates of various classes; climatic features of the seasons within different subzones; limiting distribution of representatives of different classes; number, dynamics, factors affecting the state of resources.
16.	Лесная экономика Forest economy	The discipline studies the use of production assets and the economic efficiency of the forest industry in a market economy system; the production cycle of forest cultivation; forestry financing; principles and methods of indicative planning; labor resources and labor productivity; remuneration of employees; technical labor rationing;

Description:

		prices and pricing; economic and social development of state forestry institutions.
17.	Мировые лесные ресурсы World forest resources	The discipline studies the principles of allocation of forest resources of the countries of the world; special geographical maps; geographical features of countries; exhaustible and inexhaustible, replaceable and irreplaceable, primary and secondary, simple and integral natural resources; density of concentration of resources; combination of resources; availability of resources; resource cycles; potential natural vulnerability; information and analytical references.
18.	Рекреационные ресурсы и туризм Recreational resources and tourism	The discipline studies the types of recreational activities; recreational development; tourist resource; assessment of the aesthetics of landscapes; hydrological conditions of recreation organization; tourist and recreational potential of the territory; territorial recreational systems; recreational and recreational sphere; types of tourist nature management; loads on natural complexes and methods of their determination; recreational district formation and zoning.
19.	Радиоэкологическое нормирование в лесном хозяйстве Radioecological rationing in forestry	The discipline studies forestry methods of forest protection; accounting, evaluation of indicators of the radio ecological state of forests; forecast of changes in the state of the ecosystem; biological, chemical, physical protection of forests; preparation of a radioecological report in the prescribed form; types of environmental impacts of economic activities; health and sanitary measures.
20.	Радиационный мониторинг лесов Radiation monitoring of forests	The discipline studies radioactive radiation; zones of radioactive contamination; accumulation of radionuclides by woody plants of forest biogeocenoses; forestry and edaphic factors; accumulation of radionuclides in forest food products; interaction of radioactive radiation with matter accumulation of radionuclides by forest animals; assessment of radionuclide stocks in the main components of forest biogeocenoses.
21.	Методика научных исследований в лесном хозяйстве Methodology of scientific research in forestry	The discipline studies the role of science in forestry, scientific research, its essence, stages of implementation, methods of scientific cognition, their use at the empirical, theoretical level of research, methods of field experiments, planning, forecasting, research, topic selection, study of scientific literature, keeping work records, statistical indicators of aggregates, scientific style of speech, processing of experimental data.
22.	Энергосбережение в теплоэнергетике и теплотехнологии Energy savings in power and heat technologies	The main trends in the development world energy, Energy saving, ecology. Energy industry of Kazakhstan, general problems energy saving. State program of energy saving in the RK, measures for implementation. Energy-saving measures in heat technology. Energy-saving technologies in the fuel, energy complex. Secondary energy resources. Energy saving of industrial enterprises, in housing, communal services. Use non-traditional, alternative, renewable energy source
23.	Энергосбережение на промышленных предприятиях Energy conservation in industry	Energy resource. Energy saving potential. Energy efficiency. Rational use fuel, energy resources. Conditional fuel. Energy intensity. Complex power systems. Energy technology. Main types, stages energy inspections (energy audit). Energy passport of enterprise. Instrumental energy audit. Energy balances of enterprise. Accounting for fuel and energy resources at enterprises. Typical energy saving measures. Modern energy saving technologies. Information technologies in energy saving.
24.	Основы природопользования	Nature management in mirror the history of civilizations. Natural conditions, natural resources. Nature management: types, forms.

	Basics of nature	Mechanisms of rational nature management. Financing of environmental management activities. Stimulation of rational nature management. Concept of sustainable development mankind, the problem of nature management. Preservation, restoration, rational change of ecological balance natural systems. Sustainable development energy. Energy, ecology. Problems of household, industrial waste.
25.	Энергетические системы обеспечения жизнедеятельности и техника безопасности Energy life support systems and safety	Energy systems efficiency. Bases of rationing sanitary-epidemiological parameters. Thermal protection of buildings. Purpose scope of energy systems to ensure human life. Comfortable living conditions. Thermal humidity conditions industrial premises. Room heat loss. Heating systems for industrial enterprises. Purpose, classification of heating systems. Ventilation systems for industrial enterprises. Domestic hot water supply systems. Systems of economic, drinking water supply of enterprises.
26.	Нетрадиционные и возобновляемые источники энергии Alternative and renewable energy sources	Energy, its sources, classification. The current state of the fuel, energy complex of RK. Traditional, non-traditional energy sources. The energy of sun, the physical basis the processes of conversion solar energy. Solar collectors. Solar power plants. Wind power installations. Wind energy, possibilities its use. Geothermal energy, regime the earth's crust. Biomass, Biogas fuel. Secondary energy resources.
27.	Современные способы преобразования энергии Modern methods of energy conversion (in english)	Development of new ways obtaining energy. Traditional ways of converting various types of energy thermal, electrical energy. Reserves of organic fuel. Fuel combustion methods. Efficiency of modern thermal power plants. Modernization of power units. New fuel combustion technologies. Methods, problems of direct energy conversion. Exergy. Thermal balance. Improving the efficiency of energy systems. Alternative energy sources. Renewable Energy Conversion Technologies.
28.	Энергетика Казахстана Energy in Kazakhstan	Energy sector of the Republic of Kazakhstan. Thermal energy. Renewable energy. Nuclear power. Gasification. Energy of the future. Green energy. Fuel- energy complex. Secondary energy resources. Energy system. Thermal, electric stations. Power lines. Substations and heating networks. Centralized operational dispatch control for coordinating the operation of stations and networks. Energy development based on the creation, enlargement, integration of energy systems.
29.	Основы нетрадиционной энергетики Basics of Alternative Energy	Reserves and resources of energy sources. Dynamics of consumption of energy resources and the development of energy sector in the framework of the environmental problems of energy. Non-conventional energy sources. Place non-traditional sources to meet the energy needs of the person. Wind energy and the possibility of its use.
30.	Нетрадиционные и возобновляемые источники энергии Alternative and renewable energy sources	Traditional and non-traditional sources of energy. Place non-traditional sources to meet the energy needs of the person. The use of solar energy, the physical basis of the processes of transformation of solar energy. Types of collectors, the principle of action and methods of calculation. So-lar power. Wind-mouth plant.
31.	Основы современной энергетики Basics of modern energy in English	General ideas about energy. The theoreti-cal basis of the processes accompanying the production of electricity. Features of the device and the operation of power plants. Indicators of thermal and overall efficiency of power plants. Alternative energy sources. The interaction of energy objects with the environment.

32.	Технология производства функциональных пищевых продуктов Technology of functional foods production	Basics and importance of nutrition for various contingents. Nutritional and biological value of functional food products. Features of technological processing of products for populations in need of functional nutrition. Food production technologies of functional purpose, technological modes of food processing.
33.	Экологическая биотехнология Ecological biotechnology	The main environmental environmen-tal problems associated with pollu-tion of industrial and domestic wastewater; elevated concentrations of heavy metals and radionuclides in soils, water bodies and air of the ter-ritories of the Republic of Kazakhstan. The main characteristics of wastewater. Household, industrial and agricultural wastewater, their composition and quality assessment criteria.
34.	Современные направления развития пищевой биотехнологии Modern directions the development of food biotechnology	Stages and directions of modern biotechnology. Areas of industrial and food biotechnology. Processes for producing useful substances and have connections with vegetable, animal and microbial cells; Traditional biotechnological processes used in various fields of food industry, and their role in the formation of consumer properties of food products; Modern food biotechnology achievements and the main directions of its development.
35.	Научные основы производства пищевых продуктов Scientific basis of food production	It studies the physical, chemical and biochemical processes that occur in products during their processing; methods of process control in order to obtain finished food products of high quality. Research methods of technological processes of production, raw materials and finished products.
36.	Биотехнологическая переработка отходов пищевых производств Biotechnological waste recycling food production	Limitations of man-made economic development. The concept of low-waste technologies. General principles for the creation of resource-saving technologies. The classification and characterization of wastes. General principles and methods of solid waste disposal. General principles and methods of disposal of the waste gases. Recovery of dust. Disposal of waste in agriculture.
37.	Современные технологии использования биологически активных веществ в биоиндустрии Modern technologies of use of biologically active substances in bioindustry	Classification of enzymes, hormones and vitamins. Catalysis and activation energy. The regulation of metabolism. The mechanism of action of enzymes and hormones. Sources and use of enzymes. Production of vitamins. Technology for isolating and purifying enzymatic preparations. Immobilized enzymes. Immobilization of cells. Industrial processes using enzymes and cells. Methods for the immobilization of enzymes. The use of BAS in microbiology, food and medical industries.
38.	Современные проблемы биобезопасности в пищевых и промышленных производствах Modern problems of biosafety in food and industrial production	Biotechnology and biosafety. Biological, ecological, economic, food and other security. The concept of biosafety in food production. Biologically hazardous organisms and their products. Biosecurity in cellular, tissue and organogenic biotechnologies. Stability of biosafety in bioengineering. Creation of genetically modified organisms.
39.	Пищевая биотехнология Food Biotechnology	Fundamentals of food biotechnology. Microbiological production of biologically active substances and preparations is the most important direction of food biotechnology. Food biotechnology based on autopsy and other metabolic reactions. Application of yeast, mold fungi and bacteria in food production. Alcohol production. Beer. Wine production. Bakery production.

40.	Экспертиза пищевых продуктов Expertise of food products	General information about the examination of food products. Aims and objectives of the examination. The variety of expertise. Examination procedure. Species examination methods and techniques. The authenticity and falsification of products. Identification of ways and methods to detect falsification of certain food groups.
41.	Безопасность пищевых продуктов Safety of food products	Basic scientific and practical situation of food security. Legal and regulatory aspects. State regulation in the area of food safety and bezopasnosti.Kachestvo raw materials and products pitaniya.Trebovaniya to ensure the quality and safety of food products, materials and products. International aspects of food security.
42.	Методы анализа пищевых продуктов Methods of food analysis	Food classification, composition and components of food products, food products - as a polydisperse system, biochemical changes in food production, methods of researching food components, physical and chemical changes in food components during its processing, transportation and storage.
43.	Физиология питания Physiology of nutrition	The role of food for the human body. The main metabolic processes in the body. Daily energy expenditure. Composition, physiological significance, energy and nutritional value of various food products. The concept of diet. The daily rate of human need for nutrients. Norms and principles of rational balanced nutrition for various population groups.
44.	Физиология растений Plant physiology	t studies the general laws of vital activity of plant organisms, the processes of absorption of mineral substances and water by plant organisms, the processes of growth and development, flowering and fruiting, nutrition, respiration, biosynthesis and accumulation of various substances. Techniques and methods for increasing the overall productivity of plant organisms, nutritional value, technological quality of their tissues and organs.
45.	Техногенные системы и экологический риск Man-made systems and environmental risk	The course studies the anthropogenic impact on the environment. Reveals the basics of ecotoxicants and methods for assessing their impact. Considers diagnostics and chemical-ecological control of environmental objects. Forms an idea of the main directions and methods for combating environmental pollution. Teaches methods of wastewater treatment, atmosphere, waste disposal. Studying the basics of the theory of dangers, classification and levels of the scale of dangers.
46.	Экологическая химия Ecological Chemistry	This course examines the theoretical and practical foundations of environmental chemistry. Reveals the tasks of ecodiagnosis and ecoprophylaxis. Describes a chemical pollutant in the environment; stability and degradability. Studies the chemical transformations of pollutants in natural environments. Considers the ecological chemistry of the atmosphere, hydrosphere, soil. Reveals the essence of the impact of chemical production on the environment, as well as protection technology. Teaches experimental methods of ecological and chemical research and control of environmental objects.
47.	Экологическое ресурсоведение Environmental resource studies	Assesses the possibilities and ways of economic use of natural resources, their distribution and condition, is able to assess the quality of the natural environment and the level of man-made load to ensure environmental safety of the region and the Republic.
48.	Почвоведение Pedology	Introduction. Structure, composition, properties, patterns of geographical distribution of soils, its development, the influence of environmental factors of soil formation, ways of effective use,

		improvement of soils. Control over the observance of the land code, standards, norms for the protection of soils, land resources of their rational nature management.
49.	Экологические аспекты естествознания Environmental aspects of natural philosophy	Ecological aspects natural science study the biological productivity communities, ecosystems. Knowledge the state natural ecosystems, the mechanisms environmental hazards, the production anthropogenic activities for human health, the factors exposure to hazardous ,environmentally harmful substances in the environment, leading to a change in the current or natural state the environment.
50.	Экономика природопользования Environmental management economy	Introduction. Directions, tasks, methods of forecasting, planning, analysis of ecological and economic aspects of resource use. Economic use of natural resources. The economic basis environmental management, the functioning of production facilities, the introduction of low-waste technology, the definition of economic damage to the environment, the development measures to reduce it.
51.	Актуальные вопросы радиоэкологии Казахстана Topical issues of radioecology of Kazakhstan	The course deals with the problems radioecology, the main directions radiation research in Kazakhstan, natural, artificial sources radiation, radiation pollution the Republic, radioecological problems areas with high natural and man-made radiation parameters, especially the effects radiation on living organisms. Norms radiation safety, methods radiation safety level control are studied.
52.	Безопасность окружающей среды Ecological safety of the Republic of Kazakhstan	Introduction. Legislative acts in the field of life safety. The role, tasks and structure of the republican civil protection services. Dangers of the human habitat. Classification of emergency situations of various types. Principles and methods of protecting the population in emergency situations. Stability of the functioning of objects. Rescue operations in the affected area.
53.	Основы радиационной безопасности Radiation Safety Basic	General concepts of radioactivity. Sources of radioactive contamination of the environment. Biological effect of ionizing radiation. Methods and devices for radiation detection. Protection against ionizing radiation. Ensuring radiation safety when working with sources of ionizing radiation. Legal aspects of radiation safety.
54.	Охрана наземных экосистем Protection of land ecosystems	Environmental foundations of terrestrial ecosystems of the biosphere. Laws of interaction of living organisms and habitat. Anthropogenic impacts on terrestrial and aquatic ecosystems. Legal basis for the protection of terrestrial ecosystems. Priorities of conservation of the nature reserve Fund and natural ecological systems.
55.	Теория и практика заповедного дела в РК Theory and practice of nature conservation in the RK	Subject and objectives of the discipline. Nature protection. The main tasks of nature protection. Ecosystems. Especially ohranyaemaya area (Spa) the basis of the continued existence of a biocenosis. Legislative and regulatory framework of environmental activities. The law"on protected areas". The Red Book Of Kazakhstan. Protection of fauna of Kazakhstan. Specially protected natural territories of Kazakhstan.
56.	Технология утилизации и вторичное использование отходов производства и потребления Recovery technology and recycling of waste production and consumption	Ways and methods of waste management. The recycling of solid waste. The device of the polygons. Fundamentals of technological processes of industrial waste processing. Burial, burning. Recycling of paper, glass containers, plastic packaging, slag, ash, waste oil. Recycling of agricultural waste. Recycling. Auto recycling. Microbial waste processing.
57.	Утилизация, переработка и захоронение отходов потребления	he emergence waste. Waste disposal processes in the historical perspective. Classification waste, methods their utilization. The decomposition solid waste in the dumpsites. The collection, disposal leachate. Production, utilization biogas. Organization collection,

	Recovery, recycling and disposal of consumer waste	disposal municipal solid waste in urban conditions. Processing municipal solid waste. Characteristics solid waste as an object processing.
58.	Глобальные социально-экологические проблемы и устойчивое развитие Global social and environmental issues and sustainable development	Global ecology is an interdisciplinary field knowledge. Biosphere: composition, structure. Energy, radiation and water balance the biosphere. Evolution, the future the biosphere. Global climate change, ozone depletion. Global pollution. Degradation the global environmental system as a result of unsustainable environmental management. The problem of population explosion and food crisis.
59.	Охрана наземных и водных экосистем Protection of terrestrial and aquatic ecosystems	Environmental principles of terrestrial and aquatic ecosystems. Terrestrial ecosystems (polar deserts, tundra and forest-tundra; boreal coniferous forests; broad-leaved forests; steppes of temperate zone; deserts: grassy, shrubby; mountains) and their protection. Freshwater ecosystems (lentic, lotic freshwater and marine ecosystems) and their protection. Land and water ecosystems of Kazakhstan and climatic zones.
60.	Охрана природы и рациональное использование природных ресурсов Nature conservation and rational use of natural resources	Protection of the atmosphere. Protection and rational use of water resources. Protection and rational use of land resources. Protection and rational use of mineral resources. Complex use of mineral raw materials. Technological features of formation and razra¬botki technogenic deposits.
61.	Охрана растительного и животного мира Protection of a plant and animal life	Introduction. Subject and objectives the discipline. Nature protection. The main tasks nature protection. Ecosystems. Specially protected natural areas (SPNA) are the basis long-term existence the biocenosis. Legislative and regulatory framework environmental activities. The Red Book Of Kazakhstan. Protection flora and fauna Kazakhstan. Specially protected natural territories Kazakhstan.
62.	Промышленная экология Industrial ecology	Guestions and tasks of industrial ecology. The influence of natural conditions on the functioning of enterprises of their complexes. Sources of pollution of surface and underground waters and methods of their purification. Measures for the protection of atmospheric air, water and land resources.
63.	Сельскохозяйственная экология Agricultural ecology	Biogecenoses are systemic particles of the biosphere. Grainy plants and their derivatives in the system of agrobiogeocenosis. Organization of comfortable grazing of animals. Biogeocenosis in agriculture is an intermediate link. Agricultural landscapes. Protection, Regulation and effective use of agricultural landscapes. Breeding work. Features of winter and summer conditions. Biological features of environmentally friendly poultry products in poultry farming.
64.	Современные экологические проблемы ОС Modern ecological environmental problems	An overview of environmental problems. The negative impact of human activities. Use and protection of water resources. Features air pollution. Degradation and soil protection. The current state of forest ecosystems. Physical pollution. Contamination of the environment and public health. Environmental problems of cities and urban settlements.
65.	Экологические проблемы РК Environmental problems of RK	The history the development biogeography. The biosphere, the cycle substances. The basic principles the structure ecosystems structure ecosystems. Environmental factors: climatic, biotic, anthropogenic. Concepts biocenosis, biota, the ecosystem, facies. Areas and centers origin animals and plants. Features distribution organisms on the

		globe. Features distribution organisms in horizontal and high-altitude zones.
66.	Экология Казахстана Ecology of Kazakhstan	Problems of pollution of the air basin in general on RK of areas and the cities. Effects and assessment of impact on environment. The general condition of ecology in the Republic of Kazakhstan. Global, regional and local problems of surrounding environment in RK.
67.	Геоэкология Geoecology	Geoecology is a scientific complex of the discipline created within the framework of natural and anthropogenic higher hierarchical geosystems; in order to protect the landscape zones, physical geographical zones, regions, proventions. Assessment of the most important changes in the nature of the geoecological approach and regulation of its consequences, preservation of the ecological situation on the territory of a certain geographical system. The possibility of correctly preventing the global environmental crisis through the interaction of society and nature.
68.	Техника экобиозащиты Ecobiological protection techniques	The progress of modern scientific and technological progress not only directly contributes to the improvement of human life, but also causes enormous damage to the environment and nature.Advanced methods of treatment of waste released into the air, water pollutants and soil pollutants and new waste treatment technologies. the issues of environmental impact metering are also constantly improving.
69.	Социальная экология и устойчивое развитие Social ecology and sustainable development	Subject, tasks, laws social ecology. The concept environment in social ecology. Natural and social components, their ratio. Modern environmental problems. Assessment the quality the natural environment, the level anthropogenic load. Key challenges, global initiatives for sustainable development. Indicators sustainable growth society. Kazakhstan is on the way to sustainable development.
70.	Экологическое проектирование Ecological design	Project works, ecological documentation : normatively-legal base. Development of project of norms of formation of wastes and limits on their placing. Development of project of norms maximum possible upcasts of contaminents in water objects. Development of project maximum possible extrass. Development of passport of wastes. Calculations of ecological payments. Productive co
71.	Экобиотехнология Ecobiotechnology	Introduction. Basic concepts. Definition and indicators of cleaning of constructions of the air basin, water basin. Biotechnologies of sewage treatment. Communication of biogeotechnologies with geomicrobiology and biotechnology. Biotechnology of protection of the atmosphere, protection of lands, processings of waste of vegetation. Schemes, principles of cleaning and indicators of ecobioprotective equipment.
72.	Экологический мониторинг Ecological Monitoring	Introduction. Classification of environmental monitoring. Monitoring the impact on the environment. Regulation discharges and emissions pollutants. The principles carrying out monitoring observations. Ground and remote methods. Monitoring atmospheric air, natural waters and soils. International cooperation and principles environmental monitoring in the Republic of Kazakhstan.
73.	Безопасность жизнедеятельности Safety of vital functions	Introduction. Legislative acts in the field of life safety. The role, tasks, structure of the Republican civil protection services. The dangers of the human environment. Classification of emergency situations of different nature. Principles, methods of protection of the population in emergency situations. Stability of functioning of objects. Rescue work in the affected area.
74.	Загрязнение окружающей среды	General concepts of environmental protection, sociological approaches; the main directions of environmental pollution generated

	Environmental pollution	by human economic activity; types and forms of pollution, the main pollutants, their sources and control measures, the impact on the main components of the biosphere.
75.	Государственное регулирование качеством окружающей среды Government regulation of environmental quality	Objectives and methods of state regulation of environmental quality. The concept of environmental regulation. Sanitary-hygienic and ecosystem rationing. Quality standards: sanitary,environmental, industrial and economic. Air quality control. Environmental and regulatory control of environmental quality standards.
76.	Экспертиза пожаровзрывоопасности производства Examination of fire and explosion hazard of production	Assessment of the probability of fire and explosion hazards impact on production personnel and population. Fire and explosion prevention system. Examination of fire and explosion hazard of industrial and civil objects. Fire hazard assessment of production, fire resistance of buildings and structures. Fire safety measures of objects.
77.	Инженерная экология Engineering ecology	Адамның табиғи жүйемен өзара қарым-қатынасы. Қазіргі заманның маңызды экологиялық мәселелері. Қоршаған ортаның сапасын нормалау. Шекті жол берілетін шығарындылар, шекті жол берілетін төгінділер нормативтерінің жобасы. Өнеркәсіптік шығарындыларды тазалау әдістері, биоқорғаныс техникасы. Су объектілерін қорғаудың әдістері мен техникалық құралдары, өнеркәсіптік қалдықтарды залалсыздандыру, кәдеге жарату.
78.	Современные экологические проблемы ОС Modern ecological environmental problems	An overview of environmental problems. The negative impact of human activities. Use and protection of water resources. Features air pollution. Degradation and soil protection. The current state of forest ecosystems. Physical pollution. Contamination of the environment and public health. Environmental problems of cities and urban settlements.
79.	Утилизация, обезвреживание и захоронение промышленных отходов Disposal, disposal and disposal of industrial waste	General characteristics of waste, structure, classification. Causes of waste. Industrial, toxic, domestic, radioactive waste. Waste disposal in Kazakhstan. The impact on the environment. Ways to solve problems with production and consumption waste. Requirements of international conventions on the control of transboundary movements of hazardous wastes and their disposal.
80.	Утилизация, переработка и захоронение отходов потребления Recovery, recycling and disposal of consumer waste	Waste disposal processes in the historical perspective. Classification of waste, their disposal. Landfill waste disposal. The collection and disposal of leachate. Production, utilization of biogas. Organization of collection and disposal of municipal solid waste in urban conditions. Processing of municipal solid waste.
81.	Охрана труда Occupational Safety and Health	IIntroduction. Occupational health and safety management system. Occupational injuries and diseases. Occupational health and safety. Certification of workplaces on working conditions. Harmful substances in the air. Dust. Lighting. Microclimate. Noise and vibration. Ionizing radiation. Tension and hard work. Classification of remedies. Safety. Fire safety. Electrosecurity.
82.	Безопасность инженерно-технических систем и сетей Security engineering systems and networks	Engineering systems, technological complexes, networks and equipment, providing settlements and industrial enterprises with electricity and heat, gas, Sewerage and communication system. Modern industrial construction with a high level of improvement of buildings and structures, supply of consumers with water that meets sanitary and hygienic requirements.
83.	Экологическая безопасность окружающей среды	Legislative acts to ensure environmental safety. Goals, objectives, principles of environmental safety. Problems of environmental safety and ways to solve them (climate change, ozone layer destruction, biodiversity conservation, desertification, land degradation, national

	Ecological safety of the environment"	environmental problems, local environmental pollution). Greening the economy, improving environmental monitoring, environmental statistics, greening legislation, expanding international cooperation.
84.	Экологическая безопасность РК Environmental safety of Kazakhstan	State and problems of environmental safety of the Republic of Kazakhstan. Relevance, purpose and objectives of environmental safety. Basic principles of environmental safety. Global environmental problem. National environmental problems. Local environmental problems. Greening the economy. Greening of legislation and society. International cooperation in the field of environmental protection.
85.	Экология Казахстана Ecology of Kazakhstan"	Fundamental concepts, problems and aspects of the discipline. Ecology of the atmosphere, hydrosphere, soil of Kazakhstan. Impact of missile components and test sites on the environment. Production and consumption wastes and their solutions. Radioecological situation in Kazakhstan. Biodiversity. Environmental education and upbringing. State policy in the field of environmental protection.
86.	Гендерная психология Gender Psychology	The course forms the understanding of the teaching characteristics of the human psyche and behavior related to gender, gender relations and gender differences. It provides for the consideration of knowledge and skills about the peculiarities of gender differences due to cultural and social factors. The skills of building activities in solving applied professional tasks taking into account gender characteristics and the skills of using diagnostic tools are demonstrated.
87.	Индивидуально-гендерные различия Individual Gender Differences	The course allows you to get an idea of the peculiarities of individual and gender differences through the prism of cultural and social conditions of life.Students will have formed ideas about the peculiarities of individual gender differences in the psyche and behavior of men and women on the basis of their socialization. Promotes the formation of competence to identify the specifics of a person's mental functioning, taking into account the peculiarities of individual and gender identity.
88.	Медицинская психология Medical psychology	The course introduces students to the theories of medical psychology, reveals the connection of somatic diseases with the human psyche; determines the mental state of the individual; the nature of the patient's relationship with the doctor; develops the skills of conducting interviews with the patient, conducting a psychological examination, writing and drawing up a psychological conclusion. The skills to observe the subject are formed; to evaluate their nonverbal behavior; to conduct a psychological conversation; to collect a psychological history; to apply different types of tests and questionnaires for the study of the psyche.
89.	Экологическая физиология человека и животных/ Ecological physiology of humans and animals	The discipline studies the features of the life of the human body and the mechanisms of its adaptation in a constantly changing environment, the dependence of the functions of organs and physiological systems on the effects of environmental factors in various physical and geographical zones, natural cycles. The impact on the human body of working and living conditions, increasing physical and emotional-psychological stress, as well as stressful situations is considered
90.	Прикладная биология с основами почвоведения КВ/ Applied Biology with the Basics of Soil Science	The course explains the connection with other subjects by introducing students to natural sciences and agriculture through theoretical and practical training. Students form the necessary knowledge for the organization of work at the school experimental site. Students will learn to evaluate the physico- chemical properties of soil,

		environmental factors and their significance for plants, as well as the evolutionary significance of morphological structures of plants and will be able to interpret the results of biological research.
91.	Гидробиология/ Hydrobiology	The course covers aquatic ecosystems, structure, functional features, ecological systematics of the hydrosphere, as well as the biological resources of the oceans, rivers, lakes and reservoirs, i.e. aquatic life. Teaches the functions and evolution of aquatic organisms in accordance with the basic general biological laws of various biosystems. Water ecosystems, their structural and holistic representations, their rational use in accordance with protection from pollution builds competencies.
92.	Флора и фауна мира КВ/ Flora and fauna of the world	The course examines the laws of the distribution of living organisms on the planet, the geographical aspects of flora and fauna, the structural and functional foundations of ecosystems. He also teaches the evolutionary development of living organisms in order to understand and explain their geographic distribution. Forms systematic knowledge of students about the flora and fauna of the environment, floristic, faunal, biotic migrations of the continent, modern zoning of the oceans, the main types of biomes.
93.	Экологические функции почв в биосфере и экосистемах/ The ecological function of soils in the biosphere and ecosystems	A discipline that studies the ecological functions of soils and their significance for the earth`s biosphere. The importance of soils for the functioning of the biosphere is based on its following qualities. The soil is one of the habitats of life forms and is the most important link in the regulation of biogeochemical processes, cycles of organic and inorganic components that ensure the existence of life on Earth are carried out in it.
94.	Метеорология с основами климатологии КВ/ Meteorology with the basics of climatology	This course examines the composition and structure of the Earth`s atmosphere, the main atmospheric processes, radiation and heat balance, moisture circulation in the atmosphere, circulation in the atmosphere, climate of the Earth`s surface, methods of meteorological observations. It teaches you how to correctly analyze data related to geographical phenomena and processes, the names and design of the main meteorological instruments, the principles of operation, and the ability to monitor the weather using simple meteorological instruments.
95.	Современные проблемы изменения климата/ Modern climate change's problems	This course provides students with in-depth knowledge of modern global problems, the main causes of climate change, climate-forming factors, the influence of humanity on the climate, the main methods of studying climate. During the course, students will learn how to observe the weather, identify and explain the true causes of climate change, as well as explore the prerequisites for climate change, work with meteorological instruments.
96.	География природных ресурсов/ Geography of natural resources	This training course deals with the development and distribution of territorial complexes of natural resources and their use. In the course of mastering the discipline, students learn the patterns of distribution of natural resources on earth, get acquainted with the territorial features of research and the problems of uneven distribution of natural resources. Armed with theoretical and practical knowledge on the problems of rational use of resources in various regions of the world and ways to solve them
97.	Основы здоровьесберегающих технологий ВК/	The discipline demonstrates a set of foundations, methods and methods of pedagogical activity that complement the classical technologies of updated training and education in the problems of maintaining health and professional longevity. Analyzes

	Fundamentals of health-saving technologies	medicalhygienic, health-improving, physical culture, environmental-health-saving, health-saving-educational technological processes, as well as technological processes for ensuring the security of life, as a multi- level concept of accumulating the well- being of students and teachers. Represents the means of regulatory and technical support for the system of saving the health of the population of the country.
98.	Организация массово-оздоровительной работы ВК/ Organization of mass recreation activities	The discipline `Organization of health- improving work` is aimed at acquiring pedagogical and sociological research, theoretical knowledge, professional skills and abilities in organizing health-improving, physical culture and mass- sports work in educational and sports institutions of various levels, cultivating promotion of a healthy lifestyle among the population of different ages with the provision of wide opportunities for the implementation of its physical and cultural areas.
99.	Нормирование и источники облучения персонала и населения Rationing and sources of exposure for personnel and population	The course introduces the main sections of the use of the basics of rationing, identification of sources of radiation exposure of personnel and the public to ensure safe life. As a result, the student will be able to carry out calculations to determine exposure, absorbed, effective and expected radiation doses.
100.	Энергосберегающие «зеленые» технологии Energy saving green technologies	The course introduces the main directions in the development of "green" technologies, both in the world and in the Republic of Kazakhstan. As a result, the student will be able to carry out calculations and analyze the energy balances of industrial enterprises using energy-saving "green" technologies, as well as develop measures for the use of "green" technologies in various industries.
101.	Физика в медицине Physics in Medicine	The course introduces the main features of the manifestation of physical laws in biological systems, as well as an understanding of the device and operation of medical equipment. As a result, the student will learn to evaluate the primary effects of physical factors on the human body.
102.	Основы безопасности пищевых продуктов и принципы ХАССП Fundamentals of food safety and HACCP principles	The discipline studies the legislative and legal framework of the HACCP system and general principles, the European Food Safety Control System, which allow identifying and controlling risk factors for food safety in the food industry. Determination of controlled stages of technological operations and food products at the stages of its production (manufacture) in production control programs. Analysis of information about the criteria of quality and safety of food products.
103.	Физическая и химическая опасности продуктов Physical and chemical hazards of food products	The discipline studies the ways of contamination of food raw materials and food products with xenobiotics of the environment, contamination of food raw materials and food products with chemicals and compounds used in agriculture. Chemicals used in the food industry. Chemical components of plant-growing food products. Types of polymer materials-as a source of contamination of food raw materials and food products.
104.	Генетически модифицированные организмы и проблемы пищевой безопасности Genetically modified organisms and food safety problems	The discipline studies modern ideas about the goals and methods of creating GMOs, obtaining genetically modified organisms. Considers the risks arising from the cultivation of GMOs and the use of their processed products. Molecular genetic approaches to obtaining organisms with specified properties and technologies of molecular cloning of target genes or groups of genes. Global production of genetically engineered crops. Methods of determination and evaluation of GMOs.

105.	Энергия и ее преобразование Energy and its transformation	The study of the course is based on the main types and general concepts energy and to convert it. An analysis of the prospects for the development world, domestic experience in the development traditional, alternative energy sources is presented. Teaching the course also pursues the study features processes obtaining thermal, electrical energy at thermal nuclear power plants, as well as using renewable energy sources.
106.	Энергетика и экология Energy and ecology	When studying the course, the main environmental problems of energy are highlighted. Particular attention is paid to traditional energy, as the most important environmental pollutant. The nature and extent of the impact of energy facilities on the environment when polluted by gaseous substances, solid particles is analyzed. Considered are traditional, non-traditional energy resources, methods for assessing the economic, environmental prospects for the development of energy.
107.	Энергоэффективность зданий и промышленных предприятий Energy efficiency of buildings and industrial enterprises	The course studies the main laws, regulations in the field of energy efficiency. Methods for evaluating the efficiency using various types primary, secondary fuel energy resources are being studied. The basics energy efficiency in buildings, industrial facilities institutions are considered. The role importance energy audit in the processing, analysis data on the use energy resources in order to assess the possibility energy saving are described.
108.	Основы экономико-правовых и экологических знаний Bases of economics, law and ecological knowledge	The integrated discipline includes the main issues and principles in the field of fundamentals of law and anti-corruption culture, economics, entrepreneurship and leadership, ecology and life safety. Features of the use of regulatory legal acts, the ability to use the business, ethical, social, economic, entrepreneurial and environmental standards of society. Specifics of environmental-legal, economic, entrepreneurial relations, leadership qualities and principles of combating corruption.
109.	Кормопроизводство Forage production	Examines the basics of creating and strengthening the forage base on the basis of rational use and improvement of natural and field forage lands, information about the bioecological features of plants of hayfields and pastures, technology for improving forage lands. The discipline studies methods of determining the yield and nutritional value of feed, the process and methods of harvesting hay, silage and haylage; technology of feed preparation, determination of the quality of yield of fodder crops.
110.	Агрохимия Agrochemistry	The course of this discipline includes: creating the best conditions for plant nutrition, taking into account the knowledge of the qualities of different types and structures of fertilizers, the personalities of their relationship with the soil, determining very effective forms, methods and timing of the introduction of fertilizers. Examines the quantitative and qualitative composition of macro - micro fertilizers, complex fertilizers, organic fertilizers, the impact of fertilizers on the environment, methods of agrochemical research.
111.	Биотехнология сельскохозяйственных культур Biotechnology crops	The discipline incIudes theoretical issues and practicaI resuIts in pIant biotechnology reIated to obtaining forms with new improved features. Considers the appIication of biotechnoIogy methods in crop breeding, seed production and cuIItivation technology, microbiology of ceIIs and tissues cuItivated in an artificiaI nutrient medium, clonal microseparation and pIant heaIth, pIant growth and formation reguIators, basic principles of genetic engineering, application of in vitro methods in pIant breeding.

112.	Введение в специальность Introduction to the specialty	The discipline forms basic concepts about the branches of crop production in order to create an initial idea of future professional activity, a set of knowledge about the relationship of the specialty with other branches of production and processing of agricultural products. The main attention is paid to the prospects for the development of modern technologies in agriculture and crop production, the influence of soil conditions and environmental factors on the growth and phases of plant development, the laws of agriculture, the basics of agrochemistry and crop production.
113.	Генетика Genetic	The discipline introduces the basics of heredity and variability of organisms, the main provisions of genetics, Mendel's laws, the chromosomal theory of heredity. Gives an idea of the cytological foundations of heredity, the patterns of inheritance in remote and intraspecific hybridization. Examines the provisions on the molecular foundations of heredity, the main types of variability, polyploidy and its role in breeding and evolution, genetic evaluation of populations and individuals by offspring.
114.	Декоративное растениеводство Decorative crop production	The course of this discipline includes: the history and current state of the decorative crop industry, a brief description of ornamental plants, their place in agro-industrial, amateur and household gardening, types of decorative crop production: floriculture, landscape design, decorative gardening and floristry. He studies the basics of agrotechnology of ornamental plant growing, technology of cultivation of seedlings and seedlings of ornamental plants, styles of floral compositions, features of research work in floristics.
115.	Защита сельскохозяйственных культур от вредителей и болезней Protection of crops from pests and diseases	The formation of the concept of a system for the protection of crops from pests and diseases is based on a combination of preventive and extermination measures against diseases and pests. Considers the deveIopment of a set of measures to identify foci of diseases and pests, track the development of diseases, predict outbreaks of diseases and pests, measures to combat diseases and pests of crops, taking into account the cIimatic features of the region.
116.	Кормовая база пчеловодства The fodder base of beekeeping	The discipline covers issues related to the creation of forage stocks; the forage base of beekeeping; honey-bearing resources of beekeeping and pollination of agricultural plants. Studies the classification of honey-bearing and pollen-bearing plants, their distribution; crop rotations of honey-bearing field, fodder, vegetable plants; plants of orchards, berry fields, meadows, pastures; special honey plants and technologies of their cultivation; methods of improving and expanding the forage base for bees; ways of effective use of bees during pollination to obtain high yields.
117.	Машиноиспользование в сельском хозяйстве The Parking management in agriculture	Gives an idea of the technical and economic assessment of a single machine, unit, system of machines, mechanized technologies for cultivating crops. It considers traction and transport energy means, devices and principles of operation of the main mechanisms and systems of tractors and cars. The practical part of the discipline is aimed at the deveIopment of a technological map, taking into account the provision of the economy with agricuItural machinery, the acquisition of tiIIage units, the deveIopment of soiI protection measures.
118.	Основы научных исследований в растениеводстве	The discipline forms an idea of modern research methods in crop production and agriculture. It includes: modern methods of planning experiments, methods for laying and conducting vegetation and field experiments, planning records and observations, and statistical

	Fundamentals of scientific research in crop production	processing of experimental data. The discipline “Fundamentals of Scientific Research in Plant Growing” is closely related to the disciplines “Agriculture”, “Agrochemistry”, “Crop Growing”, “Soil Science”.
119.	Плодоводство Fruit growing	The main attention is paid to the study of the cultivation of fruit and berry plants, regionalized varieties and hybrids of fruit crops, taking into account their biological characteristics. The importance of fruit crops in human nutrition is revealed. The characteristics of fruit crops, features of agricultural cultivation techniques, selection and seed production of fruit and berry crops, methods of protection against diseases, pests, weed control, features of mechanization of work in fruit growing are given.
120.	Почвоведение Soil science	The discipline is aimed at studying the origin, genesis, classification, geographical distribution and protection of soils, ways of rational use of it in agricultural production, preservation and improvement of fertility. The course examines the factors of soil formation, chemical composition, physical properties, nomenclature and classification of soils, water, air, thermal properties and soil regimes, regulation of soil regimes and directions of the soil-forming process, the main types and varieties of soils.
121.	Селекция и семеноводство сельскохозяйственных культур Breeding and seed production of agricultural crops	This discipline is aimed at studying the seIection process in crop production, hybridization techniques, crossing techniques; testing of crops; filling out documentation for varietal crops. Considers the issues of organizing primary seed production, improving varieties in the process of primary seed production; cultivation of elite varieties of grain, leguminous crops; growing seeds of fertile and sterile analogues of the corn line; cultivation of virus-free potato elite using clonal selection; varietal characteristics of the most significant crops.
122.	Сельскохозяйственная микробиология Agricultural Microbiology	It gives an idea of the main forms of bacteria and their role in agriculture. The issues of the systematics of microorganisms and microbiological processes occurring during the preparation of organic fertilizers, as well as the creation and application of microbial preparations in crop production and feed production are considered. The use of preparations for canning and obtaining feed and probiotics or replacing pesticides with microbiological preparations is being studied.
123.	Цифровизация в растениеводстве Digitalization in crop production	It is aimed at studying innovations and technological progress, developed primarily within the framework of digitalization of crop production and agriculture in Kazakhstan and in the countries of the far and near abroad. The discipline "Digitalization in crop production" includes: the implementation of national services in digital form, monitoring of agricultural land using the latest electronic methods, digitization of land, the introduction of a precision farming structure and equipping agricultural machinery with wireless navigation systems.
124.	Адаптивное растениеводство Adaptive plant-grower	It is aimed at the formation of theoretical knowledge and practical foundations of adaptive crop production, development, development and introduction into production of economically reasoned technologies for the production of natural high-grade, environmentally safe agricultural products. It covers the main ways to increase yields and maximize agricultural products based on increasing soil fertility and introducing leading cultivation technologies, managing the main factors of plant life, carbon nutrition and ways to reduce the negative impact of environmental factors.

125.	Агрометеорология Agrometerology	The discipline considers the most important agrometeorological factors that determine the living conditions, productivity of plants; the use of the features of the weather, climatic conditions of the area in agriculture. Considers the main instruments in agrometeorology, the concept, significance of solar radiation, temperature and humidity of soil, air, the importance of precipitation for agriculture, the influence of adverse factors on the growth and development of crops.
126.	Аквапоника Aquaponics	This discipline teaches students high-tech farming methods combining aquaculture and hydroponics. The Aquaponics course includes: the relationship of processes and biological objects, the purpose and sequence of technological stages of crop and livestock production; general and private technological schemes for growing the main types of crops in open and closed ground conditions; as well as features of aquaculture cultivation in open and closed ecosystems.
127.	Аэропоника Aeroponics	The discipline is aimed at familiarizing students with modern equipment and the principles of their operation when using aeroponic and hydroponic technologies in the production of crop products with increased productivity, product quality and economic efficiency. The course describes the features of growing vegetables in an air environment without a substrate by spraying the roots with a nutrient solution, and about managing the mineral nutrition of plants using automation.
128.	Биологическая защита растений Biological protection of plants	It is aimed at studying the methods and principles of measures to combat plant diseases and pests using biological objects - entomophages, herbiphages, pathogens and antagonists of the most important pests, weeds and pathogens of agricultural crops. Includes: occurrence, causes of development and forecasting, spread of diseases and pests, biological characteristics of pests and diseases, measures to combat them.
129.	Биология растений Plant biology	Formation of knowledge about plant morphology and anatomy, plant reproduction, the basics of plant florography and systematics, components of geobotany, ecosystems and phytogeography of plants, as well as the necessary minimum of general theoretical knowledge and practical abilities in plant physiology. Analyzes the processes of consumption of water and minerals by plant roots. It gives an idea of the creation of organic matter by green plants, respiration, reproduction, growth and development of plants and their adaptability to external factors.
130.	Бонитировка и классификация почв Bonitization and classification of soils	The discipline is aimed at studying the principles of land valuation and soil valuation. Considers the classification and assessment of soils by productivity, the production value of soil bonification, agricultural production grouping of soils and the methodology for determining the bonus score. Provides information on the structure of the soil cover and long-term information on the yield of the main crops of agriculture, dedicated to specific soils in Kazakhstan and abroad.
131.	Интегрированная защита растений Integrated plant protection	This discipline is aimed at studying the system of managing the phytosanitary state of ecosystems, the integrated use of various means, measures of plant protection. Considers ensuring the phytosanitary weII-being of the area and sustainable long-term suppression of the number of harmful organisms, regulation of the phytosanitary state of crops, cultivation of resistant highly productive varieties, activation of natural entomophages and acariphages, application of the biological method and the optimal use of pesticides and innovative mechanization.

132.	Овощеводство Vegetable growing	It is aimed at teaching classification of vegetable crops, their origin, features of growth and development, selection and seed production of vegetable crops. The improvement of technologies of cultivation of vegetable crops in open and closed ground is given in relation to certain conditions. Focused on the study of world methods of growing vegetable crops in greenhouse conditions, the requirements of vegetable crops to environmental factors, diseases and pests of vegetable crops, measures to combat them.
133.	Основы точного земледелия Precision farming basics	The discipline "Precision farming basics " teaches students innovative methods in agriculture using the latest technologies to improve crop quality and the use of Smart technologies. The course examines theoretical and practical knowledge of the application of digital methods, navigation and geographic information systems, the use of accurate remote sensing data, such as images or video images from drones or satellites, which allow you to collect, process and analyze data online.
134.	Сельскохозяйственная фитопатология Agricultural Phytopathology	It is aimed at studying diseases of agricultural crops; systems of measures to protect crops from diseases; pathogens: actinomycetes, viruses, bacteria and fungi. Particular attention is paid to the search for ways to reduce the harm caused to agricultural production by phytopathogenic organisms, signs of diseases depending on the zone of plant growth, methods of protection; causes of diseases; features of the development of pathogens, methods of protection.
135.	Сельскохозяйственная энтомология Agricultural entomology	It is aimed at studying diseases of agricultural crops; systems of measures to protect crops from diseases; pathogens: actinomycetes, viruses, bacteria and fungi. Particular attention is paid to the search for ways to reduce the harm caused to agricultural production by phytopathogenic organisms, signs of diseases depending on the zone of plant growth, methods of protection; causes of diseases; features of the development of pathogens, methods of protection.
136.	Химическая защита растений Chemical protection of plants	This discipline is aimed at studying methods of chemical protection and ways of effective use of chemical plant protection products. Examines the issues of agronomic toxicology, the selectivity of pesticides, the basics of sanitary and hygienic requirements for the use of pesticides. The classification of the main chemical plant protection products by the object of application, forms of chemical agents, calculation of the rate of application of chemicals, methods of application of pesticides, the mechanism of action of pesticides is given.
137.	Земледелие Agriculture	This discipline is aimed at studying theoretical and practical issues of agriculture, including the intensification of the living conditions of agricultural plants, a set of measures against weeds, crop rotations, precursors and methods, methods of soil treatment, the principles of biologization, ecologization of agriculture and the prerequisites of the agro-landscape approach in modern farming systems are also considered. The issues of improving soil fertility and general problems of growing crops are highlighted.
138.	Инновационные агротехнологии в земледелии Innovative agricultural technologies in agriculture	The discipline is aimed at studying innovative activities in the agricultural sector, increasing agricultural crop yields and animal productivity, increasing labor productivity, reducing the cost and material consumption of agricultural products, increasing profits, as well as reducing financial and economic damage from environmental pollution. Considers modern agricultural technologies of agriculture -

		nature-like, adaptive, soil protection, environmental protection, minimum, zero, green ("green"), no-till technologies of tillage.
139.	Луговодство и пастбищное хозяйство Meadows and pasture farming	The course is aimed at studying the construction and management of pasture farming, mastering the skills of technologies for growing grass and conducting meadow farming. The types of plants of natural hayfields and pastures, technologies for growing grass forage crops, methods and principles of pasture management measures, measures to improve forage lands are considered. The classification and inventory of natural forage lands, a brief description of the natural grasslands of meadows and pastures of natural zones of Kazakhstan are given.
140.	Методика сортоиспытания сельскохозяйственных культур Methods of agricultural crops variety testing	Introduces the general provisions of the state variety testing, the organization of the territory of the state variety plot, the planning of variety testing, the main provisions for setting up small-plot experiments, the study of the elements of varietal technology, the features of testing varieties on reclaimed lands, production testing of varieties, observations and accounting during the growing season, harvesting and accounting for the crop. The concepts of seed and planting material, the technology of production of crop products and agricultural technology of variety testing, the immunological evaluation of varieties and hybrids are given.
141.	Растениеводство Crop production	This course examines the morphological and biological characteristics of crop varieties, living conditions and cultivation techniques. The discipline reveals the theoretical foundations of plant productivity and crop formation, classification and characteristics of field crops, as well as cultivation technology. The practical part of the discipline is aimed at compiling technological maps for the cultivation of leading field crops, taking into account specific soil and climatic conditions of the area.
142.	Технология хранения и переработки растениеводческой продукции Technology and storage of crop products	The course is aimed at studying problems related to the quality of crop production and ways to improve them, the nature of losses of these products and the organization of their storage, rational methods of processing and storage of agricultural raw materials. The discipline considers questions about the vital activity of pathogens, insects and ticks in plant raw materials and the harm caused by them, and control measures. The material on flour milling, bakery and canning industries is demonstrated.
143.	Аграрная экономика The agrarian economy	The course forms a clear understanding of the current state of the global food market, the main structural changes that have occurred in this industry over the past decades, as well as ways out of the critical situation that has arisen in the agricultural sector at the present stage. Within the framework of this course, economic relations arising from the production, consumption, and sale of agricultural products on a global scale are considered.
144.	Агробизнес Agribusiness	The general theoretical prerequisites and provisions of scientific methods and rules of agribusiness management, the structure and its current situation, the economic foundations of storage of agricultural products, types of product losses and ways to reduce them, the concept of raw materials, its classification and directions of integrated use, ways of placing the raw material base, issues of organization of inter-economic and financial and economic relations in the field of production are considered processing, storage and use of agricultural products.

145.	Законодательство в области растениеводства Legislation in the field of crop production	The discipline studies the systems of scientific knowledge about agrarian law and agrarian legislation, which are necessary for agricultural specialists to work effectively in modern times. The course examines the basic laws in the field of crop production, as well as requirements for the safety of crop production, rules for the implementation of varietal and seed control and subsidizing services in the field of crop production in various areas, grain expertise and the issuance of a grain quality passport.
146.	Карантин растений Plant quarantine	The discipline forms the concept of accounting methods and identification of quarantine facilities. Studies the morphology and biology of external and internal quarantine facilities, as well as signs of damage to plants by pests and symptoms of diseases. Considers methods for the identification, localization and elimination of quarantine facilities, analysis of phytosanitary risk, methods of inspection of quarantined products, examination of quarantined materials, methods of disinfection of quarantined products and measures to combat them.
147.	Менеджмент в сельском хозяйстве Management in agriculture	This course contains the most important provisions of management in relation to the economics of agriculture. It includes: theoretical bases in the field of market relations related to the management of enterprises; methods for choosing strategies and tactics, bringing agricultural enterprises to markets; developing and making managerial decisions in modern conditions; issues of managing agricultural enterprises in conditions of steadily growing macroeconomic instability.
148.	Оценка и нормирование качества растениеводческой продукции Estimation and setting of norms of quality of plant-grower products	The course focuses on the study of the theoretical and practical foundations of assessing and rationing the quality of crop products, covers the basic concepts of quality and product expertise, the nomenclature of consumer properties, indicators and gradations of quality, organoleptic, laboratory, computational, experimental methods for determining the quality of crop products. Information is given on the rationing and examination of the quality of grain processing products, oilseeds, vegetables, the system of standardization of crop production.
149.	Прогноз развития вредителей и болезней The forecast of the development of pests and diseases	Examines the essence of the forecast of plant pests, its goals, objectives and practical significance, as well as the periods of reproduction of harmful organisms and their significance for the forecast. Studies the biological basis of the prognosis of plant diseases, including long-term, long-term and short-term prognosis of plant diseases. In the course of training, the student learns the methods of forecasting fungal diseases of crops and viral diseases of plants.
150.	Сельскохозяйственная мелиорация Agricultural reclamation	It forms an idea of further increasing the fertility of the earth, a steady increase in agricultural production based on the scientific use of irrigation and drainage, chemical land reclamation, and cultural and technical measures. The course includes: water regime of the active soil layer and its regulation; irrigation reclamation; reclamation of waterlogged mineral territories and swamps; soil cultivation, agricultural water supply and irrigation.
151.	Стандартизация и сертификация растениеводческой продукции	This discipline studies the basics of standardization, metrology, assessment of product quality compliance with requirements and regulatory documents, product safety, consumer properties of agricultural products, quality regulation. It includes: general characteristics of standards of different categories and types, general characteristics of technical regulation, the concept of technical

	Standardization and certification of crop production	regulations, sanitary and hygienic requirements for product safety, organizational and methodological foundations of standardization, quality and consumer properties of products, standardization of crop production.
152.	Психология управления Psychology of management	The content of the course is aimed at mastering the approaches and directions of management psychology, psychological laws of management, features of planning and solving management problems. Students will get acquainted with the psychological methods of resolving conflict situations, master the ways of motivating work, the methods of using effective management styles. Skills will be formed to analyze the psychological causes underlying the decline in the effectiveness of the management process.
153.	Инновационные технологии и методы контроля качества при хранении растениеводческой продукции Innovative technologies and methods of quality control in the storage of crop products	The course is aimed at studying the methods and methods of storage technology for crop products, the basic requirements for quality, the reasons for the deterioration of quality and safety in the process of storing products. The discipline considers the use of digital technologies in the storage of crop products, product quality control software using the achievements of scientific and technological progress to rationally reduce losses and increase the efficiency of preserving raw materials of plant origin.
154.	Инновационные технологии использования удобрений Innovative technologies for the use of fertilizers	The discipline is focused on the study of innovative technologies for the use of fertilizers, advanced solutions for optimizing the agrochemical properties of the soil and their importance for the correct use of fertilizers. The issues of improving the technology of using fertilizers, minimizing the negative impact of fertilizers on the environment, using modern equipment for applying fertilizers, the effect of fertilizers on the growth and development of plants in different periods of the growing season.
155.	Методология научно-исследовательской работы Methodology of research work	The course forms the methods of theoretical research, the problems of forecasting in scientific research and helps to choose the right direction of scientific research. The discipline "Methodology of research work" includes: methodological basic principles of scientific knowledge, philosophical aspects, the study of the structure and key stages of research work, the use of modern technologies for organizing the collection and processing of data and their interpretation, the rules for preparing reports on research works.
156.	Рекультивация нарушенных земель Республики Казахстан Reclamation of disturbed lands of the Republic of Kazakhstan	The discipline is aimed at studying the factors of natural and anthropogenic disturbances of arable territories, a complex of specialized and agrotechnical works aimed at restoring the productivity and economic value of disturbed territories. The issues of restoration and improvement of lands subject to erosion are considered. It is aimed at acquiring the ability to conduct research work on the state of disturbed lands; implementation of a forecast of the impact of disturbed lands on the surrounding environment.
157.	Актуальные проблемы растениеводства Actual problems of crop production	The discipline is aimed at studying theoretical questions about the patterns of crop formation, identifying reserves for increasing the production of crop products, developing the theory and technology for obtaining the highest yields and the best quality at the lowest labor and cost. The issues of violation of environmental safety due to the improper use of chemicals that harm plant growth, the suspension of work on fertilizing the soil and irrigating fields are considered.
158.	Инновации в растениеводстве	The discipline is aimed at studying the development and implementation of new technologies for the most important crops. It

	Innovations in crop production	includes: the development and implementation of resource-saving techniques and innovative agricultural technologies in crop production, as well as new varieties and hybrids of agricultural crops approved for use in the production, management of various areas of the economy, allowing to increase the financial, environmental and social performance of production.
159.	Организация и планирование научных исследований Organization and planning of research	The discipline is focused on the study of key areas of scientific research in agronomy. The issues of requirements for experiments and description of the results of observations, methodological bases of scientific knowledge. The choice of a scientific direction and the stages of scientific research work, the search, analysis and processing of scientific data, forecasting in scientific and industrial creativity, experimental experiments, processing the results of empirical research, forming the results of scientific work, research productivity.
160.	Патентоведение и защита интеллектуальной собственности Patenting and intellectual property protection	The course is aimed at studying the main provisions of copyright and patent law, the legal foundations of the legislation of the Republic of Kazakhstan in the field of protection of intellectual property. Includes: the concept of patenting and protection of intellectual property, the results of intellectual activity protected by copyright, innovations and the relevance of protecting intellectual property rights, types of intellectual property, protection of intellectual property, transfer and transfer of exclusive rights to intellectual property.
161.	Современные системы заготовки кормов Modern forage harvesting systems	The course is aimed at studying progressive methods for calculating the balance of green fodder, preparing a green conveyor, energy-saving technologies for growing annual and perennial fodder crops in a green conveyor system, accounting for the quantity, properties, quality of haylage, silage, the need for feed for livestock, the establishment of the area under crops and the calculation of the need for seeds of fodder crops.
162.	Адаптивная селекция в растениеводстве Adaptive breeding in crop production	The discipline is aimed at studying modern problems of plant adaptation in agriculture. The course covers the current state and prospects for the formation of the domestic agricultural economy, the adaptive potential of cultivated varieties of agricultural plants, strategies for adaptive intensification of crop production, biologization and ecologization of the intensification course of plant adaptation, the basics of the adaptive use of natural, biological and technogenic resources, agro-ecological opportunities for the productivity of crop production in Kazakhstan.
163.	Инновационные технологии в семеноводстве Innovative technologies in seed production	The course is aimed at the formation of knowledge on innovative technologies (techniques and methods) in the seed production of agricultural crops and skills in the organization and technique of the seed production process using innovative technologies. The course examines the development of sustainable seed production in modern conditions, variety renewal and features of the development of productive innovations in seed production, elite seed production, environmental and agrotechnical conditions for growing high-quality elite seeds.
164.	Программирование урожайности сельскохозяйственных культур Crop yield programming	The discipline is aimed at studying the programming of a limiting natural factor (humidity, heat, photosynthetic active radiation, soil fertility), the needs of a particular variety of crops for fertilizer, irrigation, the magnitude of the introduction of a regulated factor based on natural causes that affect the crop and the creation of optimal conditions for its formation. A science-based system for growing

		potential crop yields in different soil-climatic zones with a high yield is considered.
165.	Агроклиматические ресурсы богарного земледелия Agroclimatic resources of the rainfed farming	The discipline is aimed at studying the rational use of agro-climatic resources of the Republic of Kazakhstan. The conditions for the existence of plants, their regulation in rainfed agriculture, the heat and moisture supply of the vegetation stage, innovative agricultural technologies, the aridization of the area, the diversification of crop production are considered. Forms the concept of general methods of cultivation of agricultural crops, the development of the most rational ways to use rainfed lands.
166.	Агропочвоведение с научными основами адаптивного земледелия Agro-soil science with the scientific foundations of adaptive agriculture	The course is aimed at studying soil fertility, soil transformation in the process of anthropogenic use. The discipline considers the problems of the course of the soil-forming stage and the importance of soil-forming factors, various types of soil, water regime, the main characteristics and models of agro-soil fertility, the agrotechnical and coordinating-economic significance of crop rotations, the systematization and basics of their construction, minimum and zero land cultivation system.
167.	Адаптивная технология производства продукции растениеводства Adaptive technology of crop production	The course forms theoretical knowledge on the adaptive potential of cereals, legumes, oilseeds, root crops and tubers, spinning and fodder crops in various soil and climatic conditions. The issues of the adaptive potential of agricultural crops, the possibility of increasing the production of agricultural products and improving their quality, the development of science-based adaptive technologies for the cultivation of field crops with limited use of chemicals are considered.
168.	Инновационные методы в селекции сельскохозяйственных культур Innovative methods in crop breeding	The course is aimed at studying breakthrough achievements in the field of genetics, genomics and biotechnology, the main priorities of modern plant breeding and ways to achieve them. Considers innovative methods of work in modern breeding and includes cellular, genomic, chromosome and genetic engineering at the level of populations, organisms, tissues, cells, plasmids, chromosomes, genes and their individual parts.
169.	Инновационные технологии переработки продуктов растениеводства Innovative technologies for processing of crop products	The discipline is aimed at the rational use of grown products, taking into account their quality, expanding the range of products, the use of innovative non-waste technologies in the processing of crop products. The course covers innovative ways to preserve fresh and processed products without mass loss and with minimal losses, as well as new ways to store products without compromising their quality, modern methods of certification of agricultural products and products of their processing.
170.	Модели плодородия почв Soil fertility models	The course is aimed at studying the totality of parametric characteristics of the internal state of the soil, various fertility management programs, the probable consequences of their implementation, as well as the expected economic benefits of management (including environmental impacts), ways of further fertility research. Considers the criteria and models of soil fertility, the principles of modeling and the choice of models, the creation of production models of soil fertility.
171.	Мониторинг и интегрированная система защиты растений от вредных организмов	The course is focused on the study of modern achievements in the protection of crops from harmful organisms. The discipline includes: consideration of positive results in the application of integrated protection; monitoring in phytosanitary; agroecological assessment of integrated protection and a set of methods for protecting plants from pests adapted to agrolandscape and economic conditions;

	Monitoring and integrated plant protection system against harmful organisms	bioenergetic and economic efficiency of methods of integrated protection of field crops from diseases of pests and weeds.
172.	Научно-практические основы проектирования систем земледелия Scientific and practical basics of designing farming systems	The course is aimed at studying the development of modern resource-saving technologies, adaptive-landscape systems of agriculture, the current state of system research. It reveals the scientific foundations of crop rotations, the principles of their construction, methods for implementing modern technological methods of tillage, measures to combat weeds in adaptive-landscape farming systems, taking into account the laws of farming, the methodological foundations of modern adaptive-landscape farming systems, the scientific, practical foundations for designing adaptive-landscape farming systems.
173.	Научные основы бонитировки и классификации почв Scientific foundations of classification and classification of soils	The course is aimed at studying the scientific and methodological foundations of grading and classifying soils for various natural zones of Kazakhstan. Analyzes the current state of the land fund and soil resources of Kazakhstan, modern ideas about the theory of soil fertility, which serves as the basis for assessing the quantitative and qualitative properties of land, the basis for state accounting of land properties, categories of their suitability, control over use and territorial protection services.
174.	Научные основы использования удобрений Scientific basis of the use of fertilizers	The course is focused on the study of the rational use of organic and mineral fertilizers for crops. Considers the factors affecting the efficiency of fertilizers, technologies for calculating doses of mineral fertilizers, reasonable doses, timing and methods of using fertilizers for major crops, taking into account their biological characteristics, the degree of expected yield and agro-soil conditions. The course is aimed at mastering the problems associated with plant nutrition and the optimal use of fertilizers.
175.	Научные основы применения системы орошения Scientific basis of irrigation system application	The course is aimed at studying modern methods of rational use of water resources. It contains a reasonable development of the irrigation regime depending on the type of agricultural crops, the correct use of irrigation equipment, the control and improvement of the reclamation state of irrigated areas, the reduction of water losses in canals, the control of land erosion during irrigation, the use of return water for irrigation and the impact of reclamation work on the environment .
176.	Оценка почв Soil assessment	The course is aimed at studying a comparative analysis of innovative methods for assessing soils. Reviews the latest methods for assessing soil quality, the main assessment features for the formation of rating scales, various types of assessment of soil properties for practical purposes, as well as specific examples of soil assessment for various purposes and the formation of appropriate cartograms in order to develop various ways of their optimal application.
177.	Перспективные культуры Казахстана Promising cultures of Kazakstan	The course is aimed at studying the key aspects, potentials of promising agricultural crops in Kazakhstan in modern conditions. The course examines the state and prospects for the cultivation of new crops such, their agrotechnical significance, expansion of species composition, biological characteristics depending on environmental conditions, patterns of growth, development of plants, optimized techniques for growing promising crops in Kazakhstan, as well as the improvement of these crops by breeding methods to create new highly productive varieties and hybrids.
178.	Системный метод в агрохимии	The course is focused on the study of modern methods, determining the doses of fertilizers that can increase the yield or change its quality. Considers a methodological systematic approach to conducting

	System method in agrochemistry	fundamental and applied scientific research in the field of agrochemistry, as well as ecologically balanced fertilizer systems, optimizing the balance of nutrients, soil and plant diagnostics of plant mineral nutrition, soil-agrochemical monitoring, system interaction fertilizers with the planned harvest.
179.	Системы орошаемого земледелия Irrigated farming systems	The course is focused on studying the intensive technology of irrigated agriculture. Considers improving plant nutrition through the introduction of scientifically based norms of mineral fertilizers and the use of increased norms of organic fertilizers to improve soil fertility in irrigated agriculture, the use of crop varieties that are responsive to irrigation, the use of modern technologies for water supply to the field, computerization of process control processes, the introduction of scientific achievements and excellence.
180.	Управление агробизнесом в растениеводстве Agribusiness management in crop production	The course is focused on studying the basics of the commercialization of technological achievements, modeling in agronomy, the basics of managing the production process of field agrosystems, skills in developing and making managerial decisions in crop production, project management in crop production, intensive technologies for the production of grain and industrial crops. Includes: methods of substantiation, adoption and implementation of management decisions, methods of simple investment analysis for the development of management decisions in crop production.
181.	Физиология устойчивости сельскохозяйственных растений Physiology of resistance of agricultural plants	The course is focused on the study of modern data on the physiology of stress, considers the mechanisms of plant defense, their resistance to abiotic and biotic environmental conditions, the effect of plants on temperature rises and falls, water deficiency, high salt content in the soil, air pollution, ionizing radio emission, the influence of pathogenic microorganisms. Analyzes the main mechanisms of adaptation, adaptation of plants to certain environmental conditions, which is provided by physiological elements.
182.	Фитосанитарный мониторинг болезни сельскохозяйственных культур Phytosanitary monitoring of crop disease	The discipline is aimed at studying plant protection, taking into account the theoretical, methodological foundations of the monitoring system for harmful organisms, environmental factors affecting them. Gives an idea of phytosanitary monitoring of agricultural crops, lands on the territory of the economy to establish foci, the area of its level of infection with harmful objects, quarantine pests and diseases, with the determination of the limits of their distribution on the territory of the Republic of Kazakhstan.
183.	Цифровое земледелие DigitalFarming	The direction is directed to the study of the development of tillage as well as agricultural technology from clear tillage up to the concepts of agricultural production based on current knowledge. Analyzes the numerical modification of crop production to support the introduction of numerical technologies and platform solutions in order to provide a scientific and technical breakthrough in the agro-industrial ensemble, as well as to achieve an increase in productivity in "digital" agricultural firms.
184.	Эксплуатация оросительных систем Operation of irrigation systems	The course aims to study irrigation systems used in agronomy. It includes the classification of irrigation systems, requirements for the quality of irrigation water, irrigation principles, organization of calculation of water used for irrigation, control over the correct use of water, over the groundwater regime, control over the agricultural technology of plants on irrigated lands, elimination of salinization and waterlogging of irrigated areas.

185.	IT технологии в растениеводстве IT technologies in crop production	The course defines the essence of innovation and its classification, the structure and features of the innovation process in the agro-industrial complex, innovation activity and its features in crop production, the state and trend of production, as well as the economic efficiency of the industry. The course considers promising areas for the application of innovative technologies and their implementation in agricultural production, applied computer programs for optimizing the placement of crops in zonal crop rotation systems.
186.	Анатомия домашних животных Domestic Animal Anatomy	The discipline studies biomorphological regularities of structure and development of the organism of animals and birds; the main manifestations of life and the systems that ensure their implementation, levels of structural organisation of the animal organism, the concept of phylo and ontogenesis, their main regularities, biological bases of adaptation and factors that determine species and individual variability (habitat, feeding pattern, mode of movement, etc.).
187.	Введение в специальность Introduction to the specialty	The discipline studies the historical stages of development of the veterinary profession from ancient times to the present day; introduces students to the achievements of veterinary science in the elimination and prevention of infectious diseases common to humans and animals; studies the scientific study of the issues of prevention, treatment of animal diseases, protection of humankind from anthropozoonoses as a result of the production of animal products through veterinary expertise and examination, solving veterinary and sanitary problems in the protection of the external environment.
188.	Ветеринарная вирусология Veterinary Virology	The discipline studies the classification, range, morphology, chemical composition and properties of viruses, their stability in the external environment, the biological structure of the virusflora in the body, the peculiarities of the development of animal pathogens, types of diagnosis, prevention and control of infectious diseases caused by various viruses; examines methods of cultivation and identification of viruses; discloses the dynamics of manifestation, laboratory diagnosis and prevention of viral diseases.
189.	Ветеринарная генетика Veterinary genetics	The discipline studies students to genetics as a fundamental and applied science that studies the two most important properties of living organisms: inheritance and variation; pays attention to population genetics and biometric research in livestock; at the same time, the discipline studies the hereditary immunity and animal genetic resistance to disease, methods for detection of genetic or environmental hereditary disease, and genetic diseases of animals.
190.	Ветеринарная гинекология Veterinary gynecology	This discipline is one of the clinical branches of veterinary medicine, focusing on the theoretical and practical skills in gynecology. It involves the development of clinical reasoning for determining the etiology, pathogenesis, accurate diagnosis, prescription of treatment, and prevention of gynecological diseases and pathological processes in the reproductive and other organs of females. This includes conditions arising after the postpartum period and leading to infertility. The course also covers the treatment, prevention, and diagnosis of reproductive diseases in animals.
191.	Ветеринарная латинская терминология Latin Veterinary Terminology	The discipline of anatomical, parasitological, microbiological, surgical, clinical, and pharmaceutical terminology applies knowledge of Latin terminology in practice; practical use of Latin medical terminology in the veterinary field; the discipline aims at mastering Latin medical terminology and parsing Latin terminology, writing

		and reading Latin words fluently; the mastery of deontological principles and ethics of the profession, is important in the formation of the profession of veterinary doctor.
192.	Ветеринарная микробиология и иммунология Veterinary microbiology and immunology	The discipline studies the basic forms of microorganisms, structure, nutrition, breathing, growth, reproduction of bacteria, infection and immunity, the microflora of water, air, soil, bacterial genome, the influence of biological, chemical, physical factors on microorganisms; pathogenic and virulent properties of microbes, laboratory methods diagnostics, specific prevention of infectious diseases caused by pathogenic cocci, brucella, salmonella, escherichia, anthrax and others.
193.	Ветеринарная оперативная хирургия Veterinary Operative Surgery	The discipline studies the pathogenesis, causes of disease processes requiring surgical intervention, contributing and causing surgical diseases. In the study of this discipline, clinical signs of surgical diseases are determined, therapeutic and preventive measures are developed. A wide range of modern equipment, medications, methods and techniques, vascular surgery, neurosurgery, neurosurgery, transplant surgery are used in the detection and treatment of surgical diseases.
194.	Ветеринарная радиобиология Veterinary Radiobiology	This discipline introduces students to the concepts of radiometry and dosimetry, about the biological effects of ionizing radiation, sources of ionizing radiation, migration of radionuclides through food chains. radiation injuries and radiation sickness of animals diagnosis and treatment; studies the technological process of primary processing of animals exposed to external radiation, the organization of work with radioactive substances and the basics of radiation safety.
195.	Ветеринарная токсикология Veterinary toxicology	The discipline explores theoretical and practical knowledge about the mechanisms of action of toxic substances in veterinary medicine. It covers clinical symptoms of animal poisonings, pathoanatomical changes during poisonings, preventive and therapeutic measures, indications and contraindications for the use of veterinary drugs. The course enables the study of basic methods of modern chemico-toxicological analysis and diagnostic methods for investigating objects under veterinary supervision.
196.	Ветеринарная фармакология Veterinary Pharmacology	The discipline studies and examines the stockpiles of medicinal plants used in veterinary medicine for the treatment of sick animals. The student develops the doctor's logical and practical thinking and is oriented in the prescription and use of medicinal preparation for various diseases, applies technological methods of harvesting medicinal plant and animal raw materials for storage and preparation of various dosage forms.
197.	Ветеринарная цитология, гистология, эмбриология Veterinary cytology, histology, embryology	The discipline studies the structure, vital processes, cell death and their reproduction, and also the structural organization of cells and their tissues in relation to functional features, the central organs of the immune system, tissue definition, origin and principles of life; the discipline has moved from fundamental sciences to applied ones, which also solves current problems of modern medicine, biotechnology and veterinary medicine.
198.	Ветеринарно-санитарная экспертиза Veterinary-sanitary examination	The discipline studies a complex of safety research of livestock products, controls the quality of meat, dairy and animal origin products; conducting veterinary and sanitary measures aimed at ensuring the protection of the population from diseases common to humans and animals. It also teaches methods of canning and disinfecting animal feed; demonstrates knowledge in conducting

		veterinary-sanitary examination, sterilization of feed, obtaining products from healthy and sick animals.
199.	Ветеринарно-санитарная экспертиза продукции животноводства и птицеводства Veterinary and sanitary examination of livestock and poultry products	The discipline studies the principles of veterinary care for slaughtered animals and birds, the organization of pre-slaughter preparation and the methodology for post-mortem examination of organs and carcasses of animals and birds with an assessment of the veterinary and sanitary condition, measures for disease and poisoning prevention, rules for the usage and disinfection of meat, offal, raw materials of forcedly slaughtered animals; explains methods for determining the nutritional and biological value of livestock and poultry products; reviews and studies the provisions and requirements of regulatory documents and State Standards in the field of veterinary and sanitary examination.
200.	Ветеринарное акушерство Veterinary Obstetrics	The discipline studies the morphology and physiology of the reproductive organs and mammary gland of farm animals; biotechnological methods of animal reproduction; methods of controlling the reproductive ability of animals; prevention of diseases of the reproductive organs. It considers the normal and pathological state of fertilization, pregnancy, childbirth and the postpartum period of females of farm animals, diseases of newborn fruits; develops clinical thinking, setting the correct diagnosis, methods of treatment, prevention of gynecological diseases of animals.
201.	Общая зоогигиена General zoo hygiene	The discipline studies the influence of temperature, humidity and air movement as well as the admixture of dust particles to the air and their influence; hygienic standards and requirements aimed at protecting the health and increasing the productivity of farm animals; mastering the methods of control of hygiene and conditions of air environment, sanitary and epidemiological control of indicators of water and water supply, soil, fodder and animal feeding.
202.	Патологическая анатомия животных Pathological anatomy of animals	The discipline studies the morphological basis of pathological processes in the body of animals, at the organ, tissue, cellular, subcellular, macromolecular levels, characterizing the disease, allowing to make an accurate diagnosis of the disease to prevent economic damage from the death of animals; pathomorphogenesis of infectious diseases of animals, in particular malignant tumors, viral, metabolic diseases; dynamics of reparative processes taking into account the physiological status of animals.
203.	Патологическая физиология животных Pathological physiology of animals	The discipline studies the basic structural and functional changes in the organism of diseased animals, associated with the general laws of origin, development and outcome of the pathological process. Pathological physiology is a fundamental science, which allows to identify common causes of diseases of farm animals, analyze cause-effect relationships in the pathogenesis of any disease, as well as general pathological regularities in the disease development.
204.	Патоморфология заразных болезней Pathomorphology of infectious diseases	The discipline studies the pathomorphological changes in various infectious diseases of animals to ensure correct and timely diagnosis, determination of causes of death, differential diagnosis, and clinical-anatomical analysis. It explores characteristic changes in internal organs during major animal diseases. This knowledge is applied in practice to meet requirements aimed at safeguarding animal health, enhancing productivity, and systematizing these principles.
205.	Топографическая анатомия Topographic anatomy	This discipline is an applied morphological science, part of the extensive science of biology, which studies the layered structure of body regions, the location of organs and anatomical formations in

		regions and parts of the body, and their anatomical and functional relationship with other organs and tissues. The study of this discipline is the anatomical and surgical education of students necessary for subsequent clinical, gynaecological and surgical studies.
206.	Частная зоогигиена Private zoogiena	The discipline explores the aspects of creating optimal feeding and housing conditions for livestock and poultry in agriculture, taking into account the physiological needs of organisms and natural-climatic factors. It addresses issues related to the hygiene of farm animals, fur-bearing animals, commercial fish, bees, and non-productive animals. The course develops skills in veterinary-sanitary assessment of livestock premises and prepares future veterinary specialists based on the physiological characteristics of animals, aiming to establish and maintain normal conditions.
207.	Биоорганическая химия Bioorganic chemistry	The discipline studies the relationship of organic molecules with the biological system and the phenomena occurring on the basis of the processes of their biological formation in the animal organism. This discipline forms the students' understanding of the biological role of natural compounds, as well as establishes the relationship between the structure, reactivity of chemical compounds and their functional role. It teaches the study of the influence of structural elements of tissues.
208.	Биохимия животных Biochemistry of animals	The discipline studies chemical substances and its processes occurring in living organisms, the process of life from the point of view of chemistry; studies the types, functional role, metabolic ways of the main biomolecules that make up the living cell and methods of transformation of genomic data, principles of energy conversion in biological systems, the main methods of synthesis of biologically active substances, transformation of proteins, carbohydrates.
209.	Государственная ветеринарная служба State Veterinary Service	The discipline studies quality control in accordance with the regulatory technical documentation. The discipline studies the system of organizations, institutions of veterinary profile, at enterprises, transport, carrying out a complex of anti-epizootic measures. Knows the regulatory documents in the field. Types of quality control of raw materials of animal origin. Demonstrates basic knowledge in veterinary reporting, able to make a decision when monitoring, production and implementation of veterinary documents.
210.	Диспансеризация сельскохозяйственных животных Examination of farm animals	The discipline studies the principles of developing a plan for systematic inspection of animals in order to obtain high-quality products from farm animals; the main task is to give students theoretical and practical knowledge on animal health, as well as for the timely detection of early clinical signs and pre-clinical diseases plan a system of veterinary diagnostic and treatmentpreventive measures, prevention and treatment of sick animals.
211.	Животноводство Animal husbandry	The discipline studies the main tasks of breeding farm animals for the production of various livestock products and separate branches of animal breeding. The course reveals the peculiarities of breeding of farm animals in pedigree and commercial farms, prospective directions for the improvement of existing breeds of animals. At the same time, the discipline considers the use of information technology and the application of large-scale selection in animal breeding, animal biotechnology.
212.	Зоотехнический учет и анализ кормов Zootechnical accounting and analysis of feed	The discipline studies modern methods and scheme of analysis of feed, determines the quantity and quality factor of different types of feed, which is a determining factor of successful development of the livestock industry in the market; the course of the discipline is aimed

		at studying the peculiarities of fodder accounting, assessment of fodder nutritional content and comprehensive feeding on a scientific basis, as well as assessment of fodder quality composition.
213.	Клиническая диагностика пушных зверей и птиц Clinical diagnosis of fur animals and birds	The discipline gives students both theoretical and practical knowledge about the features of clinical diagnosis of fur animals and birds, digital data of biological features, morphological and biochemical composition of blood, urine fur animals, notions about syndromes, symptoms, prognosis and justification; demonstrates basic knowledge in the field of veterinary medicine, the ability to make a correct diagnosis and to effectively use drugs.
214.	Кормление животных Animal feeding	Discipline reveals the organization of feeding animals; in general, discipline determines the rules of optimal animal feeding and individual diets; considers cattle feeding systems, including pregnant dry cows and heifers, lactating cows, young cattle, breeding bulls and animal fattening, as well as the system of rationed feeding sheep and goats, horses, pigs, camels and poultry.
215.	Международное ветеринарное законодательство International veterinary legislation	It forms skills for studying the activities of the international Epizootic Bureau, the code of health of terrestrial animals, risk analysis for import, trade measures, procedures for import and export, veterinary certification, the role of the veterinary service in food safety, animal welfare, as well as regulatory documents for accounting and reporting, accompanying documents and plans for veterinary measures to prevent the occurrence of animal diseases, natural epizootic burdens from outside, phytosanitary biological and economic consequences.
216.	Нормы и оптимизация рациона кормления животных Norms and optimization of the diet of animal feeding	In the study of the discipline such issues as the creation of optimal conditions for feeding, keeping of farm birds and animals that meet the physiological needs of the body, taking into account natural and climatic factors, are considered; the course is aimed at optimizing the diet of feeding all kinds of farm animals, including marals, fur animals, birds, commercial fish, bees and unproductive animals; feeding diets take into account species, breed, age, sex and other animal features.
217.	Организация ветеринарного дела Organization of veterinary business	The discipline studies the legislation of the Republic of Kazakhstan, the basics and organizational structure of veterinary affairs, organization of veterinary affairs in the city and in rural areas, basics of veterinary entrepreneurship, economics of veterinary measures, planning and organization of veterinary measures, organization of veterinary supervision, issues of veterinary accounting, reporting and paperwork. It examines the organization of veterinary service in districts, cities and farms.
218.	Основы биохимии и БАВ Fundamentals of Biochemistry and BAS	The discipline studies the chemical composition and properties of substances related to the structure, biochemical properties and metabolic ways of transformations of the major classes of biomolecules of living cells, in large part related to the understanding of tissues and organs, as well as examining the structure and function of the body, vitamins, hormones, enzymes, proteins, lipids, glycosides and the basic steps in gene expression.
219.	Основы диагностической и терапевтической техники в ветеринарии Fundamentals of diagnostic and therapeutic techniques in veterinary medicine	The discipline studies symptoms and syndromes in the assessment of the disease state of animals, auscultation of the chest, examination and comparative evaluation of the diagnosis of the thyroid gland, thoracic organs (larynx, trachea), vesicular respiration, bronchial physiologic, bronchial pathologic, plegaphonia, rhinography, studies of the respiratory system by graphic methods: pneumography, trial thoracic

		puncture; provides a scheme for clinical examination of farm animals and pets.
220.	Птицеводство Poultry farming	The discipline deals with the formation of theoretical knowledge and practical skills necessary for the management of incubation and food egg production technologies, meat production in intensive poultry farming, poultry products, their processing and utilisation. The course studies productive qualities, constitution and exterior of poultry as well as feeding, housing and care as the basis of poultry farming, breeds of birds of different areas of productivity.
221.	Сравнительная физиология сельско-хозяйственных животных Comparative physiology of agricultural animals	The discipline studies the comparison of the peculiarities of physiological functions and mechanisms, regularities, and technologies of animal housing, as well as contains material on the processes of vital activity of a healthy organism, taking into account the unity and interaction with the external environment; cognition of regularities of activity of organs, tissues, cells, systems, and general and specific mechanisms; fundamental bases of policy sciences of general biological character.
222.	Физиология животных Animal Physiology	The discipline studies the physiology of individual systems and organs, consists of general and cellular physiology, and also provides a systematic approach to the study of the vital activity of the organism: digestive, circulatory, respiratory, endocrine and reproductive systems, immunity developments, physiology and neurophysiology of animal species. The discipline considers a holistic, complex and dynamic system in active interaction with the environment.
223.	Частная зоотехния Private animal husbandry	The discipline studies the biological and farming characteristics of farm animals. The course includes the study of branches of livestock industry, such as cattle breeding, horse breeding, sheep breeding, goat breeding, pig breeding, poultry breeding, camel breeding, maral breeding, fish breeding, bee breeding, rabbit breeding. Directed mastering of private zootechnics is impossible without knowledge of exterior and constitutional features of animals, animal breeds, methodology of scientific research, selection and breeding work in animal breeding, technological processes of production of animal products.
224.	Этология животных Animal ethology	The discipline deals with the study of biological factors of animal behavior, as well as its importance in the process of development and phylogenesis for adaptation to the environment. Animal behavior is the external manifestation of the vital activity of a living organism and includes any type of activity shown by an individual in response to changes in the environment and when necessary to meet any internal needs.
225.	Ветеринарная пропедевтика Veterinary propedeutics	The discipline studies modern methods of clinical and laboratory research, plan of clinical animal research, general animal research, definition of gabitus, skin research and its derivative and pathological changes, detection of the causes of disease, diagnosis, examination of visible mucous membranes and their pathological changes, research of lymph nodes, laboratory examination of blood, urine, stool; recognition and study of pathological changes.
226.	Ветеринарная протозоология и арахноэнтомология Veterinary protozoology and arachnoentomology	The discipline that studies the biology of protozoa, insects and ticks, systematics, morphology, arachnoses and entomoses, methods for determining the parasitological situation in farms by protozoa, the basics of parasitic and parasitic economic relations. One of the main disciplines of the future veterinary specialist is the preliminary study

		of invasive diseases which is based on the patterns of development, transmission, distribution of disease pathogens in the external environment and is closely related to issues of age, sex of animals, feeding, care, and the use of medicinal products.
227.	Зоонозы Zoonoses	The discipline studies the dynamic of the epizootic process of zoonotic diseases which is based on the relay transmission of the pathogen from an infected to a healthy animal, epizootological features, the role of diagnostic methods in diagnosis and differential diagnosis, economic justification and methods of therapy, measures for the prevention, control and elimination of infectious diseases of anthropozoonoses, forecasting of the epidemiological and epizootological situation.
228.	Инновационные методы научных исследований в ветеринарии Innovative research methods in veterinary medicine	The discipline contributes to the formation of the student's methodological and scientific practical system of knowledge, skills and abilities of organizing and conducting research in veterinary medicine. It teaches methods of planning and conducting research work (experiment) in the field of veterinary medicine, as well as the development of innovative research methods based on well-known ones, instills skills that contribute to a high degree of independence in performing scientific qualification work; studies the scientific and information base, the ways of cognition, the choice of a topic, the methodology of innovative scientific research, the requirements for conducting research, drawing up a research plan, processing the results obtained.
229.	Общая ветеринарная паразитология и гельминтология General Veterinary Parasitology and Helminthology	The discipline is one of the main disciplines since the preliminary detection of helminthiasis reflects on the regularities of development, transmission, and distribution of pathogens in the external environment and is closely related to issues of animal age, feeding, care, application of therapeutic preparations. Moreover, many parasites infect humans with diseases caused by worms, and man himself also becomes either an intermediate or a final host for some parasites.
230.	Общая ветеринарная хирургия General Veterinary Surgery	The discipline serves as the theoretical foundation for all surgical disciplines, examining surgical pathologies, anatomy, and methods of treatment that are common to a group of organs or a system of tissues, generally applicable to the entire organism. It involves a detailed study of the causes of pathological processes that require surgical intervention, identifies factors contributing to and causing surgical diseases, explores the pathogenesis, and develops therapeutic and preventive measures.
231.	Общая терапия General therapy	The discipline studies the methods of treatment, eliminates the causes and factors of diseases, restores the impaired functions of individual organs and systems, normalizes metabolism, productive and reproductive qualities. Taking into account the achievements of veterinary and other sciences, technology and production, it teaches mastering the methods of research for identifying internal diseases of animals, based on which it develops the necessary therapeutic, preventive and other veterinary measures.
232.	Основы клинической гематологии Fundamentals of clinical Hematology	The discipline studies the hematopoiesis system in the modern view, following the basic principles of veterinary science in assessing the state of the animal body in a physiological, clinical state; considers the development of hematopoietic organs, research techniques. It shows the determination of morphological parameters of blood in pathological changes in the body of sick, healthy animals; considers

		the causes of the change, ways to restore blood parameters of sick animals; describes the morphology of hematopoiesis cells, morphological features in domestic animals, birds.
233.	Частная терапия Private therapy	The discipline studies and combines methods of treatment for specific diseases. It is a subdivision of clinical and veterinary disciplines, which, taking into account the achievements of veterinary and other sciences, technology and production, teaches mastering methods for identifying internal diseases of animals, based on which the necessary therapeutic, preventive and other measures are carried out, aimed at preventing diseases.
234.	Эпизоотология и инфекционные болезни животных Epizootology and infectious diseases of animals	The discipline studies the basics of epizootology of infectious diseases of animals and birds; general patterns of development and settlement of infectious diseases; epizootological patterns of infection and immunity, the essence of the epizootic process, measures for general and special methods of treatment of animals, features of epizootic foci. It considers issues of diagnosis, therapy, principles of therapeutic, preventive and other measures for conducting epizootological monitoring and veterinary and sanitary measures of infectious diseases.
235.	Ветеринарная офтальмология Veterinary Ophthalmology	The discipline that studies the anatomical structure and physiology of the eye, diseases, and the prevention of eye diseases is essential in the preparation of a veterinary doctor. It is necessary to have knowledge and proficiency in applying methods of treatment and prevention, analyzing historical data, possessing clinical reasoning, synthesizing clinical facts, conducting laboratory research, and, with the correct collection of historical data, developing effective treatment methods and establishing an objective diagnosis.
236.	Ветеринарная рецептура Veterinary Formulation	The discipline studies the technological processes of manufacturing medicinal forms taking into account the scientific and technical documentation (STD), the rules for preparing medicinal forms, their labeling and packaging, storage, transportation and use of medicines in accordance with the order of scientific and technical documentation. The subject of the technology of medicinal preparations are substances, i.e. raw materials of animal or plant origin, as well as mineral and synthetic materials for the preparation of medications.
237.	Ветеринарная травматология Veterinary Traumatology	This discipline is one of the leading clinical subjects that shapes the clinical reasoning of a veterinary doctor. It covers the diagnosis, etiology of diseases, treatment, as well as the prevention of surgical diseases in animals, including many non-infectious, infectious, and invasive diseases. It teaches the proper application of prevention and treatment of general pathology, caused not only by trauma but also by poor housing conditions and improper exploitation of animals.
238.	Ветеринарная эпидемиология Veterinary epidemiology	The discipline studies the history of the disease and its spread, etiology, economic damage, pathogenesis, epizootic process and epizootological features of immunity and diagnosis, measures for the prevention and control of infectious diseases of various species of animals and birds; studying the means and methods of prevention and control of infectious diseases common to different species of animals and humans; development of measures for the prevention and elimination of infectious diseases of animals and birds on this basis.
239.	Ветеринарно-санитарная экспертиза животноводческого сырья	The discipline studies and defines the rules of veterinary and sanitary assessment, methods of sanitary and hygienic research of food products and technical raw materials of animal origin, veterinary and

	Veterinary and sanitary examination of animal raw materials	sanitary requirements for the collection of blood, intestines, endocrine enzyme raw materials, rawhide materials. It considers the production of feed of animal origin, classification and commodity characteristics of VSE (veterinary sanitary examination) endocrine-enzyme raw materials, intestines of individual animal species, primary processing requirements, technical disposal of confiscations, the main types of rawhide materials.
240.	Ветеринарно-санитарный контроль на границе и транспорте Veterinary and sanitary control at the border and transport	This discipline studies and addresses issues related to the movement and transportation of goods across the state customs border and within the country – the Republic of Kazakhstan. It focuses on the control, veterinary-sanitary supervision, and monitoring of goods to prevent the entry of parasitic and infectious diseases potentially hazardous to human health into the country. The discipline outlines methods for controlling the quality of products and raw materials of plant and animal origin.
241.	ВСЭ продуктов растениеводства, рыбоводства и пчеловодства VSE of crop, fish and bee products	The discipline studies the sanitary examination of foods of plant origin. It teaches methods for assessing the quality of plant products based on ongoing research; introduces the classification of pond and lake-commercial fish farms, beekeeping products in apiaries. It considers methods for determining nutritional and biological value. It clarifies general requirements for sampling for examination, the algorithm for conducting organoleptic, laboratory researches of fish and bee products for good quality.
242.	Гигиена молодняка сельскохозяйственных животных и птиц Hygiene of young farm animals and birds	The discipline studies the influence of climate, feed, soil, water, maintenance and care on the organism of poultry and animals. It prepares recommendations that contribute to high productivity, rational feeding, maintenance, care, and also breeding, ensuring high productivity of poultry and animals. It teaches the elimination and weakening of unfavorable factors affecting the health and hygiene of young animals.
243.	Инвазионные болезни рыб и пчел Invasive diseases of fish and bees	The discipline provides the veterinarian with the necessary knowledge on the morphology and biology of pathogens of invasive diseases, pathogenesis, diagnosis, therapy, as well as prevention of infectious and noncontagious diseases of fish and bees, the causes of which are various organisms of animal origin which parasitizes on the body of an animal (insect), in order to prevent the spread and economic damage of invasive diseases of fish and bees.
244.	Кормовые отравления животных Feed poisoning of animals	The discipline examines the causes of feed poisoning, explains the mechanisms of toxic action of poisons, considers clinical symptoms, evaluates pathological-anatomical changes. It discusses methods of diagnosis, treatment, and prevention of animal poisonings. It demonstrates regularities of toxic action of poisons on the organisms of birds, fur-bearing animals, and fish. It studies manifestations and features of chemical toxicoses, phytotoxicoses, and toxicoses caused by animal origin poisons.
245.	Организация искусственного осеменения животных и птиц Organization of artificial insemination of animals and birds	The discipline explains the basics of performing artificial insemination of farm animals and birds; studies the physiological and anatomical features of the reproductive apparatus of females and males. After studying the sexual reflexes of females and males, the discipline introduces the preparation of an artificial vagina, methods of obtaining ejaculate, evaluation, dilution and storage of semen. It examines the organization of artificial insemination of cows, ewes, mares, sows, birds and rabbits.

246.	Технология, гигиена, санитария и ветеринарно-санитарная экспертиза мясо-молочных продуктов Technology, hygiene, sanitation and veterinary and sanitary expertise of meat and dairy products	This discipline studies the technology of meat and dairy production, various raw material processing technologies, the production of high-quality products, veterinary-sanitary control over the quality of animal products and raw materials, and the implementation of veterinary-sanitary measures in meat and dairy production facilities. It covers the technologies of production, sanitation, and veterinary-sanitary expertise of meat products such as sausages, canned meat products, horse meat, large horned cattle, sheep, pigs, and fermented milk products.
247.	Ветеринарная ортопедия Veterinary Ortopediy	Veterinary orthopedics teaches methods for determining and verifying the anatomical and topographic structure of the bone apparatus and hooves of animals in the sequence of biomechanical movements in them. It also teaches to consistently describe hoof diseases known in veterinary practice. Students master the techniques of restoring hoof deformity. When identifying deviations in relation to the general orthopedic concept, it teaches the identification of etiopathogenetic and clinical signs depending on the setting of the limbs of animals with the disease.
248.	Теория и методы эксперимента Theory and methods of experiment	Based on the basic requirements of science, the student learns to determine the tasks of his research work and theoretically form and consolidate a system of methodological thinking. At the same time, he logically builds the position of the scientific theoretical principle, formulates search sequences in the analysis of experimental methods. Based on these basic principles, it is possible to determine the flexibility in the formation of a research form of using modern scientific achievements of veterinary medicine for purposes.
249.	Ветеринарная офтальмология Veterinary Ophthalmology	Veterinary ophthalmology allows you to master the skills of procedures and work with the organs of vision. Based on the biological characteristics of animals, methods of examination of the functional capabilities of the organ of vision and its anatomical structure are studied. Forms skills for the development of pathological processes in eye diseases and the use of therapeutic and surgical techniques. Teaches to develop a plan of modern measures for the prevention and treatment of diseases of the visual organs.
250.	Ветеринарное делопроизводство Veterinary office-work	Veterinary records management meets the basic requirements for the registration of veterinary accompanying and mandatory documents in the implementation of veterinary and sanitary measures, transportation of animals and products of animal origin in compliance with the requirements of the legislation of the Republic of Kazakhstan. In the process of training and paperwork, in addition to the main legislative documents, the student learns to make out economic, statistical, accounting and other data related to the production necessity.
251.	ГИС-технологии в эпизоотологии GIS technology in epizootology	Geographical information system (GIS) in epizootology is distinguished by its veterinary significance. GIS technology allows computer automation to constantly get acquainted with program data, systematizing epizootological information and long-term statistical data. In the GIS structure, students are trained on an electronic map and the requirements for the introduction of cause-and-effect relationships in relation to the disease and the dynamics of the spread of infectious diseases in animals.
252.	Краевая эпизоотология Regional epizootology	Regional epizootology monitors and analyzes infectious diseases among animals and birds. Depending on the nosological forms of the infectious source, territorial security and the possibility of its spread

		are indicated, as well as their own predictive prescriptions for buffer zones. In this regard, students will acquire the skills of drawing up plans for the prevention of infectious diseases. During the training, the skills of predicting abiotic objects with a high probability of infection are acquired.
253.	Организация научных исследований и методика написания магистерской диссертации Organization of scientific researches and technique of writing of the master thesis	The researcher has the opportunity to develop a research plan and organize activities and analysis of the results, as well as refer to relevant scientific papers and justify them. In addition, according to the basic requirements for writing a master`s thesis, students learn to formulate research results with appropriate descriptions and their general semantic content in accordance with the main goals and objectives of the specialty and research work.
254.	Хирургические болезни кошек и собак Surgical diseases of cats and dogs	The subject surgical diseases of dogs and cats teaches to determine the pathogenesis, pathological process in an animal and determine the need for surgical intervention. In other words, the discipline teaches the anatomical structure of organs in need of surgical care, based on its task and the topographic description of the pathological focus in this organ, to determine surgical access to it, to plan the operation and its conduct.
255.	Эпизоотологический мониторинг инфекционных болезней животных и птиц Epizootological monitoring of infectious diseases of animals and birds	The discipline teaches the conditions for the penetration of a pathological factor into the animal`s body, which is of particular importance in infectious diseases of animals and birds, with the sources of its origin. In this regard, he is mastering the study of etiopathogenetic processes in relation to the nosological form of an infectious disease. It also evaluates the epizootological situation associated with the disease and predicts relapses, summarizes basic territorial information and plans veterinary and sanitary measures against it.
256.	Современные проблемы ветеринарной медицины Modern problems of veterinary medicine	The course is aimed at systematizing and additions available to undergraduates knowledge of methodology and methods of research and presentation of the results in a thesis.
257.	Судебная экспертиза заболеваний и смерти животных Forensic examination of diseases and death of animals	The discipline studies conducting a forensic veterinary and sanitary examination in case of violations of feeding, exploitation and maintenance of animals. When buying and selling animals, conduct a forensic veterinary examination to prevent infectious diseases. Judicial veterinary and sanitary examination of meat and meat products in case of violation of meat processing technology (imported raw materials). He studies toxicology, thanatology, traumatology.
258.	Ветеринарная энтомология и энтомологические методы исследования Veterinary entomology and entomological methods of research	Veterinary entomology develops in close connection with biological sciences and other branches of entomology, studies the spread of insects in the biological environment and their benefits and harm to animals, it studies the issues of the causative agent of animal diseases, the carrier of pathogens of various infectious and invasive diseases, and also considers their biological feature in reducing the quality of animal products.
259.	Диагностика незаразных болезней молодняка Diagnosis of non-communicable diseases of young animals	The subject teaches a detailed consideration of the etiopathogenetic factors taken into account in the assessment of non-communicable diseases of young animals - from the embryonic and postembryonic points of view. In this regard, the veterinary conditions imposed on the female animal during the embryonic development of the offspring are discussed. The etiological consequences of factor diseases are also being studied according to the anatomical, physiological and biological characteristics of young animals after their birth. At the

		same time, methods of differentiation in the diagnosis of systemic diseases are being studied.
260.	Клинические и биофизические методы диагностики болезней органов размножения Clinical and biophysical methods for diagnosing diseases of the reproductive organs	Allows you to learn how to work with modern devices for diagnosing diseases of the genital organs of animals and determining the functionality of the organ. In this direction, it makes it possible to conduct a biophysical examination based on the anatomical and physiological structure of the penis, depending on the timing of its anatomical and physiological maturation. The identification of the consequences of impotence and pathological processes in the genitals of animals, the identification of therapeutic and preventive measures.
261.	Практическая терапия в ветеринарии Practical therapy in veterinary medicine	Based on the practical principles formed on the basis of the principles of veterinary therapy, the veterinarian forms his own experience in the treatment, prevention of animals in accordance with modern requirements. Teaches to describe the rationality of treatment and formulate the rationale for treatment, identifying the etiopathogenetic factor, by appropriate diagnostic differentiation of the nosological form of the disease before treatment. It is based on the stimulation of cellular and humoral factors to increase the resistance of the body.
262.	Редкие и экзотические паразитарные болезни животных Diagnosis and prevention of rare and exotic parasitic diseases of animals	Studies parasitic diseases of animals that occur during life in conditions other than the environment adapted to climatic and biogeocenotic conditions of growth or natural habitat. Drawing up plans to prevent the spread of diseases. Various checks concerning the occurrence of these diseases, especially among wild animals, are being investigated and methods of conducting special veterinary measures are being studied. As a result of the training, prerequisites are formed for acquaintance with exotic invasive, tropical animal diseases.
263.	Современные методы лечения и профилактика паразитозов птиц Modern methods of treatment and prevention of parasitosis of birds	During the treatment of parasitic diseases of birds, they are trained to familiarize themselves with advanced technologies of modern therapeutic, preventive measures through information messages and their expertise. The analysis of the ways of bird damage, the mechanisms of the spread of the disease is carried out, taking into account the epizootic conditions of helminthic diseases, the prognosis of appropriate measures is studied. Characteristics of the use of rationality of advanced veterinary measures in relation to invasive diseases are provided.
264.	Биотехнология в животноводстве Biotechnology in animal husbandry	The discipline studies modern areas of biotechnology related to the purposeful construction of new combinations of genetic material capable of reproducing in a cell in vitro, in vivo and synthesizing a specific product. The discipline studies the achievements of biotechnological science and can create new directions in animal husbandry and the production process, using knowledge of the biological foundations and methods of biotechnology to improve the production process in animal husbandry.
265.	Ветеринарная арахнология и акарологические методы исследования Veterinary arachnology and acarological research methods	Veterinary arachnology studies the specifics of the transmission of infectious and invasive diseases, which is caused by the defeat of living arthropods by parasites. The preliminary conditions for reducing the productivity of animals to a large extent are also considered, despite the fact that they are not directly susceptible to death. In this regard, veterinary arachnology teaches to describe the scientific basis of measures to combat direct and indirect effects on productive animals.
266.	Внутренние незаразные болезни кошек и собак	The discipline studies etiopathogenic factors of non-communicable diseases occurring in dogs and cats. It also teaches pathophysiological

	Domestic non-communicable diseases of cats and dogs	recognition of manifestations of clinical symptoms arising from the pathological process and the identification of nosological cognitive disorders. In this regard, they teach differentiation by clinical signs of the results of morphobiochemical analysis in the diagnosis and classification of diseases and give therapeutic characteristics of the treatment and prevention of diseases.
267.	Внутренние незаразные болезни птиц Domestic non-communicable diseases of birds	The discipline studies the clinical, pathological, anatomical data of non-infectious diseases occurring in birds, in connection with the biological characteristics and sexual maturity of the bird and the purpose of its maintenance. Teaches to substantiate the etiology-pathogenetic features of the disease based on the diagnosis. He studies the main problems of considering the processes of polyethological development, designing types of tests using methods in its isolation. Poultry farming studies the mechanisms of reducing resistance and the occurrence of concomitant diseases.
268.	Гематологические параметры животных Hematologic parameters of animals	The functions in maintaining homeostatic stability in accordance with the genotype of the animal are hematological and physico-biochemical processes. With the development of methods of mathematical modeling of the sequence of hematological indicators, the characteristics of the phenomena in it are studied. The morphophysiological picture of blood is mastered, the assessment of animal health by clinical and immunological examination. Based on the data obtained, the skills of drawing up a special plan of measures for treatment and prevention are acquired.
269.	Кинология и фелинология Kinologia and felinology	The discipline studies the development of domestic animals, the principles of various veterinary and zoopsychological requirements in their development. It determines the needs of research in the development of the biological potential of the animal. Teaches to solve problems that arise during breeding work in the process of their cultivation. At the genetic level, the ways of assimilation of certain habits and skills in an animal are being improved, methods of treatment and prevention of various diseases are being studied.
270.	Клиническая анатомия (Секционный курс) Clinical Anatomy (Sectional Course)	The purpose of the subject is to assess the condition of an animal in relation to its biological characteristics and physiological state from the point of view of clinical anatomy and veterinary assessment is studied. In this regard, they learn to determine the necessary prerequisites for the development of the animal and the corresponding needs of veterinary measures.
271.	Нетрадиционные методы лечения незаразных болезней животных Nontraditional treatments for non-communicable animal diseases	The physicobiological mechanisms of action of various factors in the treatment of animals by non-traditional methods (needles, weak currents, laser radiation, cold, pressure burns, irritants, etc.) that affect biological points in the animal`s body are described. In this regard, biochemical and biophysical formations of morphological structure resulting from the influence of a factor on a biological point form systemic and positive aspects in the body of animals as a whole.
272.	Онкопатология Oncopathology	In modern conditions, the problem of oncological diseases among animals is also relevant in veterinary practice. In this regard, the achievements of science and technology in the field of diagnostics and early detection of the dynamics of oncological pathogenetic processes in the animal body are studied in veterinary medicine. As one of these etiopathogenetic important factors, he masters the study of new scientific research in order to identify genetic abnormal predisposition, heredity and biases in breeding conditions.

273.	Паразитарные и инвазионные болезни кошек и собак Parasitology and parasitic diseases of cats and dogs	In the organs and tissues of the body of dogs and cats, pathogens of invasive diseases selectively accumulate in various organs and only in one organ, depending on the biological characteristics of adaptation to habitation. during the diagnosis of invasive diseases, special verification studies are carried out on various samples. The application of morphological, biological reference methods for the detection of invasive diseases of microscopic size and the isolation of their specific species is being studied.
274.	Проблемы болезней незаразной этиологии Problems of diseases of a noncontagious etiology	Currently, due to the intensive development of animal husbandry, in the process of achieving high rates of animal products, infectious etiological diseases occur in animals. In this regard, new approaches to the modern solution of urgent problems are being considered, they are being studied in separate branches of veterinary science. In parallel with the justification of the consequences of etiological factors, they teach the assessment of animal health depending on the indicators of immunological resistance of the organism.
275.	Современные методы диагностики, лечения и профилактика в акушерстве Modern methods of diagnostics, treatment and prevention in obstetrics	In the conditions of intensive development of animal husbandry, he teaches the use of achievements of veterinary medicine used for the diagnosis, treatment of obstetric animals diseases with the maximum use of modern technologies. Teaches the use of technologies to stimulate synchronization of the sexual cycle of the donor and recipient. Allows you to master the skills of using advanced methods of reproduction of genetically potential animals. Studies ways to preserve hygienic independence in obstetrics and breeding work with animals.
276.	Академическое письмо Academic writing	Forms the ability to present the results of scientific research in writing in the word a recommendation note expressing the potential team of the academic environment, expertise and industry. In this regard, the goal is to achieve reliability in order to improve the ability to independently build hypotheses of a theoretical and empirical nature. As well as the ability to work with sources of bibliographic works related to the search direction.
277.	Методы научных исследований Research methods	The discipline teaches the student to observe the ethics of scientific research, forming theoretical and practical skills in accordance with the principles of clinical and morphological studies for veterinary purposes. Relying on the sequence of statistical verification in solving the task, it contributes to the ability to navigate modern information concepts and increase the ability to think and formulate them on a scientific basis.
278.	Общая патология General pathology	General pathology - studies the patterns of development and completion of the disease on the basis of fundamental sciences. The basis of the discipline is pathological physiology and pathological anatomy. In this regard, pathological processes are studied in the teaching of the discipline: inflammation, dystrophy, necrosis, atrophy, impaired microcirculation, immunopathological processes, allergies, fever, etc. In addition, independent diseases are considered from a research point of view.
279.	Акушерские и гинекологические болезни кошек и собак Obstetrics and Gynecology diseases of cats and dogs	Explains the basics of physiological and pathological processes associated with obstetric and gynecological diseases of domestic animals, depending on their biological characteristics. In this regard, he studies the functions of the genitals, diseases of the mammary glands and genitals during pregnancy, childbirth and the postpartum period. As well as diseases of offspring, postembryonic development and infertility.

280.	Биотехнологические методы размножения животных Biotechnological methods of animal reproduction	Obtaining knowledge about the course of physiological and pathological processes associated with the growth and development of productive animals. Studies reproduction biotechnology, artificial insemination, embryo transplantation (zygotes) for the provision of special zootechnical services corresponding to the direction of the economy. Mastering the conditions for stimulating females and males in natural and artificial conditions.
281.	Мониторинг и лечение акушерских и гинекологических заболеваний Monitoring and treatment of gynecology diseases	The discipline teaches models for monitoring obstetric and gynecological diseases based on physiological capabilities and related biological patterns in animal insemination. Masters the biotechnics of modern methods of therapy of obstetric and gynecological diseases and the detection of infertility with the restoration of the function of the reproductive organ in conditions of artificial insemination, the use of biologically active and hormonal drugs.
282.	Мониторинг и лечение паразитарных заболеваний Monitoring and treatment of parasitic diseases	The discipline teaches to formulate the rationality of treatment in connection with the situation of parasitic epizootics. Based on the study of the nosological profile teaches to give a comparative justification of the rehabilitation effectiveness of the drug and optimizes training based on the influence of therapeutic and preventive measures on the physiological state and natural resistance of the animal.
283.	Особо опасные гельминтозы Especially dangerous helminthiasis	On a parasitological basis, from the point of view of complex biological science, the study of especially dangerous helminths prone to symbiotic survival in relation to parasitic life is considered. In this connection, the theoretical principles of "parasite-the main host – the external environment", the possibility of survival in the body from the immunosuppressive effect on the stimulation of the immune response in the formation of immune complexes due to tissue helminths are explained.
284.	Особо опасные протозоозы Especially dangerous protozoa	The teaching of the discipline deals with particularly dangerous diseases caused by protozoa related to eukaryotes, prone to parasitic life. In this regard, four types of protozoa are trained, which can exist in the human and animal bodies. The conditions of the spread of the simplest diseases will be analyzed: climatic, socio-economic, endemic and "cosmopolitan".
285.	Микробиологический контроль продуктов животноводства и птицеводства The microbiological control of meat and poultry products	The discipline studies the order and methods of periodic monitoring of bacteriological indicators. Conducting microbiological analysis of animal meat and wild professional animals. Undergraduates possess methods of sanitary and bacteriological research of meat of animals and birds. Possess methods of bacteriological research for the isolation of bacteria and the study of microbial diagnostics. Determination of the total number of bacteria. Relatively acceptable norms of inhibitory substances and contamination of food products by microorganisms. Establish microbiological criteria for food safety
286.	Ветеринарно-санитарная экспертиза при особо опасных болезнях животных и птиц Veterinary and sanitary examination at especially dangerous diseases of animals and birds	VSE carcasses and animal organs during forced slaughter. Visualize the organoleptic indicators of the meat of a fallen, sick or animal killed in agony. Describe infectious and endangered diseases in which the slaughter of animals for meat is prohibited. To study the bacteriological examination of the products of slaughter of animals and birds, provided for by the relevant instructions, as well as the rules of veterinary examination and slaughter animals. To study the features of the veterinary and sanitary examination of slaughter products and contagious diseases suspicious for the disease. Describe

		the requirements for personal hygiene of workers involved in the processing of sick animals and poultry.
287.	Микробиологические показатели качества и безопасности овощной продукции Microbiological indicators of quality and safety of vegetable products	The discipline studies methods of microbiological research in plant products, canned vegetable products. Study and identification of groups of lactic acid and acetic acid bacteria, yeast and fungal spores as the most characteristic representatives of the epiphytic microflora of vegetables. Determination of the amount of coliform bacteria in salads and cut vegetables selected at the main stages of production. Pollutants of biological nature. Mycotoxins, toxins. Monitors microbiological contamination of vegetable products. Sanitary and microbiological indicators of vegetable safety.
288.	Микробиология молока и молочных продуктов Microbiology of milk and dairy products	Analyzes the achievements of domestic and foreign science and practice on hygiene and sanitation of milk and dairy products. Solves the sanitary and hygienic conditions for obtaining milk in farms. Prepares undergraduates, conducts a comprehensive assessment of veterinary and sanitary control of milk according to the chosen methodology and analyzes the results, checks the sanitary condition of retail outlets. Express methods for determining the mixture of milk from mastitis, the presence of antibiotics in it. Contamination of food products with nitrates and nitrites, toxic elements and radionuclides.
289.	Патентоведение и защита интеллектуальной собственности Patent and defence of intellectual property	Forms undergraduates to study the basic concepts of intellectual property, copyright and related rights, the patent system. Explains the procedure for registration and submission of documents. Know the formulas and essence of inventions. Selection of the necessary information for the creation of new technical solutions, samples, own inventions. Instills the skills of conducting patent and inventive activities on the problem being developed to obtain reliable data. Know the main provisions of the law and patent law.
290.	Современные проблемы в эпизоотологии Current problems in epizootology	Consider modern problems of veterinary epizootology. Monitor and forecast infectious diseases of mammals, birds, fish and bees. To study epizootological geography and principles of epizootological zoning. Predict the prevalence of infectious diseases in the regions of Abay and East Kazakhstan regions. Analyze the influence of modern environmental conditions on the manifestation of the epizootic process. To study the spread of infectious diseases in the countries of near and far abroad. Conduct an analysis of the protection of the territory of the Republic of Kazakhstan from the introduction of infectious diseases.
291.	Современные проблемы ветеринарно-санитарной экспертизы Modern problems of veterinary-sanitary examination	The discipline studies modern equipment used for slaughter and processing of animals and birds and the introduction of new technological processes for the organization of slaughter, integrated processing of livestock based on innovative technologies. It prepares undergraduates who own the methods of veterinary and sanitary examination, including the detection of xenobiotics, preservatives, aflatoxins, infectious and parasitic diseases of animals, birds, fish, and to give an objective assessment of the safety and quality of animal products. Carries out monitoring and forecasting of invasive diseases in the Republic of Kazakhstan, near and far abroad countries. Studies the prevalence and seasonal-age dynamics of invasive diseases in Kazakhstan. Considers natural focal invasive diseases. It prepares undergraduates who own modern parasitological methods of research on the prevention of invasive diseases among mammals, birds, fish and bees. Objects of veterinary control and supervision develop

		schemes for the elimination and protection of the territory of the Republic of Kazakhstan from the introduction of invasive diseases.
292.	Современные проблемы ветеринарной гигиены Modern problems of veterinary hygiene	To consider modern problems of environmental protection, soil, water, feed production, animal transportation. Know the components of sanitary and hygienic and technological processes in the production of milk, beef, pork and other types of products on an industrial basis. To master ways to protect veterinary surveillance facilities from infection and spread of infectious and non-contagious animal diseases, protection of the population from diseases dangerous to humans and animals.
293.	Современные проблемы ветеринарной санитарии Modern problems of Veterinary Public Health	Studies problems, methods of prevention, development of veterinary and sanitary measures to prevent animal diseases and obtaining animal products and feed of high sanitary quality. The current state of veterinary medicine in Kazakhstan and abroad. Development prospects. State veterinary control over the safety of products. Modern problems of veterinary hygiene, epizootology, sanitary parasitology, veterinary radiobiology. Legislative and regulatory documents on veterinary sanitation
294.	Современные проблемы санитарной паразитологии Modern problems of sanitary parasitology	Carries out monitoring and forecasting of invasive diseases in the Republic of Kazakhstan, near and far abroad countries. Studies the prevalence and seasonal-age dynamics of invasive diseases in Kazakhstan. Considers natural focal invasive diseases. It prepares undergraduates who own modern parasitological methods of research on the prevention of invasive diseases among mammals, birds, fish and bees. Objects of veterinary control and supervision develop schemes for the elimination and protection of the territory of the Republic of Kazakhstan from the introduction of invasive diseases.
295.	Теоретические основы программирования ветеринарных мероприятий Theoretical bases of programming of veterinary events	The discipline teaches the use of informatics and computerization in the management of agricultural processes. Decipher the basic concepts; coding of information of different types, types of data structures, units of processing, storage and accumulation of information. Electronic and calculation tables. Local and global computer networks. Fundamentals of automated search and selection of information. Obtaining and analysis of results, methods of information protection. Solve professional problems, calculations using modern methods, work with technical and reference literature, scientific and technical documentation.
296.	Теория и методы эксперимента Theory and methods of experimental research	The discipline considers the theory, methods and planning models that allow for research work in veterinary medicine. Information retrieval, types and sources of information. Use of modern laboratory and technological equipment. Organization and formulation of modern methods used in veterinary medicine. Status and prospects. To be able to analyze and draw up the received information and analyses. Implementation of research results: patenting, mathematical statistics, approbation, inventions and innovative projects. Rules for writing a scientific article, etc.
297.	Радиационная безопасность продуктов животноводства Radiation safety of livestock products	Classification of toxic substances. Methods of sampling for radiometric studies. Radiation pathology of animals. Sorting and primary processing of affected animals. Veterinary and sanitary examination for internal and external irradiation. Decontamination of meat. Determination of levels of radioactive contamination of agricultural products, radiation dose rate in controlled products. State veterinary supervision of compliance with veterinary and sanitary

		requirements that ensure the receipt and sale of radiation-safe products, including raw materials of animal origin and feed.
298.	Ветеринарно-санитарный контроль в объектах ветеринарного надзора Veterinary and sanitary control in the obiects of veterinary supervision	The discipline studies the control and supervision of meat and milk processing enterprises, livestock facilities, vehicles, sanitary control of the movement of veterinary drugs, feed, etc., located on the territory of the Republic of Kazakhstan. Explains the methods of veterinary supervision of the Agro-industrial complex and the execution of acts of inspection of supervised veterinary facilities. Considers veterinary and sanitary examination as the main method of veterinary and sanitary supervision at slaughterhouses and dairy enterprises, markets, which forms students' skills in assessing the quality of activities in veterinary facilities.
299.	Биологическая оценка безопасности экзотической растительной и животноводческой продукции Biological safety assessment of exotic plant and animal products	Undergraduates should be able to conduct sampling to determine the freshness indicators of exotic fruits, berries and vegetables using the method of luminescent analysis. To study the assortment and characteristics of imported products, regulatory requirements for them, types of risks associated with the shelf life and storage conditions. To improve methods of veterinary and sanitary control of imported exotic products, taking into account their diversity.. Biological and radiation safety assessment of exotic plant products.
300.	Ветеринарная санитария на объектах переработки мяса и молока Veterinary sanitation facilities for handling of meat and milk	The discipline studies the correct choice of a construction site for a meat and milk processing enterprise. To be able to carry out sanitary control at enterprises for the production of meat and milk. Studying the sanitary and hygienic condition of meat and milk according to the state standard. Justify the conditions for obtaining high quality meat and milk. Carry out disinfection, deratization and disinsection. Develops and implement measures to protect territories from the introduction of pathogens of infectious and parasitic diseases.
301.	Ветеринарно-санитарные мероприятия при инфекционных болезнях пчел и рыб Veterinary and sanitary measures for infectious diseases of bees and fish	The discipline considers the development of beekeeping in Kazakhstan, East Kazakhstan region, classification infectious diseases of bees and fish according to international rules. Develops literary skills. Instills the skills of analytical abilities in the field of studying the epizootic situation in beekeeping and fish farms. Forms the ability of students to conduct early diagnosis, make timely decisions in the event of a disease and organize veterinary and sanitary measures to prevent infectious diseases among fish and bees. Considers issues that ensure the quality of beekeeping and fish farming products.
302.	Ветеринарно-санитарные мероприятия при особо опасных инфекционных болезнях птиц Veterinary and sanitary measures for especially dangerous infectious diseases of birds	The discipline studies the classification, diagnosis, and complex of sanitary and preventive measures of infectious diseases of birds common in the world, Kazakhstan, and the East Kazakhstan region. Forms the ability to monitor the epizootic situation, skills of conducting diagnostic studies, planning and implementing plans for preventive and health measures in accordance with the veterinary rules of the Republic of Kazakhstan. Develops the analytical abilities of students, allowing them to prevent disease in the shortest possible time and prevent socio-economic damage from particularly dangerous bird infections.
303.	Ветеринарно-санитарный контроль качества кормов Veterinary and sanitary control of food quality	The discipline helps to master theoretical knowledge and practical skills of veterinary and sanitary control of various animal and bird feeds. Masters the skills of laboratory control of the purity of juicy, concentrated, dried and other various types of animal feed. The ability to give a conclusion when creating veterinary and sanitary remarks to consumers when receiving technical waste of feed and low-quality

		products based on current regulatory requirements to ensure the exclusion of cases of poisoning of animals.
304.	Ветеринарно-санитарный надзор за торговлей пищевыми продуктами на рынках Veterinary-sanitary supervision of food trade in the markets	The discipline studies conducting a forensic veterinary and sanitary examination in case of violations of feeding, exploitation and maintenance of animals. When buying and selling animals, conduct a forensic veterinary examination to prevent infectious diseases. Judicial veterinary and sanitary examination of meat and meat products in case of violation of meat processing technology (imported raw materials). He studies toxicology, thanatology, traumatology. Considers procedural issues, documentation on forensic examination
305.	Ветеринарное законодательство и санитарные нормы Veterinary legislation and sanitary standards	To study the hygienic requirements for the safety and nutritional value of food products. Master uniform sanitary-epidemiological and hygienic requirements for livestock products. To study veterinary terms and definitions, research methodology, regulatory and technical documentation, veterinary norms and rules of the Republic of Kazakhstan. Radiation indicators of food safety. Uniform sanitary requirements for the importation of imported goods into the territory of the member states of the customs union. Marking. Application area. Ingredients
306.	Контроль качества и безопасности животноводческой продукции Quality and safety control of livestock products	The discipline considers issues of veterinary and sanitary quality, safety of livestock products and raw materials. Normative and technical documentation. Be able to determine the structure of muscle tissue and the tissue complex of meat carcasses. The undergraduate must own the methodology of sampling for laboratory analysis, the technology of harvesting, storage and sale, apply innovative methods of quality control of livestock products. Contaminants and types of falsifications, methods of their detection and safety.
307.	Краевая эпизоотология Regional epizootology	Regional epizootology monitors and analyzes infectious diseases among animals and birds. Depending on the nosological forms of the infectious source, territorial security and the possibility of its spread are indicated, as well as their own predictive prescriptions for buffer zones. In this regard, students will acquire the skills of drawing up plans for the prevention of infectious diseases. During the training, the skills of predicting abiotic objects with a high probability of infection are acquired.
308.	Онкопатология Oncopathology	In modern conditions, the problem of oncological diseases among animals is also relevant in veterinary practice. In this regard, the achievements of science and technology in the field of diagnostics and early detection of the dynamics of oncological pathogenetic processes in the animal body are studied in veterinary medicine. As one of these etiopathogenetic important factors, he masters the study of new scientific research in order to identify genetic abnormal predisposition, heredity and biases in breeding conditions.
309.	Санитарно-гигиенический контроль в магазинах, рынках и мелкорозничных торговых точках The hygienic control in shops, markets and small retail outlets	Assess the sanitary condition of retail outlets. To study the sanitary and hygienic requirements for food trade places. Conduct sanitary and hygienic control in shops, markets and small retail outlets. Organize the work and equipment of markets. To assess the conduct of veterinary and sanitary control of canned meat, fish, boiled, semi-smoked, smoked, raw smoked sausages, fermented milk products. Explain the features of the current sanitary supervision of the trade and storage of food products in shops, markets and small retail outlets.
310.	Судебная экспертиза заболеваний и смерти животных	The discipline studies conducting a forensic veterinary and sanitary examination in case of violations of feeding, exploitation and maintenance of animals. When buying and selling animals, conduct a

	Forensic examination of diseases and death of animals	forensic veterinary examination to prevent infectious diseases. Judicial veterinary and sanitary examination of meat and meat products in case of violation of meat processing technology (imported raw materials). He studies toxicology, thanatology, traumatology.
311.	Эпизоотологический мониторинг инфекционных болезней животных и птиц Epizootological monitoring of infectious diseases of animals and birds	The discipline teaches the conditions for the penetration of a pathological factor into the animal`s body, which is of particular importance in infectious diseases of animals and birds, with the sources of its origin. In this regard, he is mastering the study of etiopathogenetic processes in relation to the nosological form of an infectious disease. It also evaluates the epizootological situation associated with the disease and predicts relapses, summarizes basic territorial information and plans veterinary and sanitary measures against it.
312.	Эргономика, этология и гигиена в животноводстве и птицеводстве Ergonomics, ethology and hygiene in livestock and poultry	The discipline studies the patterns and features of genetically determined behavior (instincts) of animals in the conditions of industrial animal husbandry and poultry farming. Analysis and mechanisms of the act of behavior, individual features of the animal, which are manifested in its interaction with the outside world due to economically useful features. Optimal conditions for the use of animals with the selection of appropriate equipment maintenance methods. Equipment and means of mechanization that correspond to the functional and physiological characteristics of animals and birds.
313.	Ветеринарно-санитарная экспертиза с основами ХАССП Veterinary-sanitary examination with the basics of HACCP	The discipline studies the basics, principles and steps of HACCP implementation at livestock industry enterprises. Hazard analysis and assessment of critical control points in production. Development of a Production control Program and a HACCP Plan in production. To analyze the veterinary and sanitary examination taking into account the analysis of hazards and the assessment of critical control points at the stages of the technological process in accordance with the requirements of HACCP. Development of a monitoring system and conducting veterinary and sanitary examination at the stages of critical control points.
314.	Методы научных исследований Research methods	The discipline considers theoretical and practical skills for studying methods of research work in veterinary medicine in modern conditions. Conduct information search, types and sources of information. The use of modern laboratory and technological equipment in the latest research. Analyze and carry out statistical processing of the obtained results. Implement the results of research. Be able to work with patent documentation to obtain a patent for inventions, utility models, industrial models and innovative projects.
315.	Безопасность пищевых продуктов и биологически активных добавок Food and dietary supplement safety	The discipline studies the classification of biological additives by groups. Hazard (risk) factors excess of toxic elements, mycotoxins, pesticides, dosage, mechanical and biological contamination of products.To evaluate laboratory studies of the safety and quality of raw materials and finished products. Methods and results of identification of biologically active additives by codes.Rules and forms of registration of the results of the protocol. Requirements for production, packaging and labeling in accordance with the Law of the Republic of Kazakhstan "On food safety".
316.	Ветеринарно-санитарная экспертиза и безопасность кормов животного происхождения	When studying the discipline, the modern classification of feed and feed additives is studied. The nutritional value, chemical composition and safety indicators of feed, compound feed and raw materials for their production are being monitored at modern agro-industrial enterprises. Doctoral students acquire the skills to carry out an

	Veterinary and sanitary examination and safety of feed of animal origin	examination of the quality and safety of feed in accordance with the requirements of international standards and veterinary and sanitary rules in domestic conditions. Production technology, methods and requirements for storage and preparation for feeding.
317.	Ветеринарно-санитарный контроль нитратов в продуктах растительного происхождения Veterinary and sanitary control nitrate plant products	The discipline studies the permissible levels of nitrates and nitrites in plant products. The dangers of exceeding the norms of nitrates and nitrites in plant products for humans, in feed – for cattle, cattle, poultry. Methods and equipment for determining the content of nitrates and nitrites in plant products. The reasons for the excess of nitrate and nitrite content in plant products, measures to prevent and reduce indicators.
318.	Ветеринарно-экологическая оценка безопасности производства продукции животноводства Veterinary and environmental safety assessment of livestock production	The discipline studies the goals and principles of veterinary and environmental assessment of the safety of livestock production. Norms of pollutants in feed, the environment (soil, water, air), and animal products. Legislative and regulatory acts in the field of ecology and veterinary medicine for the production of livestock products. Methods for assessing, predicting and preventing the impact of environmental hazards on livestock products, including measuring the impact on the safety of livestock products.
319.	Санитарно-экологический мониторинг на объектах животноводства и птицеводства Veterinary and sanitary control nitrate plant products	The discipline studies environmental and sanitary problems in animal husbandry and poultry farming. Ecological passport of the livestock complex. Conducting systematic monitoring of compliance with environmental safety on the territory of farms and complexes. The impact of environmental pollution by wastewater and waste disposal methods Monitoring of the environmental situation. Analyzes information materials on the concentration of pollutants and develops measures to eliminate violations of environmental legislation.
320.	Современные проблемы пищевой безопасности Modern problems of food safety	When mastering the discipline, the issues of food quality and safety are considered. They study the most common contaminants and types of falsification both in the Republic of Kazakhstan and abroad. They master modern research methods and means of identification, examination, evaluation of the quality and safety of raw materials. The doctoral student should be guided by the basic laws of the Customs Union, the EAEU, the WTO, ISO standards regulating the production of quality products. Monitor the quality and safety of food.
321.	Биология индивидуального развития животных Biology of individual animal development	The discipline studies the processes of animal ontogenesis. At the same time, all stages of ontogenesis are studied: prenatal and postnatal. The course examines the structure and development of germ cells, the process of gamete fertilization, zygote fragmentation, the formation of blastula, morula, blastocysts, gastrum, lactation, the development of axial organs, the formation of fetal membranes and placenta, features of mammalian embryogenesis, general patterns of genetic and hormonal regulation of individual development of the organism, critical periods of development.
322.	Введение в специальность Introduction to the specialty	The discipline provides basic concepts about the branches of animal husbandry in order to create an initial idea of the future professional activity, the relationship of the educational program with other sciences, the prospects for the development of the specialty. Contribution of domestic scientists and practitioners to the development of the foundations of science, theory and practice of animal husbandry. Familiarization with zootechnical sciences: private zootechnics, genetics, feeding, hygiene of keeping and breeding farm animals.

323.	Зоогигиена Zoohyena	The course is aimed at studying the interaction of an animal organism with the external environment. The discipline studies the hygiene of the air environment, soil hygiene, hygiene of water and animal watering, hygiene of feed and feeding, hygiene of animal transportation, hygiene of rational care of farm animals, hygiene of pasture keeping of farm animals, occupational hygiene and personal hygiene of livestock workers, zoohygienic requirements in animal husbandry industries.
324.	Кормление сельскохозяйственных животных Feeding of agricultural animals	The discipline studies the full-fledged feeding of animals. The course examines the components of feed in the organization of full-fledged feeding of farm animals, evaluation of feed by digestible nutrients, class membership of feed, proper use of pastures, green conveyor, silage technology, evaluation of the quality of grain feeds, types of compound feeds, animal feed, norms and diets for feeding animals and poultry of different species.
325.	Основы ветеринарии Basics of veterinary	It is aimed at applying the basics of veterinary medicine in the work of a livestock production technologist. The course examines the organization of veterinary measures in our country, the basic concepts of pathophysiology and pathanatomy, clinical diagnostics and pharmacology, methods and methods of general and special animal studies, feed toxicosis of farm animals, prevention of non-infectious diseases, infectious and invasive diseases in farm animals and poultry.
326.	Разведение и селекция сельскохозяйственных животных Cultivation and selection of farm animals	The course is aimed at developing principles and methods for improving the qualities of animals. Examines the history of the origin and evolution of farm animals, exterior and interior features and constitution, productivity accounting, indicators of growth and development of animals, animal assessment by origin and quality of offspring, classification of breeds, methods of breeding farm animals in conditions of intensification, forms and principles of selection and selection.
327.	Акушерство и гинекология сельскохозяйственных животных Obstetrics and gynecology offarmanimals	It is aimed at the formation of knowledge and skills in obstetrics and gynecology of animals. The study of biological laws of reproduction of farm animals; physiological and pathological processes occurring in the body of female farm animals during insemination, fertilization, pregnancy, childbirth and the postpartum period; physiological patterns regulating the reproductive function of animals; veterinary gynecology and andrology of animals; rational methods of prevention and therapy of various diseases in animals.
328.	Анатомия животных Anatomyofanimals	It is aimed at studying the laws of the structure and development of the system and organs of the animal's body, as well as species and age features in the structure. Studies the terms directions, planes of the body, area and parts of the animal's body, body structure, skeleton and bones, joints, muscles, endocrinology, body coverings, anatomy of the mammary gland, nervous system, sensory organs, anatomy of the cardiovascular, lymphatic, respiratory, digestive, urinary, reproductive systems.
329.	Биохимия животных Animal Biochemistry	The discipline is aimed at studying the molecular processes occurring in the cells of a living organism. The course examines the structure, structure and properties of the main biogenic molecules; metabolic processes occurring in the cells of various organs and tissues; finding out the causes of pathology of various diseases and finding ways to treat them effectively; biochemistry of animal productivity: meat, milk, bird eggs, skin and wool.

330.	Верблюдоводство Camel breeding	Mastering knowledge on the technology of camel production. Species, breed and interspecific features of camel hybrids, reproductive qualities of camels, norms and diets of feeding and keeping camels, features of breeding in camel breeding, camel as a working animal, camel meat production technology, ways to reduce the cost of meat production, dairy productivity of dromedaries, bactrians and hybrids, production technology of fur coat in farms are considered.
331.	Ветеринарно-санитарная экспертиза продуктов животноводства Veterinary and sanitary examination of animal products	The discipline is aimed at studying the main technologies implemented in the framework of digitalization of the agricultural sector of Kazakhstan. It includes the creation of experienced digital enterprises in animal husbandry (smart dairy farm, automatic pig farm, etc.) based on intelligent automated and robotic biomachine complexes of a new generation; digital tools for using informative resources; acquisition of practical skills in using digital technologies to solve applied problems in agriculture.
332.	Гистология Histology	The discipline is aimed at studying the structure, vital activity and development of tissues of living organisms. Considers the formation and development of histology as a science, methods of microscopy of histological preparations; methods of studying living tissues; tissue as a system; development and classification of tissues; tissue regeneration; general morphological characteristics and classification and structure of epithelial, connective, muscular, nervous tissue of animals; private histology.
333.	Компьютерное моделирование в животноводстве Computer modelingin animal husbandry	The discipline is aimed at mastering the knowledge and skills of computer modeling in animal husbandry. The specific features of models and their classification, structural processes in modeling, the special role of the model in the process of studying complex systems, basic methods in the construction and analysis of system models, planning of simulation programs MatLab and MathCAD, analysis and interpretation of the simulation results in programs are considered.
334.	Мараловодство Maral breeding	This discipline consists in breeding marals as a branch of animal husbandry. Studies the history of the origin and biological qualities of marals; the concept of the exterior, constitution and interior of marals; productivity of marals; methods of assessing productivity; meat and antler productivity; accounting of products; methods of rearing young animals; the system of keeping marals; features of zootechnical and breeding accounting in maral breeding; selection of methods of selection and selection of marals.
335.	Менеджмент в животноводстве Management in animal husbandry	Formation of students' knowledge and practical skills in the management of processes in animal husbandry. The scientific and methodological foundations of management, management methods, planning, organization of labor, processes, actions, motivation and stimulation, accounting and control, animal feeding management, livestock reproduction management, cattle breeding management, pig breeding management, sheep breeding management, poultry management, horse breeding management, organization and management of small-scale farming are considered.
336.	Методика опытного дела и основы патентоведения The methodology of experimental business and the basics of patenting	The course is aimed at studying the main areas of research that determine scientific and technological progress in animal husbandry, as well as methods and main stages of research work. The course examines the organization of zootechnical experience, conditions that ensure the reliability of the results of experience, systematization, analysis and evaluation of the results of experience, the structure of

		the main types of patent documentation, the purpose and types of patent search, traditional search for patent information.
337.	Механизация и автоматизация животноводства Mechanization and automation of animal husbandry	The course is aimed at mastering technologies in the mechanization of production processes in animal husbandry. Studies the mechanisms of agricultural machinery and equipment of livestock premises and farms, compliance with the rules of their operation, preparation of working systems of machines and equipment for milking animals, preparation and distribution of feed, microclimate, water supply, manure removal, veterinary and sanitary work, automation of drying and ventilation processes, feed production, poultry feeding.
338.	Основы маркетинга в животноводстве Fundamentals of marketing in animal husbandry	Formation of students' basic theoretical knowledge and practical skills in the field of marketing basics in animal husbandry. Theoretical and practical aspects of marketing, the role of the consumer in the system of marketing services, conducting market research in livestock industries, concepts of goods and price, policy formation in matters of goods and prices, competitiveness and competitiveness, marketing management in the field of animal husbandry are considered.
339.	Основы научных исследований в животноводстве Fundamentals of research in livestock	Formation of students' modern skills in determining the methods and methods of conducting scientific research, the rules of evaluation and interpretation of the results obtained. The discipline considers the presentation of primary documentation in animal husbandry, the use of various methods of initial processing of material based on the results of scientific research in animal husbandry, methods and techniques for processing experimental data, economic evaluation of the results of experience, as well as basic research in animal husbandry.
340.	Пчеловодство Beekeeping	The discipline forms knowledge and practical skills on the technology of bee production. The discipline considers the biological features of the bee family, species and breed characteristics of bees and zoning, methods of keeping and caring for bees, reproduction of bees and breeding work in apiaries, new technologies for the production of bee products, features of zonal and regional specialization, planning the size of beekeeping, farms and apiaries.
341.	Рыбоводство Fish farming	It is aimed at studying the current state and prospects for the development of fish farming. The course examines the development of fish farming, the organization of fish cultivation and rearing, fish feeding, assessment of the fatness of fish, fish breeding, organization of fishing, storage and transportation of fish products, basic fishing gear, nets, seines, trawls, fishing vessels, fishing mechanization and refrigeration units, primary processing of fish, organization of promotion of fish products on the market.
342.	Технология и организация производства национальных продуктов Technology and organization of production of national products	The discipline is aimed at the formation of students' skills in mastering the methods of technological processes and the organization of the production of national food products. The course examines a set of technological measures used in the cultivation of horses of different age and gender groups; the main technological aspects, rules and techniques for organizing the production of national meat and dairy products; modern technologies for the production of koumiss with various methods of organizing technological processes.
343.	Физиология животных Physiologyofanimals	It is aimed at studying the integral functions of the body and the functions of all its parts. Examines bone functions, joint movements, physiology of the musculoskeletal system and muscles, blood and other body fluids, body defenses and the immune system, heart physiology and blood circulation, physiology of the digestive system,

		nutrition and metabolism, ovarian and extral cycles, pregnancy and childbirth.
344.	Цитология Cytology	The course is aimed at studying cytology as a science, the current level of knowledge about the cell. Examines the history and methods of microscopic studies, the structure of somatic and germ cells at the submicroscopic level, cellular theory, types of cellular organization, cell surface apparatus, cell musculoskeletal system, endoplasmic network, Golgi apparatus, lysosomes, ribosomes, centrosomes, mitochondria, cell nucleus, cell cycle, cell division.
345.	Цифровизация в животноводстве Digitalization in animal husbandry	The discipline is aimed at studying the main technologies implemented in the framework of digitalization of the agricultural sector of Kazakhstan. It includes the creation of experienced digital enterprises in animal husbandry (smart dairy farm, automatic pig farm, etc.) based on intelligent automated and robotic biomachine complexes of a new generation; digital tools for using informative resources; acquisition of practical skills in using digital technologies to solve applied problems in agriculture.
346.	Частная этология животных Private animal ethology	The discipline is aimed at studying animal behavior, analyzing genetically determined components of behavior and the problems of its evolution. Studies methods and tasks of animal ethology; behaviorism, species stereotype of behavior and labile behavioral reactions, learning patterns, criteria, observation and experiment, learning, general characteristics of instinct, features of ecological approach to ethology, the concept of a sign, Skinner's experiments, differences between human and animal languages.
347.	Экспертные системы в прогнозировании животноводческой продукции Expert systems in forecasting livestock products	Formation of theoretical knowledge and practical skills when using expert systems in forecasting livestock products. The functioning of a static and dynamic expert system, the use of an artificial intelligence expert system, methods and methods of constructing an expert system, a subject-oriented expert system and possible ways of their implementation, the design of a professionally oriented information system using artificial intelligence technologies and knowledge engineering are considered.
348.	Электрификация сельского хозяйства Electrification of agriculture	It is aimed at studying the use of electric energy in technological processes in the production of livestock products. Studies the process of electrification of livestock farms and other premises, the centralization of energy conservation, the use of electric energy in energy-intensive agricultural production processes, energy-saving technologies in animal husbandry, electronic identification systems in animal husbandry, electrical technologies in creating a microclimate in rooms for keeping animals and poultry.
349.	Эмбриоинженерия Embryoengineering	Mastering the theory and practice of micromanipulation with embryos and gametes, applying the achievements of molecular and cellular technologies in order to preserve the existing small and endangered animal breeds. Developmental biology, the process of in vitro fertilization and other assisted reproductive technologies in animal husbandry, the processes of cloning DNA fragments, genome sequencing, genome mapping, the use of assisted reproductive technologies, bioengineering methods for preserving the gene pool of animals are considered.
350.	Птицеводство Poultry breeding	This discipline is aimed at mastering the knowledge of breeding, feeding and keeping of poultry. Considers the biology of poultry, characteristics of breeds and breed groups, crosses, lines, breeding and breeding of poultry, egg incubation; poultry bonification,

		technology of keeping and feeding poultry, technology of industrial production of eggs and meat, organization of slaughter and primary processing of poultry.
351.	Скотоводство Cattle breeding	The discipline focuses on the ability to understand and analyze the technology of production of livestock products. The article considers the exterior and constitutional indicators of cattle; systems, methods of keeping and feeding young animals; dairy, meat and by-products of cattle; herd reproduction; classification of cattle breeds; breeding by lines and families; selection and selection; current technologies for milk and beef production.
352.	Технология производства продукции животноводства Technology of livestock products production	The discipline is aimed at mastering the economic prerequisites for the organization and production of products obtained from the main types of farm animals bred on farmers, as well as in peasant, cooperative, joint-stock and personal subsidiary farms of the Republic of Kazakhstan, the CIS and abroad. The course studies the issues of production technology of individual subsectors of animal husbandry: cattle breeding, sheep breeding, horse breeding, camel breeding, poultry breeding, pig breeding, fish farming, rabbit breeding, animal husbandry, beekeeping, maral breeding, karakul breeding.
353.	Аграрная экономика Agricultural economy	It is aimed at studying the specifics of activities in agricultural production, forms and consequences of state regulation in the agricultural sector. Studies the world agrarian system, the practice of agrarian reforms in the conditions of transitional periods of economic transformations, the effectiveness of the bending supply curve, methods of state intervention in the market, integration in cooperation of producers or trade protectionism, methods of assessing the level of state support for the agricultural sector of the economy.
354.	Биометрия Biometrics	The discipline forms ideas about mathematical methods of processing experimental material to prove the objectivity and reliability of the results obtained, the relationship of signs and phenomena. The fundamental methods of biometrics for the use of explanations of statistical processes in animal husbandry, the most important provisions of variational statistics, as well as the requirements for the formation of data and the main provisions of correlation, variance and regression, as well as work with computer technologies, software are considered.
355.	Биотехнология животных Animal biotechnology	The discipline is aimed at studying the subject and basic concepts of animal biotechnology. The course examines the directions and methods of animal biotechnology research, its importance for breeding, breeding, animal reproduction biotechnology, as well as molecular genetic and cellular foundations of ontogenesis, mastering cultural, embryoengineering, embryotransplantation methods used in animal husbandry, improving the efficiency of animal husbandry by biotechnology methods, the market of commercial biotechnological products.
356.	Биотехнология растений Plant biotechnology	The discipline is aimed at revealing modern ideas about plant biotechnology. Studies the most important stages in the history of the development of biological methods of plant cell cultivation, the study of the basic principles and methods of cellular and genetic engineering of higher plants, as well as cryopreservation and its application to plant cell cultures, including the features of secondary differentiation in plant cultures, the cultivation of plant cells in vitro, the production of callus and suspension cultures.

357.	Бухгалтерский учет в сельском хозяйстве Accounting in agriculture	Mastering knowledge and practical skills of accounting in agriculture, having certain features related to the production of products, as well as the nature of services and labor provided, forms of sales, technological features. The methods of accounting for animals during cultivation and fattening are considered, as well as cost accounting and calculation of the cost of livestock products, including accounting for agricultural products and their sale, mandatory insurance of the company's property.
358.	Звероводство Fur farming	The discipline forms and develops students' competence in the technology of production of animal husbandry products. The characteristics of fur-bearing animals with cellular content, seasonal reproduction and features in the structure of reproductive organs, types of content in fur farming, features of breeding work, determination of the value, quality and sorting of skins of each type of fur, rules for breeding mink, sable, fox, arctic fox, raccoon dog, nutria, marmot, chinchilla are studied.
359.	Информационные технологии в селекции животных Information technologies in animal breeding	Acquisition by students of knowledge about information technologies and the development of basic software products used in modern practice and fully ensuring the solution of breeding tasks in animal husbandry. Computer technologies, software, the concept and characteristics of an automated workplace, management of the production process and breeding work using the IAS program, skills of understanding the capabilities of computer technologies and software are considered.
360.	Каракулеводство Karakul breeding	Formation of knowledge about the state, significance and prospects of the development of karakul breeding at the present stage of the market economy. Breed types of Karakul sheep, distribution zones of sheep, reproduction and cultivation of Karakul sheep, maintenance and feeding, production technology of karakul, basic rules and techniques of slaughter of lambs for karakul, primary processing, storage and marketing of karakul skins, sorting of karakul skins are considered.
361.	Козоводство Goat breeding	Formation of knowledge and skills on the technology of production of goat products. The biology and economic features of goats are considered; dairy, down, wool, meat, combined breeds; breeding and breeding work in goat breeding; goat breeding technique; herd structure; reproduction of goats; lactation of goats; normalized feeding of goats; the main types of goat products – wool, down, milk, meat and by-products; production efficiency goat breeding products.
362.	Коневодство Horse breeding	Formation of knowledge and skills about working, productive and sports horse breeding. Horse breeds, peculiarities of keeping and feeding horses, reproduction of horses, basic principles and techniques of breeding work in horse breeding, technology of horse meat, mare's milk, koumiss, export of horses, training and testing of horses, information about national equestrian games, types of working use of horses in agricultural production are considered.
363.	Кролиководство Rabbit breeding	Formation of students' theoretical and practical foundations for the production technology of rabbit breeding products. The state and prospects of rabbit breeding development are considered; economic and biological features of rabbits; features of keeping and feeding rabbits of the main herd, breeding and non-breeding young; classification of rabbit breeds in the direction of productivity; meat, skin, down productivity of rabbits; measures to ensure the receipt of high-quality skins.

364.	Микробиология Microbiology	The discipline is aimed at forming a theoretical and practical basis for conducting microbiological research and analyzing the microflora of living organisms living in different environments. Systematics of microorganisms, prokaryotes and eukaryotes, bacteria and archaea, nomenclature and morphological features of microorganisms, physiology of microbes, systematics of prokaryotes, isolation of pure cultures of aerobic and anaerobic bacteria, genetics of microorganisms, the doctrine of infection, the evolutionary process of microorganisms are considered.
365.	Овцеводство Sheep breeding	The discipline is aimed at studying industrial technologies for the production of sheep products. The biological features of sheep, zoological and industrial or economic classification of breeds, breeding and breeding work, sheep breeding zones of different directions in the breed zoning of Kazakhstan, intensive fattening and feeding of sheep, wool, meat and dairy sheep breeding, methods of increasing the meat, wool and dairy productivity of small cattle are considered.
366.	Пищевая биотехнология Food biotechnology	The course examines the prospects for the development and current issues of food biotechnology as an important priority area of science. Examines the systematization of biotechnological bases for processing plant and animal raw materials in the field of enzymatic bioconversion technologies, methods and methods for creating genetically modified food sources and regulating their use in legislation, the use of significant biotechnological processes in food production.
367.	Племенное дело в животноводстве Breeding business in animal husbandry	Formation of theoretical skills of breeding work for practical activities. The course examines the system of breeding work in animal husbandry, the theoretical justification of breeding, evaluation of breeding qualities of producers of farm animals during selection, forecasting the effect of breeding, breeding work in animal breeding, breeding value of producers, breeding work in farms of various types, breeding accounting, organization and justification of planning breeding work.
368.	Свиноводство Pig breeding	It is aimed at studying the state, significance and prospects of pig breeding development at the current stage of the market economy. The biology and economically useful features of pigs, quantitative and qualitative indicators, the doctrine of the breed are studied; standards for feeding and keeping pigs, reproductive qualities of pigs, breeding work in pig breeding, in-line pork production, pig production technology, types of specialized farms: reproductive, fattening and with a complete production cycle.
369.	Стандартизация и сертификация животноводческой продукции Standardization and certification of livestock products	The discipline studies the basics of standardization, metrology, assessment of product quality compliance with requirements and regulatory documents, product safety, consumer properties of agricultural products, quality regulation. It includes a general description of standards of different categories and types, a general description of technical regulation, the concept of technical regulations, sanitary and hygienic requirements for product safety, organizational and methodological foundations of standardization, quality and consumer properties of products, standardization of livestock products.
370.	Технология первичной переработки продуктов животноводства	Formation of students' knowledge and skills in managing technological processes for the primary processing of animal products. The rules of transportation of slaughtered animals to the

	Technology of primary processing of animal products	meat processing plant, the schedule of receiving and handing over animals for slaughter, primary processing of slaughtered animals, technologies for processing slaughter products, fat, blood, intestinal and endocrine raw materials, technologies for processing leather and fur raw materials, technologies for preserving and storing meat and meat products are considered.
371.	Товароведение и экспертиза животноводческого сырья Commodity science and expertise of livestock raw materials	Mastering theoretical and practical skills in the field of commodity science and expertise of livestock raw materials by students. Animal raw materials are considered as a product of industrial use, types of classification and coding of animal raw materials, assortment of animal raw materials and analysis of its structure, methods of assessing the quality indicators of animal raw materials, problems of information support of commodity science and examination of goods, commodity science and examination in customs.
372.	Информационно-управляющие системы в животноводстве Information management systems in animal husbandry	Formation of knowledge for working with information and control systems used in animal husbandry. The discipline is aimed at studying information management in animal husbandry, knowledge of specialized software for agribusiness, mastery of multifunctional information and control systems in the agro-industrial complex ("IAS", "ISH"). The SELEX system (breeding, economics, system) includes subroutines for optimizing breeding, veterinary and preventive work, feed use, optimization of technology in animal husbandry, etc.
373.	Информационные технологии в животноводстве Information technology in animal husbandry	Formation of knowledge for the use of information technologies in the management of zootechnical and veterinary preventive work, control of the productivity of the dairy herd, calculation and analysis of operational and technological indicators of the farm, analysis of animal husbandry technologies. The latest achievements of science in the development of technology for the production of animal products using information technology and the processing of research results, the correct use of information on the subject under study on the global Internet are considered.
374.	Компьютерное моделирование в животноводстве Computer modeling in animal husbandry	The formation of knowledge on the basics of computer modeling in the production of animal products involves the use of various technologies. The discipline examines the types and types of models, the structure of the modeling process, the role of models in the study of complex systems, the systematization and classification of models, the basic methods of constructing and analyzing model systems in animal husbandry, computer modeling in simulation programs MatLab and MathCAD
375.	Методика научных исследований в животноводстве Research technique in animal husbandry	The course is aimed at mastering knowledge and practical skills in conducting scientific research in animal husbandry. The general methodology of conducting scientific research, specific methodological techniques and methods of setting up zootechnical experiments on various types of farm animals, planning and conducting an experiment, logical analysis of the results of experience and drawing conclusions, stages of introducing research work into agricultural production are considered.
376.	Методология научно-исследовательской работы Methodology of scientific-research work	The discipline is aimed at mastering knowledge when choosing the means and methodology of scientific research: treatment, familiarization, direct use, its reproduction and production of new knowledge. The course examines philosophical aspects, methodological foundations of scientific knowledge, structures and main stages of scientific research, methodology of theoretical and

		experimental research, modeling issues in scientific research and helps to choose the right direction of scientific research.
377.	Организация и планирование научных исследований Organization and planning of research	Formation of knowledge and skills of organization and planning of scientific research. The course of this discipline considers: topics, goals and objectives of scientific research; how to search, accumulate and process scientific information, analyze theoretical and experimental research and formulate conclusions and proposals; registration of experimental research results; implementation and effectiveness of scientific research, as well as rules for registration and protection of research results.
378.	Актуальные проблемы животноводства Current problems of animal husbandry	The discipline is aimed at studying modern problems of animal husbandry in the Republic of Kazakhstan and the world, special attention is paid to environmental problems and marketing activities in animal husbandry. The following are considered: a closed cycle of production of animal products and the sale of products by the manufacturer; DNA technologies in the breeding of farm animals; genomic data in poultry breeding; computerization of breeding work and production of animal products.
379.	Инновационные технологии производства продуктов животноводства Innovative technologies of livestock products	This discipline studies innovative production technologies in various branches of animal husbandry. Highly efficient technologies of herd reproduction, artificial insemination and rearing of young animals of all types of farm animals; new technologies for various systems and methods of feeding and keeping animals; ways to increase the productivity of animals and poultry through the use of new breeding and industrial technologies are considered.
380.	Инновационные технологии первичной переработки молока Innovative technologies for primary processing of milk	The discipline is aimed at studying the basic and innovative technologies of primary milk processing. The methods of determining the quality of milk, methods of storage and transportation, pasteurization of milk in modern conditions, waste-free technology of milk processing, processing of all by-products (skimmed milk, buttermilk, whey) into quality products, veterinary and sanitary examination of milk, standardization and certification of milk, environmental problems in milk processing are considered.
381.	Использование современных информационных систем при составлении рационов кормления The use of modern information systems in the compil	Formation of theoretical knowledge and practical skills about modern information technologies in animal feeding, feed evaluation and preparation of feeding rations. The history of the development of information technologies and systems, computer networks and telecommunications, the security of information technologies, the use of modern information systems in the preparation of feeding rations by animal species (sheep, cattle, horses, pigs, poultry) is considered.
382.	Кормление пушных зверей Feeding fur animals	This discipline studies the organization of full-fledged feeding of fur-bearing animals with cellular content. The ways and means of eliminating the most acute problems are considered, using progressive feeding systems for predatory fur-bearing animals and rodents. Familiarization with the characteristics of feed products, compound feeds concentrates, dry type of feeding, the need of fur-bearing animals in minerals and vitamins, preparation and storage of feed.
383.	Кроссбредное овцеводство Crossbred sheep breeding	Formation of scientifically-based ideas about modern technologies in crossbred sheep breeding. The discipline considers: the history of the emergence of semi-fine crossbred sheep breeding; breeding work in crossbred sheep breeding; factory lines and breeding groups; breeding of meat and wool breeds with crossbred wool; methods of

		comprehensive assessment and techniques of wool research, production classification and procurement standards for wool; economic significance and prospects for the development of crossbred sheep breeding.
384.	Методы селекции повышения продуктивности сельскохозяйственной птицы Methods of breeding to increase the productivity of poultry	Mastering the methods of breeding and organization of breeding work in poultry farming in connection with the biological characteristics of birds and the production tasks of farms of various directions. Techniques and methods of improving breeds in order to increase the productive and breeding qualities of birds, methods of selection and evaluation by offspring, principles of selection in poultry farming, breeding by lines and families, hybridization of poultry are considered. Mastering the techniques of breeding and breeding work, organization of productivity accounting.
385.	Оценка питательности кормов Evaluation of the nutritional value of feed	The discipline is aimed at scientific substantiation and practical application of progressive methods of increasing the nutritional value of feed. The process of preparing feed for analysis, methods for determining nutritional value and organoleptic evaluation of feed are considered. Analysis of the nutritional value of feed by chemical composition, energy and nutritional value, determination of their quality, taking into account the requirements of GOST standards, is carried out on modern devices and equipment.
386.	Племенное дело при повышении продуктивности животных Breeding business at increase of productivity of animals	Formation of knowledge and practical use of the law of correlative variability, conjugacy of breeding characteristics in increasing the productivity of animals. The nature of the relationship between individual traits in the process of breeding work is considered; purposeful selection and selection of animals that combine negatively correlating traits well; in-depth breeding work to obtain high-quality breeding animals; the main forms of breeding work in purebred breeding; organization and planning of breeding work.
387.	Современные технологии производства мяса и молока крупного рогатого скота Modern technology of production of meat and milk cattle	The discipline is aimed at studying modern ways and methods of improving the productive and breeding qualities of cattle, the organization and management of modern technological processes in cattle breeding. The organization and systems of milk production, specialization of dairy cattle breeding, the essence of milk production technology, modern technology of beef cattle cultivation, methods of intensive fattening, specialized beef cattle breeding, its productive, economic and technological features are considered
388.	Современные технологии производства продукции овцеводства Modern technologies of production of sheep products	The discipline is aimed at mastering modern technologies for the production of sheep products. The course examines: the current state of the global sheep gene pool, effective technologies for the production of meat, wool, milk; production of sheep products on an industrial basis using progressive intensive technologies, assessment of the quality of fur, fur and leather, smush products in modern conditions; methods of accounting for the productivity of the main and by-products of sheep breeding.
389.	Современные технологии производства продукции птицеводства Modern technologies in production of poultry farms	Formation of knowledge and practical skills on herd reproduction to ensure the modern level of production of eggs and poultry meat. The article considers an industrial herd of laying hens and broilers with certain genetic makings capable of ensuring high production performance of the enterprise; modern technologies that ensure the extension of the period of use of poultry; technological lines in feeding, watering, growing, production of eggs and poultry meat; mechanization and automation systems at poultry farms.

390.	Современные технологии производства продукции свиноводства Modern technology for the production of pig products	Formation of knowledge about the production of pig products on an industrial basis. The following are considered: concentration and specialization; complex mechanization and automation of labor processes; scientific organization and specialization of labor; creation of highly productive animals suitable for intensive use in specific conditions of detention; full and uniform provision of full-fledged feed in the assortment; effective use of feed products through the use of balancing additives and substitutes of industrial production
391.	Технологии первичной переработки говядины Beef primary processing technologies	This discipline studies modern technologies of primary processing of cattle meat. The technologies of cattle slaughter, storage and transportation of carcasses, factors affecting the slaughter and meat productivity of livestock, innovative trends in the development of technologies and equipment for slaughter and primary processing of cattle, including resource-saving technologies for processing by-products, are considered.
392.	Урбанизация и сити менеджмент Urbanisation and city management	The study of the course "Urbanization and City Management" is aimed at developing students' competencies in the field of effective management of cities and urban agglomerations on the principles of an integrated approach; assimilation, development and the ability to apply in practice methods of urban forecasting, planning, coordination of activities, comprehensive analysis, solving problems and performing tasks related to the functioning of urban systems and sustainable development of territories.
393.	Оценка инновационных проектов Evaluation of innovative projects	The course introduces students to the fundamental concepts of project management and behavioral skills necessary for the successful implementation of innovative projects, which can significantly increase the competitiveness of products, reduce production costs and provide commercial products with new consumer properties. Also, the reasons for the failure of the project and ways to reduce risks through proper planning at the early stages of a new initiative are considered.
394.	История экономических учений The History of Economic Thought	The History of Economic Thought is a discipline that studies the evolution and development of various economic theories of ideas and concepts throughout history. It helps to understand which ideas and approaches influence economic thought and influence the impact of economic policies and systems. The content of the discipline includes the study of various schools of economic and draft economists.
395.	Социология труда Sociology of Work	The course is aimed at developing students' theoretical and practical knowledge in the field of social policy of labor activity in enterprises and organizations. The study of the discipline will allow students to consider the social aspects of work and patterns, issues of organization, management and regulation of labor at enterprises in the modern economy.
396.	Ценообразование Price formation	The subject «Pricing» is studied by the main theoretical approaches to the understandable coherence of prices, introduces the price category and pricing methodology in the market, the system of domestic and foreign trade prices. In this course, theoretical and practical prices and pricing-oriented are considered, full-time courses are also studied to encourage students to competently and competently apply pricing policy techniques, pricing strategies and methods of developing autonomous economic solutions that increase the economic characteristics of a business.

(*Please describe sustainability courses/subjects offered on your campus. The following is an example of the description. You can describe more related items if needed*.)

397.	Региональная и национальная экономика Regional and national economy	The discipline «Regional and national economy» studies the social development of the region in the system of the national economy as a whole -economic development, economic reform, its further stabilization teaches the study of certain regional factors. The special state structure of Kazakhstan, natural and climatic, geographical, demographic conditions, the increasing inequality of socio-economic development of the Republic of Kazakhstan, the study of the peculiarities of the region, the study of the state and its individual search for ways to coordinate the interests of the territories
398.	Управление человеческими ресурсами Human resource management	The study of the course is aimed at gaining knowledge in the field of human resource management; mastering effective methods and techniques of personnel management by students, the formation of personnel policy in the organization. Mastering the methods of recruitment and selection of personnel, training and staff development. Training in the skills of forming a system of motivation and stimulation of employees' work; skills to effectively make personnel decisions, create conditions for the maximum realization of employees' abilities and achievement of strategic goals of the organization.
399.	Экономика труда The Economics of labour .	The course examines the foundations of the development of the labor potential of society and labor resources, identify the features of the formation of unemployment and employment, study the patterns of the labor market, and master the methods of calculating labor rationing indicators. This course will explore the priorities of the labor market in the development of society
400.	Экономика городского хозяйства Economy of municipal economy	The discipline «Economics of urban economy» introduces students to the specifics of planning and conducting economic activities of the city, based on the study of the methodology of the fundamentals of planning and economic analysis of urban economy. As a result, students develop the skills of analyzing and calculating the effective volume of the city's infrastructure, taking into account the limited resources necessary for making managerial decisions. It also gives an idea of the features of the cost of production, prices.
401.	Управление малыми и средними предприятиями Management of small and medium-sized enterprises	The course «Management of small and medium-sized enterprises» forms students' comprehensive ideas about the methodology and methods of management in the field of small and medium-sized businesses and adapts theoretical knowledge to entrepreneurial practice. In this course, the methodological foundations of conducting research for drawing up a business plan and financing the organization's activities are studied.
402.	Оценка инновационных проектов Evaluation of innovative projects	The course introduces students to the fundamental concepts of project management and behavioral skills necessary for the successful implementation of innovative projects, which can significantly increase the competitiveness of products, reduce production costs and provide commercial products with new consumer properties. Also, the reasons for the failure of the project and ways to reduce risks through proper planning at the early stages of a new initiative are considered.
403.	Экономика и организация управления в ВЭД Economics and organization of management in foreign economic activity	The discipline "Economics and Organization of Foreign Economic Activity management" is aimed at studying the issues of regulation and management of foreign economic activity of firms, enterprises, state organizations and international institutions. The course introduces students to the specifics of the analysis, planning and justification of the development of foreign economic activity of the

		enterprise, based on the use of economic and financial calculations. Forms the skills of competent business negotiations, the conclusion of international contracts.
404.	Инновационный менеджмент Innovation Management	The study of the discipline «Innovation management» is conditioned by modern requirements for the training of specialists in the field of economics and management. The theory and practical skills in the field of business management are given, which allow making effective administrative decisions in professional activity, revealing the functions and methods of innovation management, mastering the methodology of choosing especially effective options for innovative solutions, the development of innovative activities in the Republic of Kazakhstan.
405.	Прогнозирование и внутрифирменное планирование Forecasting and planning of the company	The discipline is aimed at studying the theoretical and practical foundations of the organization of planning and forecasting the activities of enterprises and firms. Considers the regulatory information base, the system of plans and their relationship, methods and models of planning and forecasting, the main indicators and their calculation. Forms knowledge and skills for drawing up plans, calculating forecast indicators.
406.	Макроэкономика Macroeconomics	The course examines the macroeconomic theory's importance, features of macroeconomic models and indicators, market equilibrium, the state's fiscal and monetary policy, economic growth, open economy, and international trade. It also allows students to use theoretical knowledge in solving practical problems, to learn to analyze the state and trends of the national economy considering macroeconomic phenomena and processes.
407.	Социология труда Sociology of Work	The course is aimed at developing students' theoretical and practical knowledge in the field of social policy of labor activity in enterprises and organizations. The study of the discipline will allow students to consider the social aspects of work and patterns, issues of organization, management and regulation of labor at enterprises in the modern economy.
408.	Социально-экономическое планирование Socio-economic planning	The course «Socio-economic planning» studies the issues of planning the social and economic development of society, develops knowledge skills in the field of theoretical foundations of socio-economic planning, analysis of trends in socio-economic development of society, based on the use of special methods of planning and forecasting based on the use of foreign experience, in order to make competent decisions in in the field of economics and management.
409.	Управление затратами Cost management	The purpose of the course «Cost Management» is the formation of students' competencies in cost management, the ability to conduct analytical work in the field of cost management. This discipline is aimed at forming students with a set of necessary theoretical knowledge to understand the essence of costs and the basics of their management, as well as practical skills necessary for the purposes of strategic cost management.
410.	Управление изменениями в организации Change management	Change processes are a natural part of evolution. However, the changes organizations face today and expect in the future present significant challenges. Managers assist organizational members in meeting both organizational and individual goals. With knowledge of the dynamics of change, managers can help individuals develop the resources and tools necessary to prepare for and move through change processes.

411.	Экономика и организация производства Economics and organization of production	This course is common to several sectors of the economy and is aimed at studying the theoretical, methodological, practical foundations of the organization and operation of the labor of workers, management of labor processes in the enterprise, the organization of payment systems of labor costs, establishing standards and regulations of labor costs, methods of calculation, examines the problems in the organization, rationing labor and wages, ways to improve the efficiency of the labor process.
412.	Экономика производственной сферы Production economy	The production sector of any country plays an important role in the development of the economy, it determines the level of development of the productive forces of the society. The strategy implemented in the Republic of Kazakhstan in order to make the country one of the most competitive countries, puts forward new requirements for the development of the national economy. Studying this course allows students to acquire knowledge of a new mechanism of production work in the current legal, economic, financial and administrative environment.
413.	Экономический анализ Economic analysis	Economic analysis is a multifaceted study of company indices. A discipline that studies economic, mathematical, statistical, correlation and regression relationships, analysis of production and sales of products, the effectiveness of the use of resources, production capacity, fixed and working capital, profit and profitability of products, as well as financial indicators such as liquidity, solvency, payback period of investment capital investment.
414.	Критическое мышление Critical thinking "Critical thinking"	is the familiarization of students with the forms and techniques of rational cognition, the creation of a general idea of logical methods and approaches used in the field of their professional activity, the formation of practical skills of rational and effective thinking.The modern world places very high demands on clarity, clarity, validity of conceptual and argumentative constructions. The main objectives of the discipline is to develop students' rational, problem-oriented, critical thinking.
415.	Логистика Logistics	The course "Logistics" is aimed at the formation of students' knowledge in the field of management of material and related flows in the process of production and distribution of goods. The study of the course will allow students to formulate ideas about modern approaches to improving logistics management; to develop the skills and abilities of analyzing problems in the field of logistics and developing effective proposals for their solution.
416.	Маркетинг услуг Services Marketing	The course will introduce students to the modern economic categories of marketing services, allows them to master the practical aspects of planning and providing competitive services, analyzing the scope of marketing services, and developing an enterprise development strategy. Attention is paid to research and marketing strategy in the services market, pricing, sales of services, communication and promotion of their sales, control and audit of marketing in the service sector, development of innovations in the service sector.
417.	Организация, нормирование и оплата труда Organization, rating and remuneration of labor The discipline	Organization, rationing and remuneration of labor» has a special content, aspects of research, methods of studying human production activity. It considers the issues of working hours, labor rationing, determining the level of tension of labor standards. One of the aspects of its sphere is the provision of social protection of employees, the preservation of their general working capacity.

418.	Основы делового администрирования Fundamentals of Business Administration	This course reveals the basic concepts and definitions in the field of organizational management, explains the requirements for the professional competence of managers, the main approaches that have made a significant contribution to the development of management. Information is provided on business record keeping, personnel policy, disagreement in business management and conflict management.
419.	Организационное поведение Organizational behavior	"Organizational Behavior" is designed to give students in-depth knowledge related to the study of the behavior of personnel in business relationships, with the aim of practical application of the acquired knowledge to improve the productivity of personnel. Studying the course "Organizational Behavior" develops students' skills of correlating actions with the ethical principles of behavior of a cultured person.
420.	Региональная и национальная экономика Regional and national economy	The discipline «Regional and national economy» studies the social development of the region in the system of the national economy as a whole -economic development, economic reform, its further stabilization teaches the study of certain regional factors. The special state structure of Kazakhstan, natural and climatic, geographical, demographic conditions, the increasing inequality of socio-economic development of the Republic of Kazakhstan, the study of the peculiarities of the region, the study of the state and its individual search for ways to coordinate the interests of the territories
421.	Планирование деятельности предприятия Planning of activity of the enterprise	The discipline "Enterprise activity planning" considers the process of setting goals and objectives of the enterprise. Studying the course will allow you to gain knowledge in the field of economics. Students will get acquainted with business planning, the allocation of various resources and the analysis of the activities of structures.
422.	1С: Бухгалтерия 1S: Accounting Discipline	1C Accounting considers a software product that is widely used in the accounting system of the country - 1C Accounting, the order and possibility of use. The order and succession of processing of all assets, financial results and operations with capital in the organization in this software product is studied.
423.	Бухгалтерский учет и статистика Accounting and statistics	When studying the course accounting and statistics, the theoretical, legal and methodological foundations of accounting and statistics are considered. Knowledge is formed according to the methodology of quantitative research of mass processes, evaluated using statistical indicators, learn to process and analyze reporting information. Accounting and statistics are closely related to each other. The joint study of statistical research and accounting data characterizes the correctness of performing business operations.
424.	Корпоративные финансы Corporate finances	This program examines the theoretical foundations of the organization of corporate finance, the financial policy of the corporation, the principles of its management, the basics of financial and mathematical calculations when making financial and credit decisions. Also, this course is aimed at obtaining theoretical skills in the field of financial and economic calculations for planning the company's finances.
425.	Международный учет и сертификация в учете и финансах International accounting and certification in accounting and finance	The course covers the basic principles and rules of international accounting. Accounting of the international level and peculiarities of accounting in different countries are studied. The principles and requirements for international certification in the accounting system. The activities of international organizations that carry out certification in the financial system and the requirements for certification are considered.

426.	Методология научно-экономических исследований Methodology of scientific and economic research	This course presents the basics about science and scientific research. The mechanism of the organization of scientific research is considered, where the main emphasis is on economic research, the methods and methodology of scientific and management systems in the economy are studied, including methods of scientific analysis, synthesis and forecast formation. Special attention is paid to the creation and formation of economic thought, the functioning of domestic and foreign economic scientific schools and their most prominent representatives.
427.	Основы микро и макроэкономики Fundamentals of Micro and Macroeconomics	The course "Fundamentals of Micro and Macroeconomics" refers to the basic discipline in the preparation of students of an economic profile, where the issues of micro and macroeconomic analysis, the main categories, processes and laws are studied. At the end of the course, the student has the skills to analyze and evaluate economic phenomena, events observed in households, firms, enterprises, as well as at the level of certain industries and the state as a whole.
428.	Основы финансов Fundamentals of finance	The structure of the course includes the study of the basic theoretical foundations of finance, the functions of finance in accordance with the concepts of distribution and reproduction, the relationship of finance with cost economic categories, financial resources and financial funds, the financial system of the Republic of Kazakhstan, the principles of its construction, structure.
429.	Основы бюджетирования и планирования Basics of budgeting and planning	This course is aimed at studying the theoretical and organizational foundations of planning and budgeting, making estimates and calculations, practical skills in using tools, as well as building budget methods in the financial system of organizations, budgeting of production, sales, inventories, material costs, labor, commercial and management expenses is the basis of budgeting and the key to the company's efficiency.
430.	Аудит Audit	When studying the Audit discipline, the main stages of the audit, the audit plan and program and the conclusion of an audit contract. The purpose of studying the discipline is knowledge of the basic principles and methods of auditing, the ability to conduct an audit in accordance with the basic principles and postulates of auditing and apply their provisions in practice.
431.	Аудит в соответствии со стандартами МСА (международные стандарты аудита) и ИНТОСАИ (Международная организация высших органов аудита) Audit in accordance with ISA (International Standards on Auditing) and INTOSAI (International Organization of Supreme Audit Institutions)	The course studies audit methods and skills, according to the professional standards of the Supreme Audit Institution (INTOSAI) and the ISA. The discipline studies competence, ethics, planning and prevention of audit risks. Norms for forming conclusions when checking the results of the company's activities and their reliable reflection in the reporting.
432.	Банковские риски Banking risks	The content of the discipline presents the characteristics of the emergence and development of banking risks in all aspects of the banking sector, as well as the main directions of reducing banking

		risks. Within the framework of this course, the main conceptual and financial aspects of banking risk, issues related to the use of banking instruments for risk management, as well as the organization of the activities of commercial banks in the banking sector of the country in modern conditions are highlighted.
433.	Бизнес-проектирование и анализ проектов Business design and project analysis	This course studies the stages and calculation of business projects and their analysis of viability in the long term of successful existence. Studies such key indicators as sales profitability, profitability, production costs, payback period, break-even point, cash flows and net present value, attracting from the positions of investment and lending.
434.	Бухгалтерский учет в сфере услуг Accounting in an online store	The course "Accounting in an online store" examines the features of accounting and reporting in electronic commerce, starting from the stage of creating an enterprise, choosing a form of business, choosing a tax regime and submitting all forms of financial and accounting reports, and also studies in detail the specifics.
435.	Бухгалтерский учет в интернет-магазине State budget and kazanishe case	The course is aimed at studying and analyzing the budgetary system, the formation of the state budget, the budgetary structure of the Republic of Kazakhstan in order to analyze the receipt and efficient use of public resources, as well as the functioning of the domestic treasury system. The structure considers the features of the organization of state and local budgets.
436.	Финансовый и управленческий анализ в Excel Financial and management analysis in Excel	The course is aimed at describing the capabilities of the financial and management analysis program in the Excel database, including analysis of long-term and short-term assets, capital analysis, long-term and short-term, analysis of the cost of production, work performed and break-even production, analysis of the financial condition of the enterprise, financial stability, liquidity, as well as calculation of all related basic financial- economic indicators using the Excel software product.
437.	Финансы зарубежных государств и основы исламского финансирования Finances of foreign countries and the basics of Islamic finance	Mastering the discipline" Finance of foreign countries and fundamentals of Islamic finance " will allow developing applied skills on the problems of modern functioning of financial systems of foreign countries, including the USA, Canada, Southeast Asia and Europe, CIS countries, as well as the formation of a basic set of knowledge to understand the basics of Islamic finance.
438.	Финансы отраслей народного хозяйства Finance sectors of the economy	The course will allow you to explore the current problems of modern functioning and development of the industries of the Republic of Kazakhstan with an emphasis on the substantive issues of the organization of finance of the branches of the national economy, such as the existing domestic industries, agriculture, agro-industrial complex, transport, construction, trade, food and non-manufacturing industries, services.
439.	Фондовый рынок Fund market	This course is aimed at helping students to study the theoretical foundations of the functioning of securities on the stock exchange, as well as activities in financial and derivative markets, practice that studies trends, trends and prospects of modern Forex markets, as well as effective investment solutions, the level of development of domestic and international financial markets for the implementation of securities transactions in practical activities.
440.	Ценные бумаги, биржевое дело и управление	The discipline "Securities, exchange business and investment portfolio management" lays the foundations of theoretical and practical aspects in the field of securities, economic content, essence

	инвестиционным портфелем Securities, stock trading and investment portfolio management	and characteristics of the main types and derivatives of securities corresponding to the characteristics of the main types, and derivatives, values, stock market, as well as securities portfolio management using concepts and principles.
441.	Экономическая статистика Economic statistics	Economic statistics is the main part of statistics, and also provides information about all the laws of the functioning of the economy and basic economic concepts, quantitatively studies mass phenomena in the economic process. The main goal is to develop skills and competencies for studying changes in the structure of the economy, analyzing the movement of economic processes, forecasting.
442.	Экология растений Ecology of plants	Plant ecology studies the influence of a complex of environmental factors on the morpho-physiological characteristics of various plant species, the relationship of various groups and life forms of plants in phytocenoses and biogeocenoses, the basics of conservation and restoration of phytocenoses, ecological-biological and ecological-geographical foundations of the functioning of plant communities, the basics of correction and restoration of plant communities. The discipline forms students' systematic knowledge about the basic laws of the distribution of vegetation cover
443.	Экология животных Animal ecology	This subject allows you to understand the scientific basis of various environmental phenomena of animals, environmental laws common to all living organisms. In the course of mastering the course, students develop knowledge about the types of interaction of living organisms with their environment and living organisms, about the natural patterns of communication, about the impact on nature and economy and human health, about the patterns of adaptation to environmental factors, animal populations.
444.	Биоразнообразие растений и животных Animals and plants bielander	The course examines the biodiversity of the environment, how to protect and use them. Studies monitoring of biodiversity conservation and sustainability of ecosystems, diversity of plants and animals, their structural and functional adaptation to environmental conditions, determination of their place in the biocenosis. Expands the theoretical knowledge of students about the modern systematics of living organisms, the adaptation of plants and animals to evolutionary processes.
445.	Геоэкология Казахстана Geoecology of Kazakhstan	In the course of studying this discipline, young specialists get acquainted with modern environmental problems of the geological environment, the interaction of the geological environment and the Technosphere. Students master the basic methods of ecological and geological mapping of territories. This course assesses the pollution of air, water, reservoirs, lithosphere in the Republic of Kazakhstan and equips students with theoretical and practical knowledge on the subject describing the environmental situation in the regions.
446.	Природопользование и геоэкология Nature management and geoecology	This course covers types of nature management and their impact on the environment, principles of rational nature management, pollution of geospheres, geoecological zoning, anthropogenic factors, global environmental problems, world experience and innovative technologies in their solution. Students supplement their knowledge on environmental problems of Kazakhstan, human development issues, their criteria, peacemaking, energy and raw materials, the world ocean, problems of developing countries, geoglobalization.

447.	Этика финансиста и бухгалтера Ethics of financier and accountant	This training course reveals the basic norms and rules of the organization of the culture of behavior of the future professional employee of the financial sector, explains the requirements for their professional competence The presented discipline is also aimed at consolidating the fundamental concepts through various kinds of business games and situations on the implementation of the corporate code of honor and internal regulations of any economic entity.
448.	Статистика и финансовая математика Statistics and financial mathematics	When studying the course, the methodological and practical foundations of statistics and financial mathematics are considered. Students should master the methodology of calculating statistical economic indicators, processing and analyzing financial information. Discipline is necessary for the formation of future specialists with practical experience in this field, which would allow them to quickly implement their immediate functional responsibilities, while competently managing the levers and tools of accounting and finance
449.	Налоговая отчетность и налоговое декларирование Tax reporting and tax declaration	The subject of the course is the study and presentation of economic knowledge on the basics of the theory and practice of taxes, taxation and tax reporting. In the context of tax reform and the transition to declaring the population, the relevance and significance of this course is beyond doubt, in which the basics of its calculation, payment and filing of tax reports are studied in the context of each type of tax.
450.	Управленческий учет Management accounting	When studying Danish disciplines, the main areas of activity, principles and personal methods of development of production, financial, credit, budgetary, investment and durable operations, training will be essential methods of teaching the cost of certainty of the cost of production and the application of ego to production, will insert the correct management of production costs. Graduates will have to have the skills of applied practical science in the field of administrative training
451.	Финансовая отчетность по национальным и международным стандартам финансовой отчетности Financial statements under NFRS and IFRS	The types of accounting reports and the rules of their formation, and the procedure for their submission are considered in accordance with IFRS and IFRS. international and national standards and modern features "are read". The formation of individual components of these reports, and the benefits of completion are clearly considered.
452.	Финансовый менеджмент Financial Accounting	The study of this discipline should help students in the field of accounting and auditing to carry out accounting of business transactions at enterprises of various organizational and legal forms of economic sectors, improve the skills of compiling the balance sheet, annual financial statements, master modern methods, skills and means of information processing.
453.	Финансовый учет Advanced management accounting	This course is a continuation of management accounting and studies management decisions made by managers of organizations related to entrepreneurial activity based on planning, accounting and analytical information, budgeting process, planning and calculation of production costs, control and regulation of operational accounting, assessment and responsibility for the execution of these decisions, through internal reporting data and company development prospects.
454.	Продвинутый управленческий учет	This course is a continuation of management accounting and studies management decisions made by managers of organizations related to entrepreneurial activity based on planning, accounting and analytical information, budgeting process, planning and calculation of

	Advanced management accounting	production costs, control and regulation of operational accounting, assessment and responsibility for the execution of these decisions, through internal reporting data and company development prospects.
455.	Анализ финансовой отчетности	Financial Statement Analysis In the course of studying the discipline, the issues of analyzing financial statements of organizations are considered, students acquire the skills of "reading" the balance sheet, profit and loss reporting, cash flow, methods of analyzing reporting on changes in equity, drawing conclusions and proposals and providing the management of the organization with reliable information are studied. Based on the results of the analysis, conclusions are formed about the activities and prospects of the analyzed object.
456.	Банковские программные продукты и финансовый анализ коммерческих банков Banking software products and financial analysis of commercial banks	In this course, the theoretical foundations of modern commercial bank software products, including new ones, are studied; the principles of functioning of the electronic payment system, the features of payment instruments used in the banking system are considered. Special attention in this program is paid to current operations and banking services, electronic banking services, the development of credit and investment products for corporate clients and the public. The discipline is aimed at studying the basics of financial analysis of banks.
457.	Банковский надзор Banking supervision	This course examines the theoretical foundations of banking supervision, types, methods of banking supervision, assessment of the current banking system based on statistical materials and information sources, comparison of domestic and foreign banking regulation and banking supervision systems, compliance with mandatory prudential standards by banks, and also performs practical tasks in various areas, rules, methods, tools of banking supervision.
458.	Бухгалтерский учет в АПК Accounting in the agroindustrial complex	The purpose of teaching the discipline is to form students' systemic knowledge about the features of accounting the field of agro-industrial complex; the formation of skills in accounting for the costs of agricultural production and processing enterprises in agro-industrial complexes and the use of methods for calculating the actual cost of production, the ability to identify and write off differences.
459.	Валютные операции Currency operation	The training course is aimed at the formation of knowledge and useful skills on the organization of foreign exchange transactions by second-tier banks, the procedure and technique of cash "spot" operations and varieties of "urgent" operations, insurance and hedging of currency risks, currency dealing, the functioning of currency and stock exchanges, currency regulation and control through the adaptation of foreign practice in Kazakhstan economy.
460.	Международные стандарты финансовой отчетности International Financial Reporting Standards	Currently, the issues of harmonization of the modern accounting system in the country and its compliance with the world level are relevant, with the help of internationally recognized reporting standards for maintaining basic accounting documents in a complex and in accordance with international standards, the role, importance and necessity of them in general for the formation of the domestic accounting system and the presentation of the necessary financial and economic reporting are taken into account.
461.	Международный учет International Accounting	International accounting studies the history and national peculiarities of accounting in foreign countries, accounting methods and models, national standards for the formation of tax (accounting) and financial

		reporting in foreign countries, accounting of production stocks according to GAAP, GASC standards, calculation of depreciation, lease, determination of production costs, types and forms of enterprise reporting, control, determination of financial results and making investment decisions.
462.	Отраслевой бухгалтерский учет Салалық бухгалтерлік есеп	Салалардағы бухгалтерлік есептің ауылдық шаруашылықтағы, сауда ұйымдарында, қоғамдық тамақтандыру мекемелерінде, құрылыс кәсіпорындарында және басқа да мекемелерде есеп жүргізу ерекшеліктерін қарастырады, салалық кәсіпорындар ерекшеліктерімен танысу, қызметтер көрсету, дайын өнімді есептеу сметасын жасау жүргізіледі, сауда, құрылыс, ауыл шаруашылығы және басқа да кәсіпорындардың есебін жүргізу үшін салалық стандарттарда қолданылатын шоттар корреспонденциясының типтік мысалдары қарастырылады.
463.	Оценка эффективности инвестиционных решений Evaluating the effectiveness of investment decisions	The basis of knowledge of this course is the development of financial literacy among students on the problems of investment activity in various objects and spheres of the economy in order to make a competent decision from an investment point of view on the effectiveness of projects and obtain tools for reliable long-term investment of available funds of investors.
464.	Практический бухгалтерский учет на базе 1С Бухгалтерия в соответствии с МСФО (Международные стандарты финансовой отчетности) Practical accounting based on 1C Accounting in accordance with IFRS (International Financial Reporting Standards)	The main objective of the course is the implementation of the academic principle of combining theory with practice, in the course of the study which is a study of accounting for specific situations and their reflection on the basis of the specialized software product "1C 8.3.". The student should learn accounting and proper execution of all ongoing business operations in accordance with IFRS in small, medium business, as well as in state-owned enterprises and national companies
465.	Продвинутый финансовый учет Advanced Financial Accounting	This course is a continuation of management accounting and studies management decisions made by managers of organizations related to entrepreneurial activity based on planning, accounting and analytical information, budgeting process, planning and calculation of production costs, control and regulation of operational accounting, assessment and responsibility for the execution of these decisions, through internal reporting data and company development prospects.
466.	Финансирование и кредитование инвестиций Financing and crediting Investment	The course "Financing and crediting of investments" covers the study of the economic content of students, the concept of investment and its types, as well as the features of investment activities, sources of financing activities, design, microeconomic analysis, identification of sources of investment and financing of activities, identification of important issues during investment activities, methods for assessing the investment climate, the effectiveness of the investment process and investment policy in market conditions.
467.	Финансовая отчетность предприятий Financial statements of enterprises	The purpose of the discipline is to familiarize, review and study in detail all types of financial statements that characterize the current production, economic and financial activities of an economic entity, the methods and methods of filling in according to the Kazakhstan

		standards of financial reporting are considered. When studying this discipline, important issues of preparing.
468.	Цифровые технологии и инновации в бухгалтерском учете и финансах Digital technologies and innovations in accounting and finance	The basics of using modern digital technologies and innovations in the accounting and finance system are considered, important issues of processing and presenting financial information using advanced technologies in the financial and accounting system are revealed, the features of innovations in accounting, accounting reporting and analysis of financial activities of an enterprise, software products, digital information exchange technologies in organizations are studied.
469.	Безопасность технологических процессов и производств пищевых продуктов Safety of technological processes and food production	The discipline "Safety of technological processes and food production" is the scientific basis for studying food technology. Search and analysis of scientific information in the field of nutrition. Skills of working with scientific, reference literature and regulatory documentation in the field of processing. Application of mathematical methods for planning experiments in the technology of processing industries. Processing the results of an experimental study. Implementation and effectiveness of research on the technology of processing industries.
470.	Гигиенические основы питания, безопасность и экспертиза пищевых Hygienic bases of food, safety and examination of food products	When studying the discipline " Hygienic bases of food, safety and examination of food products ", trainees master the quality indicators for food and nutritional safety, the main criteria, categories and scales. They get the basic concepts of the quality of nutrition of the population, the prevention of infectious diseases, food poisoning and helminthiasis. They gain knowledge about preventive measures when traveling to foreign countries. Gain skills in hygienic examination and safety of commonly used food products.
471.	Испытание и контроль пищевой безопасности Food safety Testing and control	The main essence of the study of the discipline " Food safety Testing and control" familiarization with the tasks and types of testing and food quality control bodies, conducting testing as a technological process of food production. Preparation of auxiliary material and testing, sample preparation. Give general information about scientific and technical documentation and requirements for ensuring the testing of food raw materials. possibility Certification of ongoing tests, quality systems testing of food products.
472.	Исследования микробиологических и токсикологических показателей сырья и продуктов питания Studies of microbiological and toxicological parameters of raw materials and food products	The course is aimed at studying the basics of microbiological and toxicological parameters of raw materials and food. Familiarization with the device and the principle of operation of scientific instruments and basic technological equipment necessary for microbiological monitoring of food industry facilities. Organoleptic assessment of food quality. Obtaining knowledge in the field of research on microbiological and toxicological indicators of biological raw materials and materials, studying modern technology and technology used in processing production.
473.	Контроль безопасности продовольственных продуктов и нормы их качества Food safety control and quality standards	The discipline "Food safety control and quality standards" provides knowledge about the contaminants of raw materials and food products, safety standards, skills to prevent the accumulation of contaminants in food products. Basic knowledge about food additives: classification, regulation, control. Food labeling. He studies the components of natural food that adversely affect the body and their influence of culinary techniques and technological processes of food processing.

474.	Методические аспекты оценки качества и безопасности пищевой продукции и продовольственного сырья Methodological aspects of quality and safety assessment of food products and food raw materials	The discipline " Methodological aspects of quality and safety assessment of food products and food raw materials " makes it possible to study the types of social and hygienic monitoring and its main tasks, criteria for monitoring, as well as environmental aspects of nutrition of the population of the Republic of Kazakhstan. Gain knowledge in the regulatory framework of food products in Kazakhstan and environmental certification of food products. Develop regulatory and technical documents and implement in production.
475.	Методы исследований в технологии продуктов питания Research methods in food technology	The result of studying the discipline "Research methods in food technology" is the development of the classification of methods for analyzing food, physical methods of processing food. Acquaintance with the concept of gravimetry, extraction analysis, methods of molecular spectral analysis of food products and atomic spectral analysis, target radiometry and types. Research by optical methods of food analysis, chemical methods of food research, including chromatography.
476.	Механизм обеспечения пищевой безопасности Food safety mechanism	The discipline " Food safety mechanism" introduces students to the Legislative and regulatory framework regarding the control of the safety of food production. Gives skills in managing the production environment of the enterprise, purchased materials. Determine suitability, skills in cleaning and maintenance of equipment, food safety system based on HACCP principles. Definition of Critical and control points, setting critical limits for each point and their monitoring.
477.	Техническое регулирование в области пищевой безопасности Technical regulation in the field of food safety	The discipline " Technical regulation in the field of food safety" studies the technical regulation as the main and main subject of industrial safety regulation, the functions of technical regulation and technical regulation. Acquaintance with technological processes and requirements for the performance of tasks, changes and additions to existing technical regulations. Study of control systems for ensuring compliance with technical regulations and work with modern control devices in the field of technical regulation in the food industry.
478.	Техническое регулирование и безопасность водных ресурсов Technical regulation and safety of water resources	The discipline " Technical regulation and safety of water resources" studies the quality of fish products and the requirements for them, the requirements for fish raw materials for food safety, the manufacturability of production in the fishing industry and explores the areas of state, interstate, international management of aquatic biological resources, control bodies, problems of the modern world fishing. Establishment of innovative centers of the fishery profile as a basis for stimulating research activities.
479.	Техническое регулирование и нормы безопасности в производстве консервов Technical regulation and safety standards in canned food production	The discipline " Technical regulation and safety standards in canned food production" studies the technological characteristics of raw materials, the microbiology of food preservation and ways to protect raw materials and food products from spoilage. Teaches the correct packing of products in containers, types of containers. Mastering the microbiological and thermophysical foundations of thermal sterilization of food products, aseptic preservation of food products. He studies biochemical changes in food products during canning and the use of enzyme preparations in the canning industry.

480.	Физико-химические и структурно механические исследования пищевых продуктов Physico-chemical and structural mechanical studies of food products	The discipline "Physico-chemical and structural mechanical studies of food products" studies the scientific foundations of engineering physical-chemical mechanics, types of structures, types of dispersion, classification of rheological bodies and structural-mechanical properties of raw materials and finished products, technological factors. The student works with methods and instruments for measuring the structural and mechanical characteristics of food products, determines the shear characteristics of food products. The undergraduate determines the density and the influence of technological factors on the characteristics of raw materials.
481.	Экологическая безопасность и качество пищевых продуктов Environmental safety and food quality	In the discipline " Environmental safety and food quality" they receive knowledge on the environmental impact assessment of food products. They master the basics for conducting an environmental review of food products, objects and means of environmental review of food products. They study the methods and results of ecological expertise, data processing and the main ways of food contamination, the possibility of contamination and ways to prevent, hygienic control over the use of food additives and other substances.
482.	Экспертная оценка качества пищевой продукции Expert assessment of food quality	The discipline " Expert assessment of food quality" makes it possible to master methods for determining the main physical and chemical factors affecting the quality and composition of food products, methods for studying the chemical composition and physical and mechanical properties of food products, properties of food raw materials, methods for determining their quality and proper use. To study the dimensions of technological processes and operations that affect the quality of food products and master the basics of food chemistry.
483.	Организация и планирование научных исследований Organization and planning of scientific research	The course is aimed at studying issues and definitions from the field of planning theory and organization of research and innovation activities. Familiarization with the main types of scientific activities and features of the implementation of scientific research projects. Analysis of legislative and regulatory documents governing the relationship between scientific- technical projects. Planning and implementation of results scientific activities on food enterprises. Selection and development of research methodology.
484.	Генетически модифицированные продукты питания Genetically modified foods	The course is aimed at studying genetically modified food products, their consumer properties, quality and competitiveness. The safety issues of genetically modified products are considered. Study legislative, regulatory and technical regulations in the field of regulating the safety of genetically modified food products. Studying the features of modern methods for identifying genetically modified products and information about products. Familiarize yourself with the requirements for labeling genetically modified products.
485.	Гигиеническая безопасность в безотходных технологиях Hygienic safety in waste-free technologies	The discipline " Hygienic safety in waste-free technologies " studies the main areas of non-waste and low-waste technology and the concept of non-waste production and ways to solve environmental problems in food production. Provides knowledge in the field of non-waste production in the meat industry and bone processing for fodder meal, processing of meat industry waste by dry extrusion, processing of animal blood for fodder purposes.

486.	Гигиенические требования безопасности и пищевой ценности пищевых продуктов Hygienic requirements for food safety and nutritional value	The discipline " Hygienic requirements for food safety and nutritional value" makes it possible to master the requirements for regulatory and technical documentation for food products from animal and vegetable raw materials and to determine the contamination of food raw materials and food products with xenobiotics of chemical and biological origin, to conduct a microbiological assessment of food products from plant and vegetable animal raw materials. Check for compliance with sanitary standards and rules for public catering establishments.
487.	Идентификация и фальсификация пищевых продуктов Identification and falsification of food products	In these disciplines, special emphasis will be placed on through and practical skills depending on the region and the identification of food fraud. The course syllabus covers issues such as product counterfeiting, its classification and its relationship with identification. Identification examination, examination of royal goods. Consequences of falsification and measures to prevent it. Familiarization with methods and means of identifying falsification.
488.	Инновационные технологии и рациональное питание Innovative technologies and sustainable nutrition	The discipline " Innovative technologies and sustainable nutrition" makes it possible to master the basics of the science of human nutrition, food products and their chemical composition, to understand the significance of some food components for the human body, the properties of the main and auxiliary components used in food production, the scientific foundations of technological food processes and processing industries, basic and additional raw materials for food production.
489.	Модели обеспечения качества на предприятии пищевой промышленности Model for quality assurance in the food industry	Quality equipment models. Quality management: composite and functional schemes. Requirements for the composition and essence of the parts of the quality structure, their overview. State standards, ISO. Normative and technical documents, their role in the formation of quality. A single sign of quality. Equipping the quality of products, their concept. Enterprise structure: construction and management. Methods for identifying the causes that degrade quality and their exclusion. Forms of quality control at enterprises.
490.	Научные основы производства продуктов питания Scientific basis of food production	The discipline " Scientific basis of food production" provides knowledge and experience in the use of microorganisms and enzyme preparations in the technology of catering and special purpose products. When studying the discipline, the student acquires skills in the technology of canned products from plant and animal raw materials and studies the features of the production of probiotic products. Develops recipes and technological schemes of food products
491.	Опасности химического, биологического и радиоактивного загрязнения в пищевых продуктах Hazards of chemical, biological and radioactive contamination in food	When mastering the discipline " Hazards of chemical, biological and radioactive contamination in food", the undergraduate studies radioactivity and ionizing radiation and its effect on food, sources and routes of entry of radionuclides into the human body, natural and artificial radiation and its effect on food. Gets the concept of the effect of ionizing radiation on the human body and the biological effect of radiation on the human body.
492.	Основы безопасности пищевых продуктов Fundamentals of food safety	The course is aimed at studying the content and essence of ensuring and managing safety in the food industry. Mastering the development of regulatory and technical documentation, methods of planning the work of a structural unit. Methods of testing to determine the quality

		and safety of raw materials and finished products. Familiarization with the means and methods of improving safety, the requirements for the quality and safety of raw materials and finished products
493.	Оценка качества, управлением качеством, моделирование качества пищевых продуктов Quality assessment, quality management, food quality modeling	The discipline " Quality assessment, quality management, food quality modeling" teaches mathematical modeling and modern methods of their research, types of modeling methods and their use. Masters the principles of mathematical modeling in the development of production technology, requirements, the main stages of drawing up a mathematical model of an object, systemic, classical approaches to drawing up object models. Receives skills in information and communication support for modeling, programming.
494.	Принципы организации рационального питания Organization principles of rational nutrition	The discipline "Organization principles of rational nutrition " teaches and gives an understanding of rational nutrition and the physiological foundations of the organization of proper nutrition, the physiological and hygienic foundations of the drinking regimen. Gives the concept of the basic metabolism in the human body during nutrition, about a balanced diet, about the rules and requirements for them. Gives knowledge about the physiological and hygienic foundations of the drinking regime, etc.
495.	Современные методы исследования продуктов питания и сельскохозяйственного сырья Modern methods of research of food and agricultural raw materials	When studying the discipline " Modern methods of research of food and agricultural raw materials", the undergraduate will master electromechanical methods for studying food products, voltametric methods in the study of organic, inorganic substances. Conducts titration, polarography, culometry and other types of food research using research methods and methods. Uses frequently used concepts of optical spectroscopy quantum-mechanical representation of atomic, molecular sectors. food products.
496.	Товароведная характеристика и экспертиза зерновых продуктов Commodity characteristics and expertise of grain products	The discipline " Commodity characteristics and expertise of grain products" provides the necessary skills for the organization of retail and wholesale trade in food products, trade and procurement management activities. Acquires knowledge in the field of modern technologies in the food trade and researches the quality of food products and the requirements for them. Develops and maintains documentary identification and checks for compliance.
497.	Факторы качества и безопасности продуктов питания Food quality and safety factors	The discipline " Food quality and safety factors " studies the main indicators of food quality and gives skills in the study of indicators of the technological process of food production for compliance with the requirements and standards and for checking the technological process of food production using methods of chemical-technological, biochemical and microbiological control of food production.
498.	Экологическая безопасность растениеводческих продовольственных товаров и продуктов их переработки Ecological safety of crop food products and products of their processing	The discipline " Ecological safety of crop food products and products of their processing " gives a general understanding of the theoretical foundations of the storage of fruits and vegetables, determine the parameters of storage of fruits and vegetables. Learn and study about the necessary material and technical base of enterprises for the storage of fruits and vegetables. Get skills in the field of technology for the production of dried and quick-frozen fruits and vegetables.

499.	Экспортный контроль и лицензирование пищевых продуктов Export control and licensing of food products	When studying the discipline " Expert control and licensing of food products", the undergraduate will receive information about state and regional supervision of compliance with the rules of standardization and certification of food products and the concept of the State Register, information services according to the Register and the role of the State Register in the implementation of technical policy and management of standardization and certification. Examine food quality indicators using food research methods.
500.	Инжиниринг малоотходных производств Engineering of low-waste industries	This course focuses on engineering principles and practices for minimizing waste in food production. The topics include sustainable processing methods, utilization of secondary (by-products), resource efficiency, industrial ecology, and cyclic technology concepts. Emphasis is placed on process analysis, optimization strategies, waste stream valorization, and environmental impact assessment in food production.
501.	Инновации в упаковке пищевой продукции Innovations in food packaging	The discipline examines innovations in food packaging. Vacuum and aseptic packaging, made of high molecular weight compounds (petroleum and biological source), storage of products in a gas-modified environment. Studies the use of modern efficient packaging structures. The content structures of food packaging. Food active packaging. Antimicrobial drugs. Antioxidants. Oxygen absorbers, carbon dioxide gas, ethylene. Intelligent packaging. Sensors. Indicators. Radio frequency identification. Properties of the oxygen barrier.
502.	Микроструктурный, физико-химический анализ пищевой продукции Тамақ өнімдерін микроқұрылымдық, физика-химиялық талдау	The discipline considers microstructural, physico-chemical analysis of food products. General characteristics of microstructural, physico-chemical methods of development. Studies the classification of instrumental methods of analysis. Fluorescent research methods, measurement of light quantities, a method for measuring the refractive index of light in solid, liquid media. Mass spectrometric, chromatographic, electrochemical methods of research. Electronic, vibrational, and nuclear magnetic resonance spectroscopy. Potentiometry. Voltammetry. Coulometry. A combination of different research methods.
503.	Промышленная переработка вторичного сырья Industrial processing of secondary raw materials	This course covers technologies for processing by-products and wastes from the food industry into value-added products. Topics include sourcing of secondary raw materials, extraction and purification methods, product formulation, feasibility analysis and regulatory aspects. Emphasis is placed on the sustainable use of secondary resources, recycling strategies, and principles of circular bioeconomy in food production.
504.	Разработка технологии продуктов для геродиетического питания Development of technology for products for gerodietetic nutrition	The discipline examines the specifics and ways of improving herodietics, a review of research and achievements, raw materials and materials for the purpose of creating products of the herodietic direction. He studies the technologies of jelly products enriched with food additives, yogurt, rye bread, bakery products, technologies of canned meat, milk porridges, fermented milk drinks, sausage, pasty products, curd masses, molded fish semi-finished products, food additives, biologically active.
505.	Ресурсосберегающие, Green skills технологии в пищевом инжиниринге	The discipline examines resource-saving, Green skills technologies in food engineering. Technological flow, operation, scheme, processes in the food industry. Application of promising electrophysical

	Green skills technologies in food engineering	methods in the food industry: high-frequency currents, IR radiation, acoustic methods, heat treatment, electromagnetic treatment, microwave methods. Classification of modern methods of raw material processing. Processing of raw materials, semi-finished products by electrophysical methods, characteristics, modes. Saving electricity when processing agricultural raw materials.
506.	Современные методы анализа продовольственного сырья и продукции Modern methods of analysis of food raw materials and products	The course reviews advanced analytical techniques for characterization of food components and products. Topics such as spectroscopic techniques, chromatography, thermal analysis, microscopy and advanced technologies are covered, with emphasis on their application to food quality assessment, safety and process optimization. Emphasis is placed on the fundamentals of analytical techniques, sample preparation, data interpretation, and applications in various food systems.
507.	Современные миниперерабатывающие комплексы Modern mini-processing complexes	This course explores design and operation of compact, integrated food processing plants. Topics include small-scale operations, modular system configuration, process automation, resource optimization and implementation of sustainable practices, benefits of modular systems and their application in food manufacturing that allows for flexibility and scalability. Special attention is given to adaptation of industrial processes for localized or specialized food production.
508.	Технология безглютеновой продукции Technology of gluten-free products	The discipline considers specialized products, development directions, and the prospects of gluten-free products. Studies gluten-free flour products, a variety of raw materials, pentose-containing, beta-glucan-containing, ingredients, mixtures, food components, a range of culinary products, formulations, properties, production, whole grains, increasing the value of food, finding optimal possible ratios, processing modes, technologies for enriching useful substances, various methods of production of gluten-free flour products, quality indicators.
509.	Инновационные технологии переработки-мяса, молока, рыбы Innovative technologies processing - meat, milk, fish	The discipline examines innovative technologies for processing meat, milk, and fish. It studies new technologies for storing meat raw materials. Methods of meat processing: electrical contact, ultrasound. New methods of meat processing. Nanotechnology in the meat industry. New technologies for the production of milk and cream, cheeses, fermented milk products, curds, cottage cheese and dairy products for children, fish and fish products. Technology of products from aquatic organisms: obtained by salting, drying, curing, smoking.
510.	Методология научных исследований Methodology of scientific research	This course covers fundamental principles and practices of scientific research methodology. Topics include literature review, hypothesis development, experimental design, data collection and analysis, research ethics, and the processes and mechanisms for advancing scientific ideas. Emphasis is placed on the application of the scientific method to address questions in food science through well-designed research and careful interpretation of results.
511.	Безотходные технологии в птицеперерабатывающей отрасли Waste-free technologies in the poultry processing industry	The course explores innovative zero-waste technologies in the poultry industry. Students will explore sustainable practices, by-product utilization, and the industry's circular economy principles. Topics include advanced processing techniques, sustainable use of recycled materials, bones, feathers, and wastewater disposal. This course emphasizes reducing environmental impact while maintaining product quality and safety in modern poultry processing plants.

512.	Генномодифицированные продукты питания, методы генной инженерии Genetically modified food products, methods of genetic engineering	The discipline examines genetically modified products. Concept, subject of research. Specifics of manufacturing genetically modified organisms abroad and in neighboring countries, risks during cultivation and methods of genetic engineering. Identification. Methods of detecting transgenic organisms in food products. Modern aspects of safety of genetically modified ingredients in food products. Problems of food consumption and dangerous risks to human health, their impact on food security of countries.
513.	Защита интеллектуальной собственности Intellectual property protection	The discipline considers issues related to the protection of intellectual property objects, in particular, the issues of patenting discoveries, the procedure for creating and introducing applications for the issuance of a patent for discoveries, a useful sample, the rules for completing license agreements. The legislation of the Republic of Kazakhstan. The basic concepts and definitions are given, the methodology for determining the index of sections of the International Patent System, the performance of patent research is given. The requests submitted to the application data for patenting discoveries in Kazakhstan are outlined.
514.	Контроль качества и безопасности продовольственного сырья Quality control and safety of food raw materials	The discipline examines quality control and safety of raw materials and food products. They study the dangers of microbiological and viral occurrence, contamination with xenobiotics, substances from plant and animal husbandry compounds, natural components of food products, genetically modified sources, control of the use of bioactive and food concentrates. Indicators, quality control tools and methods. Quality management. Important quality control methods. Regulatory documents on quality.
515.	Методы научных исследований Methods of scientific research	This course covers basic research methods in food science and technology, including literature review, experiment design, data analysis, and discussion of results. Students will gain hands-on experience with modern methods, statistical tools, and critical evaluation of scientific literature, patents, which will prepare them for advanced research and professional careers in the food industry.
516.	Методы обработки экспериментальных данных Methods of experimental data processing	This course covers statistical methods for analyzing experimental data relevant to food research. Topics include experiment design and development, data visualization, hypothesis testing, regression analysis, multivariate methods, and computer tools (software). Emphasis is placed on the selection of appropriate analyses, proper interpretation of results, and effective presentation of results from food-related experiments.
517.	Моделирование технологических процессов производства пищевых продуктов Modeling of technological processes of food production	The course introduces methods of modeling food production processes. Students will learn to develop and apply mathematical and computational models to optimize food processing operations. Topics include process modeling, predictive modeling, and data analysis. The course emphasizes a deeper understanding of food processes and allows using tools such as optimization and real-time control to improve their efficiency.
518.	Организация и планирование экспериментов Organization and planning of experiments	This course focuses on the systematic design and conduct of experiments in food science research. Topics include statistical principles, factorial designs, randomization, blocking, sample size, data management, and validation of results. Emphasis is placed on the design of efficient experimental plans that maximize information while minimizing resources in food and process research.

519.	Основы HACPP Fundamentals of HACCP	The concept of HACPP. Objects of HACPP regulation. Basic principles. Risk study. Establishing points during raw material supply, ingredient selection, processing, storage, transportation, warehousing, and sales. Entering critical limits for each point. Entering monitoring procedures. Creating corrective actions. Studying and entering verification procedures. Studying and entering registration data procedures. Procedure for entering food safety. Preliminary stages of HACPP. Benefits of using HACPP.
520.	Пищевая безопасность сырья и продукции Food safety of raw materials and products	The discipline considers national and international points of view of the harmlessness of raw materials and products. The main varieties and methods of contamination of food products with various substances, toxins of natural origin from the external environment, the probable danger of using organisms modified with the help of genes, microelectronics based on mini-particles, the possible risk of enriching food with useful substances without controlling important signs of food harmlessness, the planned ways of its supply are shown.
521.	Современные технологии переработки овощей, фруктов, зерна Modern technologies for processing vegetables, fruits, grain	The discipline examines the current state, development prospects, practical issues of processing vegetables, fruits, grain. Stone fruits: promising areas. Plant protection. Modern methods. Processing methods: biochemical, chemical, physical, mechanical: preservation, shock freezing, drying, ozonation; treatment with radiation, in pulsed electric fields, using high pressure, membrane technologies, concentrated freezing, frying in a vacuum, vacuum, "smart" packaging. Storage features.
522.	Технологии белковых текстуратов Technology of protein texturates	This course covers advanced technologies and processing methods for creating textured protein products. Topics include protein sources, methods of producing concentrated protein products, extrusion techniques, protein aggregation/gel formation, and texturing methods. Emphasis is placed on understanding the mechanisms of structure formation, texturing principles, and applications in meat analogs, extruded high moisture content products, and other structured vegetable proteins.
523.	Технология биологически активных веществ и биологически активных добавок Technology of biologically active substances and biologically active additives	The discipline considers the production process of extracting bioactive substances and their concentrates. Studies the production process of extracting bioactive substances from dietary fibers and fats, enzyme preparations, organic compounds of various chemical nature, water- and fat-soluble. Systematization, definition, modern production process of extraction of bioactive substances concentrates. Description of the characteristic, distinctive properties, advantages, disadvantages and the role of probiotics. Symbiotic drugs. The use of bioactive substance concentrates in the manufacture of food.
524.	Технология искусственных продуктов питания Technology of artificial food products	This course examines technologies for the production of artificial or synthetic food products. Topics include plant-based meat alternatives, cultured proteins, in vitro meat technologies, molecular gastronomy techniques, and new sources of ingredients such as microalgae. Emphasis is placed on raw material sourcing, processing methods, product formulation and regulatory aspects of artificial food production.
525.	Фундаментальные, прикладные исследования в науке Fundamental and applied research in science	This course explores the principles and practices of basic and applied research in scientific disciplines. Topics include exploring fundamental questions, theory development, translational research, product/process innovation, modeling techniques, and the fundamentals of research commercialization. Emphasis is placed on

		understanding the complementary roles of basic and applied research to advance food science knowledge and develop effective solutions.
526.	Введение в цифровой инжиниринг Introduction to Digital Engineering	This course examines the history of engineering, its role in the modern culture of creating machines; modern engineering production, the place and role of the scientific approach and invention in it; digital design and construction, its role in the development of digital production; the contribution of scientists to the formation of the mechanical engineering industry; prospects for digital engineering in mechanical engineering, its role at the current stage of development of mechanical engineering. The course is focused on developing knowledge about the digitalization of modern engineering production, the concept of reverse engineering, and modern software.
527.	Инновационные материалы Innovative materials	The course studies the main aspects of replacing traditional materials in mechanical engineering with innovative polymer ones,composite, nanostructured materials; the features of the choice of components for polymer composites are considered materials, methods for predicting the properties of new materials. The course is aimed at developing professional competencies in the field of knowledge of new materials and technologies for their production, as well as developing ideas about nanomaterials and composite materials, methods of their research and areas of application.
528.	Основы взаимозаменяемости Interchangeability basics	This course examines methods for ensuring interchangeability and its methodological foundations in relation to modern products of mechanical engineering and instrument making. Methods for calculating and selecting fits with clearance and interference, calculating dimensional chains and threaded connections, calculating and selecting fits for rolling bearings, methods for selecting fits for keyed connections and calculating the accuracy of gears, as well as recommendations for making working drawings of parts are considered. Examples are given of solving problems of choosing fits with clearance and interference, and standardizing the accuracy of some connections.The course is aimed at developing the ability to make informed choices for given conditions and ensure quality performance of products.
529.	Выбор заготовок в машиностроении Selection of blanks in mechanical engineering	This discipline provides the basis for the classification of machine parts blanks, methods for selecting the type of workpiece for various types of production, methods of designing and producing blanks; gives information about technological equipment and basic principles for choosing equipment used in the production of workpieces in various types of production; studies the design of workpieces using special software; provides information about the mechanization and automation of the production of blanks, low-waste and resource-saving technology for their production. The discipline is aimed at developing skills in selection, design, use of methods and methods of modern production of machine parts blanks.
530.	Инженерное творчество в машиностроении Engineering creativity in mechanical engineering	This course describes the general principles and methods of engineering creativity, ways to form the effectiveness of creative methods for solving design and technical problems, the conditions necessary for engineering creativity, the development of abilities for engineering creativity; development work, features of structural optimization, selection of the type of workpiece and methods of its manufacture, structural analysis of the choice of a typical route for processing parts, the number and sequence of transitions in the

		operation, a rational system of machine tools; design and technological support of wear resistance of parts.
531.	Компьютерные программы и оборудование Computer programs and equipment	This course discusses computer technologies, their role and importance of computer technology in modern society, application of the possibility of packages of application programs for solving problems of engineering technology, systems for supporting the life cycle of products, project management systems, program 1C Production enterprise management, Compass-3D program, paperless document flow in machine building, aspects of application of electronic-digital signature in corporate document flow.
532.	Машинная графика Machine graphics	The discipline includes the following sections: familiarization with the AutoCAD program and existing computer-aided design systems; consider graphic primitives and working with them, blocks and external links; custom coordinate system; learn how to work with drawing design, drawing editing commands, and working with layers. The types of products and design documents are considered; carry out in practice the creation of solid models and their editing, dimensional styles and tolerances, isometric images of the part; three-dimensional modeling.The discipline is aimed at developing knowledge and skills in using SS, USDD when preparing working drawings of parts using modern software.
533.	Механика материалов Mechanicsof Materials	This course examines the strength of materials; geometric characteristics of cross sections of rods; external and internal loads; section method; stress, deformation, concepts of strength, rigidity and stability; mechanical characteristics of materials under tension and compression, bending, shear (shear) and crushing; torsion, complex resistance, stability of centrally compressed rods, inertial and impact loads; strength under stresses that change cyclically over time; calculation of strength, rigidity and stability. The course is focused on the ability to conduct strength calculations for given conditions and ensure quality indicators of products.
534.	Основные элементы технологической подготовки производства в машиностроении Key elements of manufacturing preparation in mechanical engineering	This course covers the main types of production, characteristics and calculations of machine tools, allowable design loads, tools, machining modes, design, calculation and technology for the manufacture of blanks and parts, layout of the mechanical assembly area for production; principles of calculation and ways of ensuring accuracy in the development of technological processes, as well as ways of ensuring the quality of machines, methods of increasing labor productivity and ways of reducing the cost of products.
535.	Проектирование и моделирование в системе КОМПАС-3D Design and modeling in the KOMPAS-3D system	The course program examines the possibilities of creating in KOMPAS-3D drawings of parts of varying degrees of complexity in accordance with the requirements of SS and USDD, using all the capabilities of automated software; preparation of accompanying technical documentation; automation of the project creation process using 3D solid and surface modeling components. The course is aimed at developing knowledge and skills in using KOMPAS-3D software in the design and modeling of various parts and assemblies in mechanical engineering.
536.	Проектирование и производство заготовок Design and manufacture of preparations	This course discusses the main production processes of billets; cast preforms, features of use and design of cast preforms; types of production of blanks by pressure; blanks from long and special rolled products, free forging, volume hot stamping, peculiarities of stamping and stamping design; production of blanks from powder materials, powder materials, forming methods, equipment, tooling, field of

		application; welded workpieces, prospects for low-waste new technologies for production of workpieces.
537.	Теории решения изобретательских задач Theory of inventive problem solving	This course describes the general characteristics of constructive and technological creative activity and the process of inventions; general principles and methods of engineering creativity; common ways of creating the effectiveness of creative methods for solving structural and technical problems; the conditions required for engineering creativity; development of abilities for engineering creativity; research work of students. development work; method of branches and boundaries for solving the traveling salesman problem, optimization of operations for multi-operation CNC machines.
538.	Устойчивость механических систем Stability of Mechanical Systems	This discipline considers the forms of equilibrium and movement of mechanical systems, signs of stability of elastic systems, methods for solving elastic stability problems, basic concepts of the theory of stability of movement; kinematic pairs and their classification; kinematic chain and their views; number of degrees of freedom and generalized coordinates; structural analysis and mechanism synthesis, kinematic analysis; ordinary and stepped mechanisms; planetary mechanisms; differential mechanisms.
539.	Автоматизация и механизация технологических процессов в машиностроении Automation and mechanization of technological processes in mechanical engineering	This course describes the main provisions of automation and mechanization in mechanical engineering; cost-effectiveness of production automation; automated production process; features of tools and devices used in automated production; automatic control systems; elements and devices of automatic control systems; automation of equipment loading and workpiece processing; optimal control of processing accuracy automate the assembly process comprehensive automation of serial production
540.	Организация и планирование современного машиностроительного производства Organization and planning of modern engineering production	The discipline forms the basis of knowledge on planning, design, organization and layout of modern mechanical assembly plants and sites in various forms of production. Examples of organizational and planning calculations for creating production sites and planning the work of main and support personnel are given. The methodology for calculating the labor intensity and machine intensity of production, methods of lean improvements and reasonable organization of the workspace are considered. The course is focused on developing knowledge and skills in performing basic calculations necessary for the design and layout of mechanical assembly shops.
541.	Основы проектирования инструментальных цехов Bases of planning of toolrooms	This course covers general information on the design of tool shops; procedure for designing tool shops; composition and quantity of the main equipment; principle and structure of construction of the main production processes; design of the system of repair and maintenance of tool production, quality control of products, labor protection of personnel; design of the production process preparation and control system; determination of the composition and number of personnel, layout planning solutions of workshops, business justification of the project
542.	Основы проектирования технологических	This course describes the basics of designing machining processes by cutting machine parts based on the general principles and regularities of the engineering technology, the accepted requirements for the

	процессов производства машин Fundamentals of design of machine manufacturing engineering processes	manufacture of high-quality products in the context of creating modern production processes and innovative technologies, with an established production program at the lowest cost of materials, minimum cost and high labor productivity.
543.	Основы ремонта бронетанкового вооружения и техники Basics of repair of armored weapons and equipment	This course outlines the basics of repairing armored weapons and equipment, which consists of performing a set of works in order to bring failed combat vehicles into serviceable condition by replacing (repairing) their damaged or worn-out assembly units; studying the basic principles of organizing and carrying out repairs of armored weapons and equipment using the technological capabilities of enterprises of the military-industrial complex. The course is aimed at developing skills in using the basic laws of mechanical engineering technology when carrying out repairs of armored weapons and equipment.
544.	Основы CAD/CAM/CAE Basics of CAD/CAM/CAE	The course is the basis of theoretical training at the undergraduate level and the basis of engineering and technical activities of graduates. The course is presented in sections: technology of automation of work in mechanical engineering, the use of automation tools for the main types of design and technological work in mechanical engineering. The course is focused on the formation of knowledge and skills of three-dimensional modeling of objects, their processing on CNC machines and computer engineering analysis.
545.	Технологическая подготовка производства при обработке на станках с программным управлением Preproduction planning of machining processes on computer controlled machines	This course discusses the range of parts processed on various types of numerically controlled machines; features of design of operational technological processes on machines with numerical program control; recommendations on selection of cutting modes on machines with numerical program control structure and stages of technological preparation of production or use of machines with numerical program control.
546.	Технология обработки и программирование на станках с числовым программным обеспечением Machining technology and programming on numerically programmed machines	The discipline develops knowledge in the field of computer-aided design. The course is presented in the following sections: description of initial technological information; development of technological routes for processing parts on CNC equipment and modeling of their processing processes using specialized CAM applications. The course is focused on the ability to program technological operations and transitions in the G-cod programming language, develop individual tasks of the technological process of manufacturing parts and plan their automated system support.
547.	Технология производства и методы обработки типовых деталей в машиностроении Machine production technology, reverse engineering	The discipline develops the knowledge and skills necessary for the analysis, research and development of a number of technical processes and equipment. Learns the basic principles of reverse-engineering; use of modern tools and software for analysis, calculations and modeling. Forms practical experience in working with various types of equipment and technological processes, teaches how to propose improvements and innovative solutions. The discipline is aimed at developing skills in the application of methods and technologies of reverse-engineering of parts and machines for the development of the mechanical engineering industry.
548.	Цифровизация сборочного производства	The discipline is aimed at studying the theoretical foundations of machine assembly and equipment of assembly plants, the formation

	Digitalization of assembly production	of skills and abilities to design effective technological processes for machine assembly in machine-building production, the features of machine assembly processes in serial and mass production. Shows the calculation methods performed during assembly operations. Describes solutions for digitalization of assembly production and reduction of manual labor during assembly through the use of modern software technologies.
549.	Экономика машиностроительного предприятия Mechanical engineering enterprise's economics	This course covers the law of the Republic of Kazakhstan on the enterprise; development and placement of enterprises in industries; Enterprise resources and results fixed assets at the enterprise; working capital, production program and production capacity; personnel, labor productivity and wages, production costs, cost of production, accounting, maintenance and calculation of calculation items; peculiarity of cost accounting in market conditions; profit and profitability, calculation of technical and economic efficiency of machine-building production.
550.	Безопасность компьютерных сетей Computer network security	The discipline "Computer Network Security" presents the basic principles and methods of information protection in network environments. It covers the main aspects of threats, vulnerabilities and protection mechanisms in computer networks. During the course, students study modern security standards, authentication and data encryption protocols, as well as methods for detecting and preventing cyber attacks. The course provides students with the necessary skills to ensure network security and protect important information resources.
551.	Бизнес-аналитика Business Analytics	The discipline is aimed at teaching students methods of data analysis and statistical methods.As part of the course, students study the basics of business analytics, business process analysis, data analysis, project planning and management. They also study the principles and methods of visual modeling using UML. During the course, students will learn how to use UML to create class diagrams, sequence diagrams, state diagrams and other types of diagrams that allow you to model business processes and systems.
552.	Системы управления БД MySQL MySQL Database Management Systems	This course will introduce students to the MySQL database management system. The course is aimed at the formation of knowledge and skills of working with MySQL DBMS, including the creation, modification, filling, maintenance of databases. During the training, students will learn the basics of SQL, database concepts, and also gain experience in creating and optimizing queries. The knowledge gained will be useful for developing applications that require working with MySQL databases.
553.	Интернет технологии Internet technologies	This course builds students' knowledge and skills of working with basic Internet technologies such as HTML, CSS, JavaScript, PHP and basic principles of web development. The course covers topics related to the design and development of websites, the creation of dynamic user interfaces, adaptive layout and the use of modern tools and technologies. As a result of the training, students will be able to create effective and interactive websites using modern Internet technologies.
554.	Многоуровневые WEB приложения и интернет технологии	This course builds students' knowledge and skills in developing multi-level web applications, as well as understanding the basic principles of Internet technologies. The course covers topics related to the architecture of multi-level web applications, client-server interaction, working with databases, as well as web application security. As a result of the training, students will be able to develop multi-level web

	Multilevel WEB applications and Internet technologies	applications, including the design and implementation of the frontend, backend, the use of modern web frameworks, tools, as well as to ensure the security of the created applications.
555.	Создание Windows-приложений на основе Visual C# Creating Windows applications based on Visual C#	This course forms the skills of creating Windows applications based on Visual C#. In the course of training, students study the creation of graphical interfaces, interaction with databases and application development using various technologies. Acquiring skills in creating Windows applications based on Visual C# will give students the opportunity to put them into practice and increase their chances in the labor market in the field of software development.
556.	Исследовательский проект Research project	This discipline is intended for the implementation of projects in the field of IT. Within the framework of this discipline, students will receive the necessary knowledge and skills for conducting research in the field of IT, as well as for designing, developing, and implementing applications for mobile and web platforms. The purpose of the discipline is to develop the skills of independent research and analysis of technological solutions in the field of IT, as well as the ability to apply the knowledge gained to develop high-quality, functional applications.
557.	Компьютерная графика Blender и визуальные эффекты Blender computer graphics and visual effects	This course is aimed at developing students' knowledge and skills of working with computer graphics and creating visual effects in the Blender program. The course covers topics such as 3D object modeling, texturing, lighting, animation, compositing and creating visual effects. As a result of the training, students will be able to create high-quality computer graphics and visual effects for various projects in the entertainment industry, advertising, architecture and many other fields.
558.	Кроссплатформенная мобильная разработка Cross-platform mobile development	The course is aimed at developing students' knowledge and skills in developing mobile applications that can work on different platforms. The course covers topics such as application development using React Native, Xamarin, Flutter, Cordova and other cross-platform technologies, working with APIs and databases, optimization and application testing. As a result of the training, students will be able to create high-quality, scalable mobile applications for different operating systems.
559.	Основы программирования на языке Kotlin Basics of programming in Kotlin	This course introduces students to the basics of programming in Kotlin. The course is aimed at the formation of basic knowledge, programming skills necessary to create applications in the Kotlin language. During the training, students will learn the basics of syntax, the structure of the language, and also learn how to create and debug simple programs on Kotlin. The acquired knowledge will help students to create applications on Kotlin, use them in their further professional activities.
560.	Собственная мобильная разработка Own mobile development	This discipline prepares students to create high-quality mobile applications and trains them to the skills necessary to work in the mobile development industry. Within the framework of this discipline, students study the process of developing mobile applications, including planning, design, testing, deployment. They will learn how to create attractive, intuitive user interfaces, how to implement application functionality and how to test them on various devices and operating systems.
561.	Методы измерения ионизирующих излучений	This course examines the categories of nuclear materials (NM) and the requirements for the accuracy and multiplicity of measurements. The balance of nuclear materials and the balance equation are

	и свойств ядерных материалов Methods of measurement of ionizing radiation and the properties of nuclear materials	considered. Accounting and confirming measurements of nuclear materials, non-destructive methods of nuclear materials analysis and calibration of the measuring system are given. Determination of the content of wells in samples by measuring their own gamma radiation and gamma spectrometric measurements is discussed. The fundamentals of the theory of radiation transfer and multiple scattering are given.
562.	Методы обработки сигналов и изображений в медицине Methods of processing signals and images in medicine	This course is dedicated to digital images used in medicine. It examines image quality and basic image operations. The classification and distinctive feature of medical images is given. The analysis of medical images and verification of analysis algorithms is given. The features of visualization for diagnosis and therapy are considered. Mathematical modeling as a method of analyzing biological processes is given. The approximation of typical biological signals and the analysis of biological noises are considered.
563.	Основные принципы конструирования приборов и оборудования The basic principles of the design of instruments and equipment	This course discusses the theoretical foundations of design and engineering with the development of technical specifications. The structure and design features of various devices, as well as the principles of the development of the terms of reference are given. Attention is paid to the formulation of goals and objectives. The design documentation and its classification are considered. The main groups of technical documentation and specifications are given. The design technology, operational properties and reliability of devices and equipment are considered.
564.	Основы САПР низкопотенциальной энергетики Basics of CAD low potential energy	This course discusses the goals and objectives of mathematical modeling of low-potential energy facilities. Frequently used methods of optimization of simulated objects, types of ideal models and the method of thermoeconomics are given. The main methods of modeling and dynamic optimization of refrigeration units and air conditioning systems are considered, taking into account seasonal changes in outdoor air temperature and the magnitude of loads. Attention is paid to computer-aided design systems.
565.	Теория и техника научного эксперимента Theory and Techniques of a scientific experiment	The course discusses in detail the methods of experiment planning. The possibilities of using single-factor, fractional factor and full factor experiments and rotatable plans in research are being studied. Optimization problems in extreme experiments are shown. Special measurement questions, error theory, mathematical statistics, probability theory and measuring instruments are considered. Methods and means of thermal measurements, thermal analysis, methods of experimental study of heat and mass transfer processes are generalized.
566.	Теория и техника теплотехнического эксперимента Theory and technique of heating experiment	The course examines the elements of the theory of experimental planning, regression and static analysis. An overview of technical measurements and devices is given. The methods of experimental study of thermophysical properties of substances and processes of heat and mass transfer, methods and means of control of technical materials and metals of thermal power thermal technology installations are generalized. Methods of quality control of raw materials, fuels and products of heat-technological productions and metrological support of production and experimental research are presented.

567.	Физико-математическое моделирование ядерных энергетических установок Physics and mathematics modeling of nuclear power plants	This course examines the main areas of application of electronic computers in physical research. The features of the formulation of the computational experiment are considered in detail. Numerical integration of functions of one variable and multiple integrals are given. Finite-difference methods for solving differential equations, applied to nuclear reactors, are considered. A technique for modeling the motion of a particle in a force field is given. The characteristic of neutron-physical problems and an algorithm for modeling physical processes in nuclear reactors are given
568.	Перспективы и теплофизические проблемы теплохладотехники Perspectives and heat physics problems of heat refrigerants technique	This course presents the theoretical foundations of obtaining low and ultra-low temperatures. An analytical description of heat transfer processes is given. Approximate methods for solving the equations of thermal conductivity and diffusion for the conditions of heat treatment of products are considered. The basic concepts and methods of calculating the processes of cooling, freezing and defrosting of products are given. Freeze drying, cold storage and heat treatment of products are considered.
569.	Атомные электростанции Atomic power stations	This course covers energy resources and the production of electrical energy. The criteria for the selection of steam parameters at nuclear power plants with regenerative heating of feed water and water coolant are disclosed. The description of the steam generator plant of a nuclear power plant with PWPR and a reactor plant with a water coolant is given. The issues of technical water supply and layout of NPP equipment are considered. Ventilation and decontamination installations and thermal schemes are considered. Nuclear power plant.
570.	Безопасность эксплуатации ядерных энергетических установок Safe operation of nuclear power plants	In this discipline, the factors of potential safety of nuclear power plants (NPP) and possible ways of manifestation of hazards are considered. The types of accidents of nuclear power plants are given. The system of state and international requirements for the implementation of technical operation is considered. The requirements for the technical condition of the nuclear power plant and the requirements for safety management systems are given. The ways of improving the security management system are considered.
571.	Водородная энергетика Hydrogen energetics	This course discusses the properties, methods of obtaining, storing and transporting hydrogen. The issues of atomic-hydrogen energy and controlled thermonuclear fusion are revealed. New directions in hydrogen production are described. The main research directions in the field of hydrogen energy and energy technologies are given. A comparative analysis of modern methods of hydrogen production is given and promising directions of hydrogen energy in the world are shown.
572.	Магнитно-резонансные методы Magnetic resonance methods	This course examines the history of the creation of MRI and the principles of magnetic resonance. The types of magnetic resonances and their applications are given. The idea of spin-lattice and spin-spin relaxation is given. The concept of self-diffusion and the method of its measurement by gradient NMR are considered. The methods of obtaining an image in a magnetic resonance study are considered. A quantum mechanical description of the phenomenon of magnetic resonance and the nature of the anisotropy of the spectra is given.
573.	Медицинская дозиметрия Medical dosimetry	In this discipline, the field of ionizing radiation and the radiation dose are considered. The physical foundations of photon radiation dosimetry are given. The design feature and the principle of operation of ionization and semiconductor dosimetric detectors, as well as other

		methods of dosimetry are studied. The issues of dosimetry of charged and uncharged particles and dosimetry of incorporated radionuclides are considered. The main methods of protection against ionizing radiation in medicine are given.
574.	Основы когенерации Basics of cogeneration	In this discipline, cogeneration plants and prospects for their use are considered. Power units based on gas piston engines (GPE), gas turbine, combined-cycle, solid fuel and biogas cogeneration plants are considered. The issues of cogeneration and small-scale energy at food industry and agriculture enterprises are considered. The idea of trigeneration and environmental problems in the production of thermal and electrical energy is given.
575.	Основы нанотехнологии Basics of nanotechnology	This course is devoted to the development trends of nanotechnology. Molecular beam epitaxy and chemical deposition from the gaseous phase are considered. Modern methods using scanning probes and scanning tunneling microscopy are given. Atomic force microscopy and atomic engineering are being studied. Probe methods for the formation of nanostructures and methods for the formation of nanoscale images are discussed. The features of self-regulating processes and the formation of nanostructured materials and coatings are analyzed in detail.
576.	Основы ядерной физики в приложении к медицине Fundamentals of nuclear physics in the application to medicine	This course is devoted to the use of nuclear physics in the diagnosis of human organs and the use of recording equipment. The history of the development of nuclear medicine, the properties of atomic nuclei and radioactive transformations of nuclei are considered. The concept of radioactivity, dosimetry is given. The use of radioactive radiation for diagnostics and radiation therapy is considered. The degree of exposure to ionizing radiation is given. Magnetic resonance imaging, computed tomography and the production of radiopharmaceuticals are being analyzed.
577.	Применение ускорителей в медицине и промышленности Application of accelerators in medicine and industry	This course covers the basic concepts in the field of physics and accelerator techniques. The classification and types of accelerators are given. General information about the acceleration of charged particles is given. The principle of operation and design features of direct-acting accelerators, linear induction accelerators and cyclic accelerators are considered. Accumulators and the method of counter beams are considered. The main issues of operation and maintenance of accelerators are examined.
578.	Принципы лучевой диагностики и терапии Principles of radiation diagnostics and therapy	The course examines general and specific issues of radiation diagnostics and radiology. The physicotechnical and biological foundations of radiation therapy and the work of the radiation therapy department are considered. The existing sources of ionizing radiation, clinical dosimetry and means of providing radiation protection are given. Indications and contraindications to radiation therapy, methods and planning of radiation therapy, as well as radiation reactions and injuries are given.
579.	Современные методы преобразования энергии Modern methods of energy conversion	This discipline is devoted to the problem of obtaining and converting energy. Primary energy resources, mechanical, electrical, electromagnetic, chemical, nuclear energy, gravitational forces, power and flow energy are considered. An idea is given about the methods of heat energy transfer and the efficiency of a thermal piston engine. The complex use of thermal and electrical energy, problems of electromagnetic energy conversion, electrochemical energy storage and nuclear power plant are considered.

580.	Физика плазмы и термоядерные реакторы Plasma physics and thermonuclear reactors	This course examines the current state and prospects for the development of thermonuclear energy. The basic concept of plasma and plasma retention is given. Radiation losses from the plasma and plasma parameters in the fusion reactor are considered. The design and economic analysis of the construction of a D-T reactor is given. Tokamaks, probcotrons, linear and toroidal theta pinches, laser fusion and promising designs of fusion plants are considered.
581.	Физика реологических жидкостей Physics of rheological fluids	In this discipline, non-Newtonian fluids with rheological characteristics that are independent and time-dependent are considered. Viscoelastic fluids and the dependences between the pressure drop and the throughput under the laminar flow regime of the fluid in round pipes are considered. An idea of heat exchange in laminar and turbulent flow in a pipe is given. Pressing of molten polymers and mixing of non-Newtonian liquids are considered.
582.	Физические методы визуализации Physical methods of visualization	In this discipline, X-rays and image acquisition are considered. The principles of computer X-ray tomography and digital angiography are given. The features of the use of ultrasound for visualization and image acquisition using radioisotopes are given. MR and EPR tomography are considered. The issues of using infrared radiation to obtain images and visualization by the distribution of electrical impedance are highlighted. The analysis of various visualization methods is given.
583.	Теория и техника теплотехнического эксперимента Theory and technique of heating experiment	The course examines the elements of the theory of experimental planning, regression and static analysis. An overview of technical measurements and devices is given. The methods of experimental study of thermophysical properties of substances and processes of heat and mass transfer, methods and means of control of technical materials and metals of thermal power thermal technology installations are generalized. Methods of quality control of raw materials, fuels and products of heat-technological productions and metrological support of production and experimental research are presented.
584.	Экспериментальные методы физических исследований Experimental methods of physics research	This course discusses methods for creating and controlling pressures and temperatures during research and sources of electromagnetic and corpuscular radiation. Luminescent, resonant, electron-probe and ion-probe research methods are analyzed in detail. Methods of X-ray photoelectron spectroscopy (XPS), methods of surface investigation and X-ray diffraction studies are considered. The principle of operation and calibration of atomic power, scanning and transmission microscopy equipment is studied.
585.	Научно-технические проблемы теплоэнергетики и теплотехнологии Scientific and technical problems in heat power engineering and thermo technologies	This course is devoted to the analysis of trends and patterns of energy development in the modern world. Special issues of the theory of combustion and special questions of heat and mass transfer are considered. Modern and promising methods and methods of obtaining and converting thermal and electrical energy are discussed. The analysis and prospects of using industrial waste and secondary energy resources as energy fuel and renewable energy sources are given.
586.	Альтернативные источники энергии Alternative energy sources	This course analyzes the harmful effects on the environment during energy production. Solar and wind energy, small and micro-hydroelectric power plants are considered. The principle of operation of heat pump and bioenergy installations is studied. The types and main indicators of alternative fuels are discussed. The analysis of the

		state and prospects of using alternative fuels for vehicles is given. The main directions of the use of secondary energy resources are analyzed.
587.	Атомные электростанции Atomic power stations	This course covers energy resources and the production of electrical energy. The criteria for the selection of steam parameters at nuclear power plants with regenerative heating of feed water and water coolant are disclosed. The description of the steam generator plant of a nuclear power plant with PWPR and a reactor plant with a water coolant is given. The issues of technical water supply and layout of NPP equipment are considered. Ventilation and decontamination installations and thermal schemes are considered. Nuclear power plant.
588.	Инновационные теплотехнологии в теплоэнергетике Innovative heat technologies in heat power engineering	This course examines thermal, waste-free technologies and thermal, technological and functional schemes in modern industrial production. Economic and environmental analyses of heat-technological processes and criteria for environmental assessment of low-waste heat technologies are given, as well as ways to increase the efficiency of energy use in existing heat-technological processes. The analysis of the effective use of energy and material resources, as well as energy consumption maps in the heat technology complex is given.
589.	Системы низкотемпературной теплотехнологии Systems of low temperature thermal technology	The discipline is devoted to the consideration of the important role and great importance of low-temperature technology systems in various industries. The stages of development and formation of low-temperature technologies are shown. The classification of low-temperature heat technologies and the principles of constructing schemes of installations for their implementation are presented, the main and auxiliary equipment included in these schemes are described. The available methods of evaluating the efficiency and environmental friendliness of the equipment are highlighted.
590.	Современные методы переработки органического топлива Modern methods of processing organic fuel	The course covers the issues of modern methods of processing organic fuels, which are either physico-mechanical or physico-chemical, and also considers their classification according to various characteristics. The characteristics of existing raw materials and the requirements that apply to raw materials are presented. The description of obtaining important and valuable products, such as coke oven gas, coke, as a result of organic fuel processing processes is given. The issues of environmental friendliness of fuel processing processes are considered.
591.	Современные методы преобразования энергии Modern methods of energy conversion	This discipline is devoted to the problem of obtaining and converting energy. Primary energy resources, mechanical, electrical, electromagnetic, chemical, nuclear energy, gravitational forces, power and flow energy are considered. An idea is given about the methods of heat energy transfer and the efficiency of a thermal piston engine. The complex use of thermal and electrical energy, problems of electromagnetic energy conversion, electrochemical energy storage and nuclear power plant are considered.
592.	Современные пути развития атомной энергетики Modern ways of development of nuclear energy	In this course, nuclear fuel and heat carriers and the physical basis of obtaining thermal and electrical energy are considered. General information about the history of the development of domestic and foreign nuclear power is given. The contribution of domestic and foreign scientists to the development of nuclear energy and the use of fission energy, synthesis and other energy-intensive technologies for the production of electricity is discussed. The basic concepts of physics and design of nuclear reactors are analyzed.

593.	Современные технологии использования вторичных энергоресурсов Modern technologies of use of secondary energy resources	The discipline considers various ways and directions of using secondary energy resources as a way to energy conservation. The classification of secondary energy resources and possible directions of their application are shown. The stages of development and implementation of waste-free production technology are presented. The role of modern energy-saving measures as an energy-saving potential in heat and power production is substantiated. A detailed analysis and evaluation of the effectiveness of the use of secondary energy technology in the world is given.
594.	Фазовые превращения Phase transformations	This discipline is devoted to condensed systems. It gives the thermodynamics of phases and phase transitions in binary systems and considers the structure of condensed media. The issues of the statistical theory of phase transformations in binary solid solutions and the classification of phase transitions are analyzed. Model theories of phase transformations and phase transformations in the solid state are given. Experimental methods for studying phase transitions in condensed media are being studied.
595.	Современная методология исследовательской работы Innovative research methodology	The discipline studies the basics of the methodology of scientific research: scientific research, its essence and features; concept of method, methodology; the logic of the scientific research process: stages and levels of scientific research; the content of the hypothesis, the content of the stages of the research process; features of the main stages of the study; classification of scientific research methods; empirical and theoretical levels of scientific research; scientific problem, its formulation and formulation; stages of scientific research.
596.	Современные методы и организация планирования научных исследований Modern methods and organization of scientific research planning	The discipline considers modern methods of conducting research work, the main stages of conducting research and the components of research work, methods of analysis, processing, systematization of information, methods of statistical processing of experimental data, fundamentals of experimental planning in the study of technological processes, statistical processing of experimental data, formulation of conclusions for each stage of research work.
597.	Физиология устойчивости микроорганизмов Physiology of resistance of microorganisms	The discipline studies the main achievements in the field of physiology of resistance of microorganisms, the limits of resistance of microorganisms to stress, the range of tolerance "boundaries of life" of microbiological objects and prokaryotes, environmental factors, the basic concepts of adaptation, resistance, homeostasis, sensitivity and stress. Considers the problems of physiology of microorganisms with their unique properties in terms of adaptation to the effects of various biological and physical-chemical environmental factors, including extreme ones.
598.	Биотехнология БАД и БАВ Biotechnology BAD and BAS	The discipline studies the classification of biologically active additives, the organization of modern microbiological production based on living cells and spores, the organization of modern microbiological production of preparations of biologically active substances and biologically active additives, the microbiological production of highly purified preparations of biologically active substances for medical and food purposes. Considers biotechnological production based on the processing of biological raw materials and issues of quality and safety, examination of biologically active additives.

599.	Биотехнология в решении проблем очистки окружающей среды Biotechnology in solving problems of environmental cleaning	The discipline studies methods for increasing the productivity of microorganism strains for their use in ecological biotechnology, the safe use of microorganisms obtained by genetic modification methods, as well as individual products of microbial synthesis, and the biological processing of industrial waste from various industries. Solid waste disposal, biological methods of wastewater treatment, bioindication of pollution of aquatic ecosystems, bioremediation, self-purification of water bodies, restoration of soil fertility are considered.
600.	Биотехнология заквасок Starter biotechnology	The discipline studies the current state and prospects for the use of bacterial preparations, the selection of bacterial preparations for production, bacterial preparations for fermented products, the preparation and use of bacterial preparations in a production environment. He studies microorganisms used in fermentation industries, yeast, lactic acid bacteria, varieties of microorganism compositions used in bakery production, liquid yeast, wheat and rye sourdoughs used in the production of bread, bakery and confectionery products, baker's yeast.
601.	Биотехнология органических кислот и белковых препаратов Biotechnology of organic acids and protein drugs	The discipline studies the fundamentals of the technology of organic acids and protein preparations, also considers traditional and new areas of food biotechnology, the technology for obtaining organic acids - malic, citric, succinic lactic, acetic, which are widely used in the food industry as preservatives and acidity regulators. Modern directions of food biotechnology for obtaining protein preparations, including the production of protein products, enzyme isolates and concentrates.
602.	Методы выявления биологически активных веществ Methods for detection of biologically active substances	The discipline studies immunoassay methods using poly and monoclonal antibodies, spectral analysis, cytokine genes, methods for determining the biological activity of substances, to study the secretory forms of cytokines. Spectral-correlation test and Voll method, methods of flow cytometry, Western blotting and in situ immunohistochemistry are considered, genetic methods for studying mRNA stability, mRNA expression of cytokines, natural antisense nucleotide sequences.
603.	Микробиологические методы анализа Microbiological methods of analysis	The discipline studies microbiological methods for the analysis of raw materials for meat and dairy production, as well as for the entire food industry. Considers microbiological methods for the analysis of starchy raw materials for alcohol production, sugar beet raw materials for alcohol production, raw materials for yeast production, for bakery production, eggs, egg products, wort and beer, raw materials for the production of medicines, biological preparations, raw materials for pasta production, confectionery production, sugar production .
604.	Микробиологические основы биотехнологических производств Microbiological bases of biotechnological productions	The discipline studies methods of cultivating microorganisms, types of raw materials and technological equipment for microbiological production, stages of the technological process, optimal conditions for cultivating microorganisms, growth and reproduction of microorganisms, obtaining microbial biomass, obtaining yeast from molasses, fermentation of lactic acid bacteria, propionic acid bacteria, technology for obtaining lipids, polysaccharides , ethyl alcohol and organic solvents, vaccines, bacterial fertilizers, bacterial plant protection products.

605.	Моделирование и оптимизация технологических процессов и состав пищевых продуктов Modeling and optimization of technological processes and the composition of foods	The discipline deals with various aspects of computer modeling of biotechnological processes - from setting tasks and developing mathematical models to their computer implementation and interpretation of the results, the use of modern software products for optimizing and calculating recipes. The modern methodology of computer modeling of biotechnological processes and systems is being studied. Mathematical models of the kinetics of the processes of continuous cultivation of microorganisms, membrane separation of biosynthesis products, biotransformation and biocatalysis are considered.
606.	Молекулярно-генетические основы биотехнологии Molecular genetic basis of biotechnology	The discipline examines the principles of the structural organization of RNA and DNA, DNA repair and recombination, the structural and functional organization of nucleic acids, replication mechanisms, issues of modern molecular biology, modern ideas about the functioning of the genome and molecular mechanisms and DNA replication, transcription mechanisms, regulation of gene expression and technologies of splicing and recombinant DNA, post-transcriptional modification of RNA, physical and biophysical methods used in biotechnology.
607.	Научные основы производства пищевых продуктов The scientific basis of food production	The discipline studies the scientific foundations for the development of technologies for the production of food products from animal and vegetable raw materials (physicochemical, biochemical, microbiological and colloid-chemical processes), their significance and impact on the quality indicators of food products, the scientific basis for the processing of vegetable raw materials. It studies the methodological foundations of scientific creativity and cognition, the stages of research work and the choice of research direction, the processing of scientific information, modeling, new trends in the development of food technology.
608.	Оценка качества и безопасность биотехнологических производств Assessment of the quality and safety of biotechnological industries	The importance of compliance with safety rules at production facilities. Methods for monitoring the quality and safety of raw materials and components, biologically active additives, medicines and food products. The regulatory framework for ensuring the biosafety of biotechnological industries. Modern microbial biohazard factors associated with biotechnological processes. Methods and indicators necessary for sanitary and microbiological assessment of biotechnological industries. Biosafety problems in the industrial use of microorganisms.
609.	Пищевая диагностика: контроль за качеством Food diagnostics: quality control	The discipline studies the practice and problems of food certification; laboratory control of components and raw materials, food safety management systems, indicators of nutritional value, micronutrients, laboratory and instrumental control of technological processes. The factors that form the quality of products, methods of quality control of raw materials and finished products, requirements for the quality of raw materials and finished products, compilation and development of regulatory and technical documentation are considered.
610.	Современные методы в биотехнологии Modern methods in biotechnology	The discipline examines the main directions and technologies for obtaining targeted genetically engineered products, the scientific foundations of molecular biology, the main directions of deduction and use of genetically modified organisms at various levels, the methodology of bioengineering of organs and tissues, and also studies the scientific foundations of methods for analyzing the main cellular macromolecules and target products of biotechnology, the scientific foundations of gene diagnostics and gene therapy.

611.	Современные методы разделения и очистки продукции Modern methods of separation and puri-fication products	The discipline studies modern methods of separation of substances: ion-exchange, affinity, gel chromatography, immunosorption, electrophoresis. Considers the classification of separation and concentration methods, precipitation methods, statistical and dynamic extraction methods, distillation and sublimation methods, chromatographic methods of analysis. Separation using membranes: reverse osmosis, ultra and microfiltration. Dehydration of the product, methods of its modification and stabilization. cleaning methods. A combination of several separation operations.
612.	Современные проблемы биобезопасности в пищевых и промышленных производствах Modern problems of biosafety in food and industrial production	The discipline studies biosafety and biotechnology, the state of the problem, the concept of safety. Biological, food, ecological, economic, military and other security. The concept of biosafety in food and industrial production, biologically hazardous organisms, their metabolic products, biosafety in organogenic, tissue and cellular biotechnologies, biosafety and genetic risk in transgenesis and bioengineering, sustainability of biosafety in bioengineering, development of genetically modified organisms are considered.
613.	Искусственный интеллект в цифровом растениеводстве Artificial Intelligence in Digital Crop Production	The course “Artificial Intelligence in Digital Crop Production” is dedicated to the study of the theoretical foundations and practical applications of artificial intelligence (AI) in modern crop production. The course explores the possibilities of using machine learning methods, computer vision, natural language processing, and other AI technologies to solve problems in the field of increasing yields, optimizing resource use, reducing costs, and improving the sustainability of agricultural production.
614.	Искусственный интеллект в лесном хозяйстве Artificial intelligence in forestry	The discipline studies modern practices building intelligent systems for various purposes, research structures in the field artificial intelligence, stages development classification artificial intelligence, formal systems, graph hypergraph models, AND/ OR trees, state space search methods, informed search state space exploration, constraint satisfaction tasks, counteraction search, efficiency using neural network technologies to solve economic problems solved by neural network modeling methods.
615.	Медиа-тренды в современных казахстанских СМИ Media trends in modern Kazakhstani media	An idea is given about the pace of development of national civilization, the influence media it. The key issues reflecting the reasons emergence of media trends Kazakhstani media explored: principles achievements analysis development media, the functional features media, Internet literacy, the focus the development modern sites the creation resources, the language of information, multimedia capabilities, feedback, external Site structure.
616.	Монополизация национальных СМИ Monopolization of national media	The course provides students with detailed information about the stages formation and development of national media, models news services, skills and methods of work of journalists from different countries. These include the development press, its modern formation, types of newspapers and magazines, the importance of information services, state monopolization, the influence and location large industrial groups in the med.
617.	Национальные и транснациональные медиакорпорации	In the course of studying the subject, there acquaintance with information about transnational corporations, independent, private, public

	National and transnational media corporations	joint ventures. Data firms investing directly abroad (investments), the current state of the market economy, the development domestic and foreign economies modern market economy, world experience, foreign markets. transnational ethnocentrism. analyzes the work polycentric regional, geocentric corporations, media coverage transnational corporations.
618.	Современная казахская литература Modern Kazakh literature	Development and originality of modern Kazakh literature. Mastering the depth of the national character of Kazakh poetry, the theme of independence in the works of poets. Familiarity with the level of innovative literary criticism, the search for innovators in the genres of prose, poetry, drama, satire. Conducting review and analytical works on Kazakh literary criticism published since independence. Teaching a deep, comprehensive analysis of the language of the works of representatives of modern Kazakh literature.
619.	Стратегия SMM SMM Strategy	Short description of discipline The course content provides students with information about the new term SMM strategy and strategy development, ways to improve the effectiveness of communication with the audience and ways to increase the number of regular users of sustainable development, etc. Information is provided on the application of this strategy in the context of modern socio-economic development. The effectiveness of intra-service advertising is demonstrated and the impact of increasing competitiveness, etc. is discussed.
620.	Интегрированная методика обучения казахскому языку и литературе Integrated methodology of teaching the Kazakh language and literature	The course is aimed at mastering the theoretical and practical foundations of holistic, interconnected teaching of the Kazakh language and literature. The discipline examines methods of integrating linguistic and literary knowledge through artistic text, developing listening, speaking, reading, writing, literary and linguistic analysis, developing creative tasks, improving functional literacy and forming students`` competencies through working with text.
621.	Методика преподавания казахского языка и литературы в школах с неказахским языком обучения Methods of teaching the Kazakh language and literature in schools with a non Kazakh language of instruction	The course is aimed at teaching the theoretical and methodological foundations of mastering the Kazakh language and literature as a second language. The content discusses the formation of a language environment, teaching communication orientation, genre and thematic analysis of a literary text, character description, vocabulary enrichment, and the development of literary perception and understanding skills. Creative tasks and ways to effectively use interactive methods in teaching Kazakh language and literature will also be mastered.
622.	Мировой литературный процесс и основы его преподавания The world literary process and the principles of its teaching	This course is aimed at the literary analysis of works of foreign literature and the evolution of creative and critical processes in foreign literature. Topics include critical directions and the role of literary criticism. Topics discussed: Critical directions in foreign literature; Creative methods and directions; Literary criticism and its social role, modern critical approaches.
623.	Мировая литература и основы обучению World literature and education system	Future teachers study the patterns of development of world literature, artistic features of works through the prism of social characteristics of the world. Thanks to the study of world literature, the worldview of future teachers is expanding. They learn to master

		the main directions of world literature through the analysis of literary works. They analyze and compare the connections and features of world literature and Kazakh literature. They also analyze the connection of the artistic significance of works with the social situation in modern culture. Future teachers learn to explain to their students the laws of the development of world literature and understand the significance and specifics of teaching works of world literature within the school curriculum.
624.	Теория литературы Theory of literature	Future teachers study methods of analysis and examination of a work of art, mastering the basics of theoretical concepts in literature. They demonstrate the theoretical foundations of the field of literature necessary for a teacher of the Kazakh language at school. They also get acquainted with the definition of the literary process, genera and types of literature, artistic techniques, trends and trends. Future teachers study the features of fiction as art, its ideological essence and social nature, the laws of development and the principles of the analysis of a work of art. They learn to master theoretical concepts and categories in literary studies. They also learn to master the methods of analyzing any type of text and teach students to recognize the aesthetic nature of a work of art.
625.	Оценивание и развитие Assessment and development	Future teachers have a deep understanding of the essence of assessment in the educational process and can provide ethically constructive assessment at different stages of the educational process and involve students in the assessment. Future teachers identify, differentiate and use various assessment technologies, principles, stages, tools for assessing their field of knowledge (including formative and aggregate assessment, self-assessment, mutual assessment, etc.). They are able to critically evaluate, analyze and further develop their own concepts and experiences regarding the assessment.
626.	Исследования, развитие и инновации Research, development and innovation	In order to maintain the relevance and the possibility of continuous development of themselves and their professional activities, future teachers acquire new knowledge based on research and conduct practical research in an ethical manner in various fields related to the development of education and the teaching profession, innovative approaches to teaching, as well as training and guidance of students. Future teachers adopt development- oriented thinking and are able to develop, update and apply innovative approaches and teaching technologies in the context of ongoing changes in society and the educational environment.
627.	Планирование преподавания и индивидуализация обучения Training planning and independent learning	Future teachers are familiar with educational programs in their field of teaching, as well as with pedagogical principles and intersecting topics for the development of a certain level of education, such as entrepreneurship and sustainable development. Future teachers have the skills to apply teaching technologies based on pedagogical and independent research and individualize learning, taking into account the versatility of students and the principles of inclusion in the learning process.
628.	Ресурсосберегающие технологии пищевой промышленности Resource saving technology in food industry	Rational use of energy resources in food industry. Ways to improve quality of products. Issues that need to be addressed when using physical, chemical, biotechnological methods for processing raw materials and finished products. Theoretical basis of heating food

		infrared. Processing wet foods with alternating electric current and acoustic vibrations.
629.	Инновационные технологии перерабатывающих производств Innovative technology of processing industries	Innovative technology used in the processing industries. Development and implementation of innovative high quality cereals and other food products of therapeutic and prophylactic purposes of grain legumes and oilseeds using advanced processing techniques. Development of new technologies and technical solutions ionized hydroionized and nanotechnology in the processing of plant products.
630.	Инновационные технологии в области пищевых продуктов функционального и специализированного назначения Innovative technologies of functional and specialized food products	Conceptual conditions for the emergence of food products of a certain orientation: functional and specialized; basic raw materials as a material for creating functional components; risks in technological production processes; education of the quality of food and catering products that meet modern requirements of rational nutrition. Rules for the creation of new technologies; analysis of the nutritional value of the material, catering products and gluten-free products, as well as their research on harmlessness and quality.
631.	Системы менеджмента в обеспечении качества и безопасности пищевой продукции Management systems in ensuring the quality and safety of food products	Equipping the quality of food raw materials and products; internal and external conditions - affecting the harmlessness and quality of products. Quantitative criteria for evaluating technological systems of food production according to their quality parameters; methods of qualitative and quantitative research of the risk of violations of the functioning of technological systems. Means of coordinating the quality and safety of food products based on HACCP, international standards of the 9000 and 22000 series.
632.	Контроль и оценка качества сырья и продовольственных продуктов Control and assessment of the quality of raw materials and food products	The discipline studies the quality of meat, dairy products, catering products, flour, starch, sugar, confectionery, bakery, confectionery, wine and vodka products, yeast, soft drinks. The student in the course of laboratory work determines the salt content, pH, acidity, alkalinity, basic nutritional nutrients (proteins, fats, carbohydrates, ash, dry substances). The application of an integrated approach is designed to study the normalized indicators of food quality by qualimetric methods. The course introduces modern devices.
633.	Технология вегетарианских и диетических блюд на предприятиях общественного питания Technology of vegetarian and dietary dishes at catering establishments	The course of the discipline examines the existing theories of nutrition (rational, balanced, dietary, blood type nutrition and others) vegetarianism as one of the theories of nutrition, the history of the emergence of vegetarian cuisine, the principles of therapeutic nutrition, the founders of therapeutic nutrition, classification of dietary tables, types of products used to prepare dietary dishes by numbers. Technological techniques and methods of culinary processing are studied in the preparation of dietary dishes according to the purpose, recipe, product yield standards
634.	Экономика предприятия Economics of enterprise	At the present stage of economic reforms, significant changes are taking place in the economy, especially at the microeconomic level: the nature and methods of economic activity of enterprises are changing. This course studies in detail the resources of the enterprise, the efficiency of their use, profitability and the main technical and economic indicators of the functioning of the enterprise. In addition,

		methods of stimulating labor resources, in order to optimize the production capacity and capital of the enterprise.
635.	Технология детских и диетических молочных продуктов Technology of children and dietary milk products	The discipline considers the relevance of the development of children's and dietary dairy products in modern market requirements, analysis of quality, raw materials used, requirements and regulatory indicators, types of children's dairy products (enpits, dry mixes, liquid, pasty, milk porridges), the range of dietary dairy products, methods of production of dietary and children's products, technological control of production, formation of quality at all stages of production
636.	Биофармацевтическая биотехнология Biopharmaceutical biotechnology	The discipline studies biological objects used in the biotechnological production of pharmaceutical drugs, the specifics of the development and registration of biotechnological medicinal products, nutrient media, and bioreactors for obtaining biopharmaceuticals. It also examines the technology for obtaining and standardizing probiotics, vitamins, amino acids, organic acids, and antibiotics. Additionally, the application of genetic engineering in pharmaceutical biotechnology, the production of drugs based on cytokinins, and the fundamentals of immunobiotechnology are explored.
637.	Биотехнологические принципы получения высших культур растений Biotechnological principles of obtaining higher plant crops	The discipline studies the theoretical and practical foundations of obtaining higher plant cultures using modern biotechnology methods. It explores the main stages and methods of in vitro cultivation: apex culture, meristem, callus culture, plant regeneration, microclonal propagation, somatic hybridization, the use of phytohormones, genetic engineering methods, cellular selection, and molecular diagnostics to create plants with improved agronomic properties, resistant to stress and pathogens. Bioreactors for micropropagation, cryopreservation methods, and encapsulation are also examined.
638.	Инновационные методы исследования высших растений Innovative Methods in the study of higher plants	The discipline studies modern and promising methods for researching the physiology, biochemistry, morphology, and molecular biology of higher plants; non-destructive analysis methods, spectroscopy, fluorescent methods, genetic and molecular-biological approaches, microscopy methods, phytochemical analysis are considered, as well as the application of bioinformatics and digital technologies in botanical research. It includes the practical use of innovative equipment and software for monitoring plant conditions, assessing their productivity, and evaluating their resistance to environmental stress factors.
639.	Инновационные технологии в биотехнологическом производстве с интеграцией искусственного интеллекта Innovative technologies in biotechnological production with the integration of artificial intelligence	The discipline studies innovative technologies applied in biotechnological production, the use of artificial intelligence to optimize fermentation processes, quality control, and prediction of drug effectiveness; IT modeling of biological interactions and optimization of genetic modification methods; new biotechnological methods and developments contributing to the creation of functional food products; the application of encapsulation methods in the production of biotechnological products; methods of quality control and biosafety of raw materials and finished products.
640.	Управление качеством	The discipline is aimed at studying a set of measures aimed at ensuring compliance of products or services with established standards, requirements, which includes planning, control,

	Quality management	improvement of processes, work methods, as well as the use of quality management systems, the purpose of this set of measures is to meet customer needs, increase efficiency, reduce costs through continuous improvement, optimization of production processes.
641.	Гигиенические требования и санитарные нормы в строительстве Hygienic requirements and sanitary standards in construction	The discipline studies the fundamentals of ensuring safety, human health at all stages of construction, operation of buildings, they regulate the placement of objects, lighting parameters, ventilation, noise levels, vibration, microclimate, the standards apply to residential, industrial, public buildings, establishing the minimum dimensions of premises, sanitary, living conditions, compliance with these requirements prevents the negative impact of the environment, building materials on humans, ensuring a comfortable, safe living, working environment.
642.	Гигиенические требования и санитарные нормы в пищевой отрасли Hygienic requirements and sanitary standards in the food industry	The discipline studies the basics of ensuring the safety, quality of food products, they cover all stages of the technological process: reception, storage, processing, packaging, transportation of raw materials, finished products, special attention is paid to disinfection, pest control, microbiological safety, compliance with these standards helps to prevent food poisoning, infectious diseases, guarantee the health of consumers, in addition This helps to increase the competitiveness of the enterprise, compliance with international standards (for example, HACCP, ISO 22000).
643.	Сертификация строительной продукции на безопасность и экологическую чистоту Certification of construction products for safety and environmental cleanliness	The discipline is aimed at studying the processes of certification of building materials, structures in order to confirm their compliance with safety standards, environmental requirements, students learn about national, international standards governing the safety, environmental cleanliness of building materials, as well as certification procedures, including monitoring compliance with building codes, standards, environmental requirements, minimizing environmental impact, the processes of risk assessment, product testing, quality audit, certification according to environmental safety standards are considered.
644.	Экспертиза пищевых продуктов Expertise of building materials	The discipline studies methods for assessing the quality, compliance of building materials with established standards, students become familiar with various laboratory testing techniques aimed at determining the physical, chemical, mechanical properties of materials, the course covers the processes of testing the strength, durability and safety of materials, as well as their impact on the performance characteristics of buildings, structures, the knowledge gained in the course is important for ensuring the quality of construction projects, compliance with regulatory requirements.
645.	Внедрение систем менеджмента в строительстве Implementation of management systems in construction	The discipline is aimed at studying approaches, methods for implementing quality management systems, labor protection, ecology, energy, others at construction enterprises, with special attention paid to the requirements of international standards, national regulations, certification issues, risk management, sustainable development, digitalization of processes, documentation management, improving the safety, efficiency of construction processes at all stages of the facility"s life cycle: from design to commissioning, maintenance.
646.	Государственный контроль в системе	The discipline is aimed at studying the legal, organizational, methodological foundations of state supervision over compliance with the requirements of technical regulations, standards; it examines the powers of regulatory bodies, types and forms of control, the

	технического регулирования State control in the system of technical regulation	procedure for conducting inspections, registration of results, mechanisms for bringing to justice; special attention is paid to protecting consumer rights, preventing the circulation of hazardous products, interaction with accredited certification bodies, as well as the role of state control in ensuring quality, safety, sustainable economic development.
647.	Идентификация и фальсификация строительных материалов Identification and falsification of building materials	The discipline studies methods for determining the authenticity, quality, compliance of building materials with current standards, regulations, it includes analysis of the composition, structure, physical, mechanical properties of materials, particular attention is paid to identifying counterfeits, substitutes, unauthorized additives, poor-quality materials, which helps prevent the use of uncertified or non-standard products, identification methods are also important for monitoring compliance with environmental standards, protecting against harmful substances in materials.
648.	Испытание и технохимический контроль пищевых производств Testing and technochemical control of food production	The discipline studies the testing, technochemical control of food production, which includes the analysis of the quality of raw materials, intermediate, finished products in order to ensure safety, compliance with standards, this includes chemical, microbiological and physicochemical studies aimed at identifying harmful substances, compliance with standards, improving the quality of products, which helps protect the health of consumers, maintain a high level of production.
649.	Новые технологические решения в строительстве New technological solutions in construction	This course focuses on the study of modern technological advancements in the construction industry. The discipline is aimed at studying and analyzing modern technological solutions in construction. Innovative materials, automated and robotic systems, BIM modeling, 3D printing technologies, intelligent construction solutions, structures and technologies used in the design, organization and conduct of construction work, as well as their effectiveness and sustainability are considered. The impact of technological innovations on cost reduction, quality improvement, sustainability and digitalization of construction processes at all stages of project implementation is studied
650.	Зелёные технологии и экологическая устойчивость в строительстве Green Technologies and Environmental Sustainability in Construction	This course focuses on the study of green technologies in construction, energy-saving methods, and modern approaches to minimizing environmental impact. Topics include eco-friendly materials, efficient resource use, recycling technologies, and principles of sustainable building. Students will gain the knowledge and skills needed to develop environmentally responsible projects and contribute to sustainable development goals.
651.	Современная урбанистика и развитие городских территорий Modern urbanism and urban development	The discipline covers modern processes of urbanization, urban space planning, sustainable urban development and digital urbanism. The course explores modern urbanization processes, the formation of agglomerations, urban infrastructure development, multifunctional spatial design, integration of transport and engineering systems, socio-ecological interactions, and digital modeling. Special attention is given to analytical tools used in urban planning and the creation of sustainable strategies for efficient, environmentally responsible, and resilient urban area development.
652.	Архитектурно-строительная	The course focuses on the architectural and structural transformation of real estate objects, including functional adaptation, redevelopment,

	трансформация объектов недвижимости Architectural and construction transformation of real estate objects	renovation, repurposing, structural reconfiguration, heritage preservation, building condition assessment, compliance with safety and planning regulations, modernization of engineering systems, integration into the urban context, and alignment with sustainable architectural practices, economic feasibility, user needs, and environmental efficiency
653.	Инновационные технологии и материалы в строительстве Innovative technologies and materials in construction	The course explores innovative materials and construction technologies, including smart and composite materials, nanotechnology-based products, energy-efficient systems, 3D printing in construction, modular building components, recyclable materials, automated fabrication processes, and sustainable design solutions. It emphasizes the evaluation of technical, environmental, and economic performance of novel materials according to modern construction and safety standards
654.	Проектирование архитектурной среды с учётом психологии человека Designing Architectural Space from a Human Psychology Perspective	This course explores how architectural space influences human perception, behavior, and emotional well-being. It examines factors such as lighting, color, form, scale, sound, and spatial organization. Students will learn design principles for creating environments that are comfortable, safe, and psychologically supportive for users.
655.	Транспортная доступность в объектах городского строительства Transport Accessibility in Urban Construction Projects	This course covers both theoretical and practical aspects of integrating urban construction projects with transportation infrastructure. Topics include pedestrian accessibility, public transport connectivity, design of transport hubs and parking zones, as well as principles of inclusivity and sustainable urban development. Students will learn methods for assessing transport accessibility and developing integrated mobility solutions for urban construction environments.
656.	Современные технологии устройства оснований и фундаментов Modern technologies for building foundations and foundations	This course focuses on the study and evaluation of modern foundation and ground improvement technologies, emphasizing research, modeling, and digital integration. Topics include simulation of foundation behavior, comparative analysis of construction technologies, experimental validation techniques, and the use of digital tools such as Plaxis, Revit, and GeoStudio. Students will develop the ability to critically assess engineering solutions under various geotechnical conditions using scientific and data-driven approaches.
657.	Бизнес-инновации и устойчивость Business innovation and sustaina	The course explores modern approaches to implementing business innovations under the principles of sustainable development. It addresses innovation strategies, change management, environmental responsibility, and social entrepreneurship. Special attention is paid to integrating sustainability into corporate models and digital business solutions. The program develops systems thinking and practical skills necessary for companies to adapt effectively to challenges in today's dynamic economic environment.
658.	Стратегическая концепция бизнеса Strategic business concept	Course aimed at developing advanced strategic thinking and decision-making skills. It focuses on strategic planning for sustainable growth, global business analysis, innovation-led strategies, and transformational leadership. The curriculum emphasizes scientific forecasting, data-driven decisions, and navigating uncertainty. Doctoral students integrate theory with executive practice to lead complex transformations and design long-term strategic frameworks in evolving markets.

659.	Эмоциональная компетентность лидера Emotional competence of a leader	The course is aimed at developing leadership skills and emotional intelligence in the business environment. It explores the fundamentals of self-regulation, empathy, social awareness, stress resistance, and effective communication. Special attention is given to the impact of emotional competence on decision-making, team leadership, and conflict resolution. The program helps enhance the leader's ability to understand both themselves and others, which is essential for organizational effectiveness and sustainable development today.
660.	Прорывное лидерство Breakthrough leadership	Breakthrough Leadership develops key competencies for leading large-scale organizational change. The course explores advanced leadership concepts, strategies for overcoming resistance, fostering innovation, and building a progressive culture. Emphasis is placed on emotional intelligence, adaptability, risk management, and communication. Participants learn to initiate and implement transformation to support sustainable growth and generate strategic business impact.
661.	Стратегическое бизнес лидерство Strategic business leadership	Strategic Business Leadership explores essential approaches and tools aimed at cultivating leadership qualities for effective organizational management during instability and change. It addresses strategies of influence, motivation, team collaboration, and the shaping of leadership vision and corporate culture. Emphasis is placed on decision-making in uncertain environments, transformational leadership, managing change, and developing long-term goals that support business sustainability and competitiveness.
662.	Управление талантами Talent management	This course explores core strategies for identifying, developing, and retaining talented employees. It covers methods for assessing potential, career planning, motivation, and engagement. Special attention is given to mentorship culture, diversity, and succession. Participants gain skills to build talent systems that support innovation, improve performance, and ensure sustainable development and long-term business success
663.	Эффективное управление хаосом Effective chaos management	Effective Chaos Management is a course designed to enhance strategic decision-making skills during uncertainty, crisis, and rapid transformation. It includes flexible management techniques, situational leadership, stress control, and navigation in unstable environments. Emphasis is placed on adaptive thinking, team resilience, and anti-crisis strategies. Participants explore tools for analyzing complex scenarios and developing effective behavioral models for navigating chaotic organizational situations.
664.	Экономика науки и финансирование исследований Economics of science and research financing	This course focuses on the economics of science and mechanisms of research funding. It explores funding models, public and private sources, grant programs, and criteria for evaluating research investments. Emphasis is placed on resource mobilization strategies and sustainable development of scientific systems. Students gain practical tools for planning, justifying, and managing research projects under resource constraints and competitive environments.
665.	Глобализация и управление устойчивым развитием Globalization and sustainable development management	The course studies the impact of globalization on the development of society, politics and everyday life of people. The course reveals the mechanisms of transformation of social institutions, global communications, interaction of cultures. Particular attention is paid to the analysis of challenges and opportunities arising in the conditions of the global world.
666.	Ценности и практики в образовании	This course explores the values and practices that shape educational content and culture. Topics include humanism, inclusivity, academic

	Values and practices in education	integrity, sustainability, equity, professional ethics. Special focus is placed on how values are embedded in educational policy, leadership, and daily practice. Students analyze how values influence decision-making and learning environments, they acquire tools to integrate ethical approaches into educational strategies and programs.
667.	IT и AI решения для цифрового управления IT and AI solutions for digital management	The course focuses on mastering modern IT and AI solutions for digital management in education. It covers intelligent platforms for automating learning, analytics, document flow, and communications. Emphasis is placed on integrating AI into the university's digital strategy and enhancing management efficiency. Students gain skills in selecting, implementing, and evaluating digital systems with a focus on innovation and sustainable development.
668.	Урбанизация и сити менеджмент Urbanization and city management	The study of the course "Urbanization and City Management" is aimed at developing students' competencies in the field of effective management of cities and urban agglomerations on the principles of an integrated approach; assimilation, development and the ability to apply in practice methods of urban forecasting, planning, coordination of activities, comprehensive analysis, solving problems and performing tasks related to the functioning of urban systems and sustainable development of territories.
669.	Управление человеческими ресурсами Human resource management	The course is a key component of the efficiency, competitiveness and sustainable activities of an organization of any form of ownership. as it affects the recruitment and training of personnel, the system of evaluation and motivation. Particular attention is paid to the role of managers in the development of effective and efficient methods of management and development of human resources, which is one of the most important strategic goals of the organization.
670.	Коммерческие риски Commercial risks	This course covers the fundamental theories of commercial risk in business. Corporate risk perception, understanding business risk through a decision tree, risk management process, understanding business risk through modeling, ownership, operational risk, contingency planning and disaster recovery, the new role of risk managers in sustainability and strategic risk are just some of the topics covered.
671.	Развитие связей с общественностью Development of public relations	This course examines the processes for providing resources to disadvantaged groups. Students learn about the activities of numerous departments and institutions in the socio-economic sphere, the business sector and government structures. Particular attention is paid to the importance of the participation of commercial organizations in improving the living conditions of the population. The key ideas are considered that guarantee the meaningful participation of society in its growth through projects and initiatives that are sustainable, self-sufficient and controlled by the community.
672.	Формирование и управление цепями поставок Formation and management of supply chains	The course "Supply chains formation and management" is aimed at studying the theoretical and methodological foundations of supply chain management, the basics of administration and controlling, methods and tools for modeling and optimizing supply chains. As a result, the student develops the ability to analyze and justify the reliability, stability of supply chains and solve practical problems in the field of logistics, in the conditions of innovative development of the enterprise.
673.	Планирование преподавания и	formation of skills of individualization of teaching, taking into account the diversity of students and the use of teaching technologies, based on pedagogical and independent research. Students can: •

	индивидуализации обучения физике Planning of teaching and individualization of physics education	understand the requirements of competence, entrepreneurship and sustainable development in their pedagogical and subject area when planning and conducting training; • plan and predict other conditions that affect learning; • apply the principles of individual learning and guidance in practice, take into account the needs of their students, support the development of their personality and self-esteem.
674.	Физика и образование устойчивого развития Physics and sustainable development educatio	This course is an interdisciplinary study of physics in conditions of unstable development. Natural resources and technologies in the field of ecology, the interaction between social laws and environmental problems, as well as the application of physical laws for sustainable development are considered. The focus is on the analysis of modern energy and environmental problems, the study of energy sources, the efficient use of resources and the development of technologies to reduce the negative impact on the environment.
675.	Химия комплексных соединений Chemistry of complex compounds	This course examines issues related to the physical and chemical properties of complex compounds. During the course of studying the subject, students will become familiar with the theoretical foundations of coordination chemistry and the properties of coordination compounds. As a result of mastering this discipline, modern ideas about chemical bonding, stereochemistry, stability, and reactivity of coordination compounds should be formed.
676.	Устойчивое развитие Sustainable development	The discipline introduces the complex of sustainable development of sports. Provides general information about the basics of modern teaching methods and the system of working with children and youth in order to develop professional competencies to prepare them for life and work. Explores a youth leadership development program that aims to train young leaders and prepare them to use sport as a tool for self-development.
677.	Планирование преподавания и индивидуализация обучения Teaching planning and individualization of learning	Pre-service teachers are familiar with the curriculum in their area of teaching and the guiding pedagogical principles and cross-cutting development themes of a specific level of education, such as entrepreneurship and sustainable development. Pre-service teachers possess the necessary skills of individualization of teaching, considering the diversity of students and their inclusion to the learning process, as well as the use of teaching technologies, based on pedagogical and independent research. Pre-service teachers who demonstrate competence can: understand the main principles and requirements of the curriculum in their area of teaching and apply them in planning and conducting educational activities; identify factors and conditions that affect students' learning; apply in practice the principles of inclusion as well as individualized teaching and guidance (adapting curricula, developing differentiated lessons) by considering the needs of the students and support the development of their personality and self-esteem, including career guidance.
678.	Строение и функции животных 1 Structure and functions of animals 1	Pre-service teachers investigate the laws of the animal world development from the simplest unicellular forms to highly organized taxa (arthropods, mollusks, arthropods). They examine the features of morphophysiological organizations, phylogeny, embryogenesis, physiology, and reproduction. They also research their geographical distribution, the role in ecosystems and the practical significance of the main types and classes of invertebrates, as well as the importance of biodiversity conservation as a leading factor in ecosystem sustainability. During the course, pre-service teachers build their understanding of the importance of zoology in the formation of a

		scientific worldview. Pre-service teachers who demonstrate competence can: • describe anatomical, morphological, physiological, ecological features of invertebrates using special terminology; identify primitive and progressive features of invertebrate structure based on comparative analysis; determine the taxonomic affiliation and classify invertebrates; conduct surveillance of biological objects; carry out cameral processing of zoological material, to produce micro- and macro-preparations of invertebrates; mount systematic and biological collections; apply the acquired knowledge and skills during the experiment, organization and planning of educational activities of students; participate in discussions and negotiations about the scientific problems of the evolution of the animal kingdom; describe the structure and role of invertebrates in ecosystems in written and oral form; analyze, generalize and systematize scientific information in the field of invertebrate zoology; sketch and design the results of their work; Substantiate phylogenetic relationships between organisms.
679.	Преподавание вариативного курса по краеведению Teaching a variation course in local history	The course is designed to form ideas about the historical past of the Abai region and the teaching methods of this subject, about personalities who have left a noticeable mark on the history of the region; the formation of a sustained interest in the socio-economic, political and geographical location of the Abai region, its history and archeology, the development and current state of the region; introducing students to social experience and moral values, the culture of the peoples inhabiting the Abai region.
680.	Планирование преподавания и индивидуализация обучения музыки Planning of teaching and individualization of music teaching	Purpose: formation of skills of individualization of teaching, taking into account the diversity of students and the use of music teaching technologies, based on pedagogical and independent research. Students can: understand the requirements of competence, entrepreneurship and sustainable development in their pedagogical and subject area when planning and conducting training; plan and predict other conditions that affect music learning; apply the principles of individual music teaching and guidance in practice, take into account the needs of their students, support the musical and creative development of their personality and self-esteem.
681.	Планирование преподавания и индивидуализация обучения художественного образование Teaching planning and individualization of teaching Art education	Purpose: formation of skills of individualization of teaching, taking into account the diversity of students and the use of fine arts, graphics and projecting teaching technologies, based on pedagogical and independent research. Students can: understand the requirements of competence, entrepreneurship and sustainable development in their pedagogical and subject area when planning and conducting training; plan and predict other conditions that affect the teaching of art education; apply the principles of individual the teaching of art education and guidance in practice, take into account the needs of their students, support the artistic and creative development of their personality and self-esteem.

The above is a list of courses that were introduced as part of the Shakarim University Curriculum Renewal Program, which aims to include sustainable development in the content of courses and modules offered by the university in accordance with the UN Sustainable Development Goals.