

ONTUSTIK-QAZAQSTAN
MEDISINA
AKADEMIASY
«Оңтүстік Қазақстан медицина академиясы» АҚ



SOUTH KAZAKHSTAN
MEDICAL
ACADEMY
АО «Южно-Казахстанская медицинская академия»

Academic Committee

Educational program

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EDUCATIONAL PROGRAM

Educational Program Group: B085 Pharmacy

Educational Program Code: 6B10106

Educational Program Name: Pharmacy (Abbreviated 2 year)

Educational Program Level: Bachelor's

The "Pharmacy" educational program was developed by the members of AC "Pharmacy":

Agreed with employers:

Director of ULE "Association of Pharmaceutical and Medical Organizations of SKO 'Damu'"

Director of LLP "Zerde Pharm"

Director of LLP "AKNIET GROUP"

Chairman of CPG "Pharmacy"

Protocol No. 9 of 18 04 2025

Approved by the Methodological Council

Vice-Rector for Academic Affairs

Protocol No. 9 of 02 05 2025

Approved by the Academic Council

Protocol No. 13 of 02 05 2025



H. Alzhanova

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Passport of the educational program 6B10106 «Pharmacy»

1. **The mission of the educational program:** Become a leader in the training of competitive highly qualified specialists in the field of pharmacy!
 2. **The purpose of the educational program** is to train competitive, qualified, competent pharmacists focused on the modern market, with deep theoretical and practical knowledge in the field of pharmacy, capable of performing production and practical tasks in professional activities.
 3. **Justification of the OP:**
 - for students (describe the reasoned evidence of the program's potential in terms of graduate employment opportunities, etc.)
 - the need in the labor market (describe the reasoned evidence (society's demands, labor market needs) of the need to implement an educational program with a focus on employers)
 3. **Professional standard on the basis of which the educational program is developed** - missing
- Regulatory documents for the development of a educational program (state educational standards, professional standards (if any), etc.)**
- Code of the Republic of Kazakhstan dated July 7, 2020 No. 360-VI SAM. "On the health of the people and the healthcare system", with amendments and additions as of 07/04/2022.
 - The Law of the Republic of Kazakhstan "On Education" dated 07/27/2007 No. 319-III, with amendments and additions dated 07/14/2022 No. 141-VII.
 - Order of the Ministry of Health of the Republic of Kazakhstan "On approval of state mandatory standards for levels of education in the field of healthcare" dated July 4, 2022 No. KR DSM-63.
 - Order of the Minister of Science and Higher Education of the Republic of Kazakhstan "On approval of State mandatory standards of higher and postgraduate education" dated July 20, 2022 No. 2.
 - Order of the Ministry of Education and Science of the Republic of Kazakhstan "On approval of the Rules for organizing the educational process on credit technology of education" dated April 20, 2011 No. 152, with amendments and additions as of 05/06/2021.
 - Order of the Ministry of Health of the Republic of Kazakhstan "On approval of the nomenclature of specialties and specializations in the field of healthcare, nomenclature and qualification characteristics of positions of healthcare workers" dated December 21, 2020 No. KR DSM-305/2020, with amendments and additions as of 04/09/2021
 - Order of the Ministry of Education and Science of the Republic of Kazakhstan "Standard rules for conducting ongoing monitoring of academic performance, intermediate and final certification of students in higher educational institutions" dated March 18, 2008 No. 125, with amendments and additions as of 05/12/2022.

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- Standard rules for the activities of organizations implementing higher and postgraduate education", Decree of the Government of the Republic of Kazakhstan dated October 30, 2018 No. 595 with amendments and additions as of 12/29/2021.

- Internal regulatory documents of JSC SKMA.

6. **Field of professional activity** pharmaceutical activity in the field of circulation of medicines and medical devices.

7. **Objects of professional activity pharmaceutical enterprises;** management and pharmaceutical control bodies; testing centers; laboratories for quality control, standardization and certification; chemical and toxicological departments (laboratories) of the Center for Forensic Medicine, toxicological centers; reference and information centers, information and analytical centers, etc.; educational and scientific organizations.

General information

№	Field name	Note
1	Registration number	
2	Code and classification of the field of education	6B10 Healthcare
3	Code and classification of training areas	6B101 Healthcare
4	Educational group	B O85 «Pharmacy»
5	Educational program	6B10106 «Pharmacy»
6	Type of the EP	Current OD
7	ISCED level	6
8	NSC level	6
9	Orc level	6
10	OT features	-
	UNIVERSITY PARTNER (SOP)	-
	UNIVERSITY PARTNER (RDO)	-
11	List of competencies	KK1 – Pharmaceutical activities KK2 – Management KK3 – effective communication KK4 – Leadership and team building

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		KK5 – Strategy for continuing professional development KK6 – research abilities
12	Learning outcome	LO1 – Puts into practice knowledge and skills in the organization of pharmaceutical assistance to the population of Kazakhstan. LO2 – Carries out wholesale and retail sales of medicines and medical devices LO3 – Prepares medicines in pharmacy conditions LO4 – Able to organize industrial production of medicines and medical products, to manage production processes LO5 – Complies with the principles of organization and implementation of quality control of medicines, medicinal plant raw materials, pharmaceutical substances, standard samples, adjuvants and materials LO6 – Able to organize and carry out chemical toxicological examination of toxicologically important substances LO7 – Knows the rules of proper use of medicines: prescribing medicines, professional advice in compliance with the principles of inclusion, providing critical information about the benefits, risks and possible contraindications of medicines LO8 – Guided by the current regulatory and legal documents in the organization of pharmaceutical activities and effectively manages the processes for the provision of medicines and medical devices in order to improve the quality of health and the performance of the healthcare system LO9 – Possesses effective communication skills between healthcare stakeholders, motivation for continuous professional development, and cultural tolerance. LO10 – Demonstrates leadership qualities (from the early stages of a career) and the ability to work in a team. LO11 – Committed to lifelong learning, chooses trajectories of development of individual plan of continuous professional development on the basis of constant changes in science, pharmacy and healthcare for the development of professional competencies. LO12 – Applies scientific knowledge to develop analytical and research skills, and is able

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		to conduct research that ensures the effectiveness, safety and quality of medicines and medical devices LO13 – Demonstrates a broad outlook, critical and analytical thinking, drawing on knowledge of social and natural sciences, digital technologies and the basics of artificial intelligence, and effectively uses modern communication tools in a professional environment.
13	Form of instruction	The field value must be derived from the IP of the specified university.
14	Language of instruction	Kazakh/Russian
15	Loan volume	120
16	Duration of study	2 years
17	Academic degree	Bachelor
18	Availability of an annex to the license for directing training	KZ73LAA00011788
19	OT accreditation	Yes
	Name of accreditation body	Independent Accreditation and Rating Agency
	Accreditation period	Bachelor's degree program - № _____ 09.06.2020-08.06.2025
20	Discipline information	Appendix A 2

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Appendix A. 1

MATRIX

correlation of the results of the education program as a whole with the competences being formed

	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12	LO13
KK1	+	+	+	+	+	+	+	+	+	+	+	+	+
KK2	+	+			+		+	+	+	+	+	+	+
KK3	+	+		+	+	+	+	+	+	+	+	+	+
KK4	+	+	+	+	+	+	+	+	+	+	+	+	+
KK5	+			+	+	+	+	+	+	+	+	+	+
KK6	+					+	+			+	+	+	+

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Appendix A.2

Competence Achievement/Learning Outcomes MATRIX

№	Name of discipline	Discipline brief description	Cycle (GED, BD, PD)	Component (RC, UC, CC)	Number of credits	Formation of learning outcomes (codes)
The cycle of basic disciplines						
University component						
1.	Pharmaceutical Botany	Plants - the source of life on earth. The concept of the biosphere. Plants as a source of medicinal raw materials. The value of plants in the cycle of matter in nature and in the life of the biosphere. Botany as a science and pharmaceutical discipline. The value of botany for pharmacy. Similar and distinctive features between plants and animals. Geography of plants.	BD	UC	5	LO 9 LO 10 LO 11
2.	Molecular biology with the basics of medical genetics	The formation of knowledge about the molecular mechanisms of cell activity, the structure and function of genes, the analysis of genetic information for the diagnosis and treatment of hereditary diseases and the conduct of analytical and research work; skills in the diagnosis of genetic diseases and the application of molecular technologies necessary for the manufacture and quality control of medicines using digital technologies and artificial intelligence.	BD	UC	3	LO 3 LO 5 LO 12 LO 13
3.	Biological Chemistry	Biological functions and structural organization of proteins. Enzymes. The role of membranes in metabolism and their diversity. Vitamins. Specific and common paths of catabolism. Bioenergy. Exchange of carbohydrates, lipids and proteins. Macro- and trace elements. Water - salt exchange. Biochemistry of hormones. Biochemistry of liver and kidneys. Exchange of blood proteins. Biochemistry of blood. Biochemistry of tissues. Pharmaceutical biochemistry.	BD	UC	3	LO 1 LO 5 LO 8 LO 12

4.	Microbiology	Principles of organization of microbiological laboratory. Microbiological research methods: microscopic, bacteriological, serological, biological, allergological, molecular-genetic. Study of infectious disease pathogens, informative methods of microbiological diagnosis, indications for the use of drugs specific therapy and prevention.	BD	UC	4	LO 1 LO 5 LO 9 LO 12
5.	Physiology with the basics of anatomy	Physiology with the basics of anatomy is the theoretical basis of medicine, which allows the future specialist to get a comprehensive understanding of the structure and activities of cells, tissues, organs and systems. This discipline is the only subject that will acquaint students of the pharmaceutical faculty with the main object of their action - the function and structure of human organs and systems. The main method of physiology with the basics of anatomy is experimental.	BD	UC	3	LO 1 LO 9 LO 11
6.	The fundamentals of organization pharmaceutical business and effective communications in pharmacy	Fundamental principles of providing pharmaceutical care to the population. Organization and regulation of pharmaceutical retail activities. National GPP (Good Pharmacy Practice) standard. Basic principles of pharmacy establishment and procedures for opening pharmacies. Prescription and compounding department. Pharmaceutical evaluation of prescriptions. System of free medicine supply. Organization of drug compounding in a pharmacy setting. Pharmacy warehouse management. Customs regulation in the circulation of medicinal products and medical devices. Ethics, deontology, and ethical-legal foundations of pharmaceutical product promotion in the market. Communication, the communication process, communicative competence, and principles of effective interaction between a pharmacist and pharmacy patients, colleagues, physicians, and other healthcare professionals. Communication barriers in pharmacy practice, conflict-contributing factors, and methods of conflict resolution. Pharmacist approaches to the patient depending on individual characteristics, age, and type of disease.	BD	UC	5	LO 1 LO 2 LO 8 LO 9

7.	General methods of research and analysis of drugs	State principles and regulations governing the quality of medicines. General pharmacopoeial methods for the study of drugs. Analysis of drugs of inorganic nature and organic origin of derivatives of aliphatic and alicyclic compounds.	BD	UC	4	LO 5 LO 9 LO 10 LO 11 LO 12
8.	Pharmacology -1	General patterns of pharmacodynamics and pharmacokinetics of drugs and changes in the functions of organs and systems caused by pharmacological action. Principles of prescriptions and writing prescriptions. Calculation of doses and concentrations of drugs. Agents affecting the central and peripheral parts of the nervous and immune systems. Chemotherapeutic agents. Side effects when prescribing drugs, methods of preventing and correcting side effects.	BD	UC	4	LO 7 LO 11 LO 12
9.	Pharmacology -2	Methodologies for selecting the most effective and safe drugs for the treatment of diseases of the respiratory, cardiovascular systems, organs of the urinary system, system of the gastrointestinal tract, endocrine system, oprino-motor system. Antibacterial drugs, antibiotic resistance.	BD	UC	4	LO 7 LO 11 LO 12
10.	Pathological physiology	Pathological physiology, is the theoretical basis of medicine. Pathological physiology studies the general patterns of occurrence, development and outcome of disease, as well as typical pathological processes that form the basis of disease. The basic method of general pathological physiology is the method of experimental modeling.	BD	UC	3	LO 7 LO 9 LO 11 LO 12
11.	Toxicological chemistry	Toxicological chemistry: subject, tasks, main directions and objects of research. Chemical and toxicological analysis of "medicinal" poisons, pesticides, "volatile", "metallic" poisons, caustic alkalis, mineral acids and their salts, narcotic substances in biological objects. Laboratory diagnostics of acute poisoning.	BD	UC	4	LO 6 LO 9 LO 10 LO 11 LO 12
12.	Pharmaceutical technology	State regulation of pharmaceutical production. Technology of dosage forms with solid, liquid, and viscous-plastic dispersion media. Technology of dosage forms prepared under sterile and aseptic conditions. Incompatible combinations and	BD	UC	4	LO 1 LO 3 LO 8



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		irrational prescription formulations of medicinal products.				
13.	Innovative Pharmaceutical Technology	Technology for the development of innovative medicinal products: production of new chemical compounds; synthesis of pharmacologically active metabolites or their isomers; development of new dosage forms with improved pharmacokinetic properties. Biotechnological medicines with novel mechanisms of action. Pharmaceutical nanotechnology as a strategy for targeted drug delivery. Computer-based drug modeling. Prediction of compatibility of active pharmaceutical ingredients and excipients.	BD	UC	4	LO 1 LO 4 LO 9 LO 12 LO 13
14.	Introductory educational practice	General familiarity with the structure, tasks and main functions of the pharmacy organization, with the staff of the pharmacy and the main functions of the pharmacy organization specialists, with the requirements of the sanitary regime of the pharmacy organization, the organization of work on the manufacture of pharmaceutical forms, organization of work on quality control, registration and issuance of medicines, organization of work on storage of medicines in a pharmacy organization.	BD	UC	1	LO 1 LO 8 LO 9
15.	Production practice for the organization of pharmaceutical activities	Organizational and managerial work of the head of the pharmacy. Work in the pharmaceutical retail chain: the prescription and production department, the department of finished medicines, the department of over-the-counter supply. Work in the pharmacy's inventory department: supplying the pharmacy with the necessary range of medicines, receiving goods to the pharmacy, studying demand and determining the need for medicines, storing goods. Work in the pharmaceutical wholesale chain.	BD	UC	2	LO 1 LO 2 LO 8 LO 9
16	Educational practice Pharmaceutical technology	Familiarization with the structure of a pharmacy, the rules of operating small mechanization equipment, and devices for obtaining purified water. Introduction to the manufacturing process of solid, liquid, semi-solid, sterile, and aseptically prepared dosage forms. Familiarization with the preparation of pharmaceutical dosage forms according to the requirements of healthcare institutions and physician prescriptions.	BD	UC	1	LO 1 LO 3 LO 8

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The cycle of basic disciplines

Component of choice

17.	Project-oriented activity in pharmacy	Pharmaceutical activity in the field of treatment of drugs, in the chemical and toxicological departments of the Center of Forensic Medicine, in the field of education and science, in the bodies of standardization and certification of medicines. Project-oriented training. Concept of the project and its distinctive features. Essence of project management. Place and role of project management in pharmacy research. Project management methodology.	BD	CC	3	LO 1 LO 8 LO 9
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The cycle of profile disciplines

University component

1.	Medical and pharmaceutical merchandizing	Materials science. Metallic material. Corrosion of tools and anticorrosion measures. Non-metallic materials. Rubber medical products. Medical products from glass and porcelain. Plastic masses and other non-metallic products. Ophthalmologic optics. Sterilization and distillation equipment. Classification of medical equipment and pharmaceutical products. Factors that determine the quality and consumer properties of medical devices and pharmaceutical products	PD	UC	4	LO 1 LO 8 LO 12
2.	First aid in case of emergency	The subject, tasks, volume and main tasks of providing first aid. Terminal conditions. First aid in case of wounds. Injuries, transport immobilization. Bleeding. First aid for burns. First aid in case of acute heart failure. First aid in case of allergic reactions.	PD	UC	3	LO 7
3.	Pharmacognosy - 1	Methods of pharmacognostic analysis. Analysis of medicinal plant materials containing polysaccharides, fats, fatty oils and fat-like substances, vitamins, essential oils and alkaloids. Obtaining, research and standardization of essential oils. Plant sources, botanical description, geographical distribution, habitat, chemical composition, collection and preparation of medicinal plant materials, ways of application in medicine and pharmacy.	PD	UC	5	LO 5 LO 9 LO 10 LO 11 LO 12 LO 13

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4	Pharmacognosy - 2	Analysis of medicinal plant raw materials containing glycosides of different groups, flavonoids, saponins, tannins, phenolic compounds. Plant sources, botanical description, geographical distribution, habitats, chemical composition, collection and procurement of medicinal plant raw materials, medical and pharmaceutical applications. Medicinal raw materials of animal and mineral origin.	PD	UC	5	LO 5 LO 9 LO 10 LO 11 LO 12 LO 13
5.	The pharmacy Management and Economics 1	Pharmacy management bodies in the Republic of Kazakhstan. Licensing, import and export of drugs and MI. Regulatory documents regulating the activities of pharmaceutical organizations. Methods of forecasting the main economic indicators. Pricing. Analysis of turnover. Inventories and their rationing. Planning of indicators on labor and wages, circulation costs, gross income, gross and net profit in a pharmacy organization.	PD	UC	5	LO 1 LO 2 LO 11 LO 12 LO 13
6.	Management and economics of pharmacy-2	Types of accounting and accounting meters. System of legal regulation of accounting. Structure of economic means, sources of their formation Tasks of accounting of fixed assets and their classification. Valuation and recognition of property, plant and equipment. Depreciation. Cash receipts and disbursements. Accounting of settlements with MPI and other institutions. Payroll. Balance sheet. Tax system of RK.	PD	UC	4	LO 1 LO 2 LO 11 LO 12
7.	Pharmaceutical chemistry	A specialized branch of pharmaceutical chemistry studies the methods of obtaining, the structures, physical and chemical properties, the relationship between chemical structure and pharmacological activity, and quality control methods of medicinal products derived from aromatic and heterocyclic (5- and 6-membered oxygen- and nitrogen-containing) compounds at the stages of development, production, storage, and use in accordance with regulatory requirements.	PD	UC	5	LO 5 LO 9 LO 10 LO 11 LO 12

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8.	Pharmaceutical chemistry and standardization of drags	The discipline "Pharmaceutical Chemistry and Standardization of Medicinal Products" studies the methods of obtaining, structures, physical and chemical properties, the relationship between chemical structure and pharmacological activity, quality control methods of medicinal products derived from heterocyclic compounds, as well as the state principles and regulations governing their quality, and the rules for developing regulatory documents for the control of quality and safety of medicinal products.	PD	UC	5	LO 5 LO 9 LO 10 LO 11 LO 12
9.	Pharmacotherapy	General principles of pharmacotherapy and clinical pharmacology. Pharmacokinetic parameters of medicinal products, methodologies for evaluating pharmacodynamic effects. Prediction and assessment of adverse drug reactions. Interrelation and interdependence of pharmacokinetics and pharmacodynamics of medicinal products. General principles for evaluating the efficacy and safety of drug use. Clinical-pharmacological principles of pharmacotherapy for diseases of the nervous system, inflammatory conditions, and immune system disorders. Major symptoms and syndromes of diseases affecting the respiratory, cardiovascular, digestive, hepatobiliary, endocrine, urinary systems, and the blood system. Main symptoms and syndromes of infectious and inflammatory diseases. Diagnostic methods. Clinical-pharmacological principles of rational therapy. Routes of administration, dose selection, dosing frequency, and course treatment depending on the nature and severity of the disease.	PD	UC	4	PO 6 PO 7 PO 11
10.	Good pharmaceutical practice (GPP)	Good Pharmacy Practice (GPP) Standard. General provisions. Structure of the GPP standard. Regulatory framework of the National Pharmacy Standard (NAP). Internal pharmacy documentation. Content and recommended structure of Standard Operating Procedures (SOPs) for a pharmacy organization. Sanitary regime in the pharmacy, occupational safety, and workplace safety procedures. Organization of reception, storage, and dispensing of medicinal products and other pharmacy goods in accordance with NAP requirements. Control and	PD	UC	3	PO 1 PO 2 PO 3 PO 8 PO 11



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		supervision of pharmaceutical activities in compliance with NAP requirements.				
11.	Pharmaceutical Care	Principles of providing patient counseling within rational use of medicines, including OTC (over-the-counter) drug recommendations; counseling on possible adverse drug reactions and evaluation of potential drug–drug interactions. Issues of compatibility and incompatibility of medicinal products with each other and with food components, as well as assessment of drug tolerability by the body. Inclusive approaches of the pharmacist to patient communication during dispensing of medicines.	PD	UC	5	LO 1 LO 7 LO 11
12.	Production practice of Pharmacognosy	Acquisition of skills of practical work on organization of procurement of medicinal plant raw material, calculation of reserves, development of basic methods of collection, drying, storage and processing of medicinal plant raw material. Work to determine the reserves of medicinal plants. Methods of cultivation of medicinal plants. Taking of medicinal plant raw material from the preparer. Packing, marking and transportation of medicinal plant raw materials. Processing of materials.	PD	UC	2	LO 5 LO 9 LO 10 LO 11 LO 12 LO 13
13.	Production practice on the management and economics of pharmacy	Work on the study of the organizational structure and management of the pharmacy organization. Study of the system of work with pharmaceutical personnel. Types of accounting and accounting measures. Study of the organization of workflow and rationalization of workflow. Work on the organization and conduct of analysis and forecasting of the main economic indicators of the pharmacy organization.	PD	UC	2	LO 1 LO 2 LO 9 LO 11 LO 12
14.	Production practice "Quality control and standardization medicines"	Quality control and standardization of medicines, procedures and principles of organization and conduct. Modern physical, chemical and physico-chemical methods used in pharmaceutical analysis. General pharmacopoeic research methods used for drug quality control. Modern physico-chemical (instrumental) methods for identification, analysis of purity and quantitative determination of medicines.	PD	UC	2	LO 5 LO 9 LO 10 LO 11 LO 12

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Profile disciplines (PD)

Component of choice

1.	The marketing and management in pharmacy	The concept of marketing. Marketing environment, marketing complex. Functional structure of marketing. Market conditions. Market segmentation. Classification, product levels. Pricing policy of a pharmaceutical company. Marketing activities of pharmaceutical enterprises. Marketing policy of communications. Marketing research .Methodological foundations of management. Management of the decision-making process. Motivation of work activity. Fundamentals of personnel management in pharmacy organizations. Management styles of the labor collective.	PD	EC	5	LO 1 LO 8 LO 10 LO 11 LO 12
12.	Final certification	Basic principles of organization of pharmaceutical assistance to the population. Design and release of medicines. Technology of drug forms. Methods of pharmacognostic analysis. Analysis of medicinal plant raw materials containing various groups of BAV. Analysis of medicinal agents, derivatives of aromatic and heterocyclic compounds of synthetic origin using chemical, General pharmacodynamics and pharmacokinetics of drugs and changes in the functions of organs and systems caused by pharmacological effects.			4	LO 1, LO 2, LO 3, LO 4, LO 5, LO 6, LO 7, LO 8, LO 9, LO 10, LO 11, LO 12 LO 13