

«Оңтүстік Қазақстан медицина академиясы» АҚ

MEDISINA
AKADEMIASY



SOUTH KAZAKHSTAN

MEDICAL
ACADEMY

АО «Южно-Казakhstanская медицинская академия»



EDUCATIONAL PROGRAM

Educational program code: 7M10142
Name of the educational program: Pharmacy
Level of the educational program: Magistracy (research and pedagogical direction)

Shymkent, 2025 y.



The educational program 7M10142 «Pharmacy» was developed by the members of the Academic Committee of educational programs at the master's and doctoral levels

Chairman of the AC OP for Masters and Doctoral levels

K.K. Orynbassarova

Protocol № 8 25 03 2025y.

Agreed with the employer:

Director of the Association of Pharmaceutical and Medical Organizations «Damu»

Kh. D. Alzhanova

Director of «Recipe» LLP

Advisor to the Director of Pharmaceutical Activities of «Ecopharm International» LLP

Head of the Production Department of «Zerde-Phyto» LLP



E. A. Baimbetov

Zh. D. Kenzhebaev

M. Zh. Zhumataev

Approved by the Methodological Council

Vice-Rector for Academic Affairs

M.Y. Anartaeva

Protocol № 9 of 02 05 2025y.

Approved by the Academic Council

Protocol № 13 of 02 05 2025y.



Passport of the educational program

1. Mission of the educational program: Training of highly qualified scientific and pedagogical personnel with research skills in pharmacy.

2. The purpose of the educational program: To create, on the basis of the integration of education and science, an effective system for training scientific, scientific and pedagogical personnel in pharmacy, capable of effectively solving the problems of pharmacy, ensuring the modernization of education, science, and developing breakthrough technologies.

3. Rationale for the educational program: On the basis of the integration of education and science, to create an effective system for training scientific personnel capable of effectively solving pharmaceutical and managerial problems in healthcare, providing education, modernizing science, and developing innovative technologies in pharmacy.

4. Professional standard on the basis of which the educational program has been developed:

Regulatory documents for the development of an educational program

- Order of the Minister of Science and Higher Education of the Republic of Kazakhstan «On Approval of State Compulsory Standards of Higher and Postgraduate Education» dated July 20, 2022 No. 2.
- Order of the Minister of Health of the Republic of Kazakhstan «On Approval of State Compulsory Standards for the Levels of Education in the Field of Healthcare» dated July 4, 2022 No. KR DSM-63.
- Order of the Minister of Education and Science of the Republic of Kazakhstan «On Approval of the Rules for the Organization of the Educational Process on Credit Technology of Training in Higher and (or) Postgraduate Education Organizations» dated April 20, 2011 No. 152.
- Law of the Republic of Kazakhstan «On Education» dated July 27, 2007 No. 319-III (as amended on 04.07.2022)
- Order of the Minister of Education and Science of the Republic of Kazakhstan «On Approval of the Model Rules for the Activities of Higher and Postgraduate Education Organizations» dated October 30, 2018 No. 595 (as amended on 29.12.2021)
- «Regulations on the Procedure and Procedures for the Development of Educational Programs» of JSC «SKMA» dated 29.04.2024.

- Internal regulatory documents of JSC «SKMA»

5. Field of professional activity: Managers of pharmaceutical companies, managers and quality management specialists in pharmacy, specialists in the rational use of medicines, specialists in scientific activities in research organizations and institutions of higher and postgraduate education.

6. Objects of professional activity: Healthcare management organizations, organizations that oversee pharmaceutical activities, pharmaceutical and medical organizations, pharmaceutical manufacturing.

Types of professional activity: Pharmaceutical activity, activities in the field of circulation of medicines and medical devices.

General information

№	Characteristics of the EP	Data
1	Registration Number	7M10100087
2	Code and classification of the field of education	7M10 Healthcare
3	Code and classification of the field of study	7M101 Healthcare
4	Group of Educational Programs	M142 Pharmacy
5	Code, name of the educational program	7M10142 Pharmacy
6	Type of EP	Current EP
7	ISCED level	7
8	NQF level	7
9	IQF Level	7
10	Distinctive features of the EP	No
	Partner University (JEP)	-
	Partner University (DDEP)	-

11	List of competencies	<p>Key competencies of the graduate of the program:</p> <p>KC1 It can effectively and successfully carry out research activities in the field of quality and safety of drug substances and medicinal plant raw materials.</p> <p>KC2 Able to organize and manage the production process of the faraceutic product in accordance with GMP and GPP standards, relevant pharmaceutical practice.</p> <p>KC3 Has the skills to validate analytical methods, statistical processing of test results, and compile a report on the validation of methods in accordance with international requirements.</p> <p>KC4 Able to plan, organize and manage pharmaceutical activities for the storage, transportation and quality control of medicines and medical devices in accordance with the requirements of the standards of relevant pharmaceutical practices.</p> <p>KC5 Competent in the field of pharmaceutical development according to the principles of relevant practices, capable of professional growth and self-analysis.</p>
12	Learning Outcomes	<p>LO1 Manages and plans the activities of entities engaged in pharmaceutical activities. Organizes and carries out pharmaceutical activities in the control and licensing system in the field of circulation of medicines and medical devices.</p> <p>LO2 Organizes work in subjects engaged in pharmaceutical activities to create conditions for storage, transportation and quality control of medicines and medical products.</p> <p>LO3 Organizes a system for maintaining documentation that allows you to trace the actions performed in relation to medicines and medical products, received and shipped series/batch of products from the supplier to the buyer and the location of substandard medicines and medical products.</p> <p>LO4 Conducts self-inspection and development of a set of measures to maintain the level of quality of medicines and medical products during their storage, sale and circulation. Organizes procedures for quality control of medicines using digital technologies.</p>

		<p>LO5 Organizes and provides comprehensive advice to the population and specialists on the rational use of medicines and medical devices.</p> <p>LO6 Demonstrates knowledge and understanding of the interdisciplinary nature of scientific research in modern education and pharmaceutical science and practice in accordance with the requirements of the current legislation of the Republic of Kazakhstan and Good Pharmaceutical Practices (GxP). Organizes activities to ensure the quality, safety and effectiveness of medicines.</p> <p>LO7 Engaged in professional growth, demonstrates introspection skills and experience for teaching at the higher and postgraduate levels, taking into account the principles of student-centered learning and assessment, pedagogical interaction with stakeholders; development of teaching materials taking into account the integration of education, science, innovation and digital technologies.</p> <p>LO8 Integrates scientific knowledge and skills at an interdisciplinary level for the effective functioning of the formulary system, the pharmacovigilance system, and the evaluation of the use of medicines in medical organizations.</p>
13	Form of study	In-person
14	Language of instruction	Kazakh, Russian
15	Amount of loans	120
16	Degree Awarded	Master of Medical Sciences in 7M10142 «Pharmacy»
17	Duration of training	2 years
18	Availability of an appendix to the license for the direction of personnel training	KZ36LAA00011387 (018)
19	Availability of EP accreditation	Yes
	Name of accreditation body	Independent Agency for Accreditation and Rating (IAAR)



	Name of accreditation body	Independent Agency for Accreditation and Rating (IAAR)
	Accreditation Certificate No., Accreditation Validity Period	No. AB 4131, 09.06.2020 – 08.06.2025
20	Information about disciplines	Annex 1.2

Annex 1

**Matrix of correlation of learning outcomes for the educational program as a whole
 with the competencies that are being formed**

	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8
KC1								
KC2								
KC3								
KC4								
KC5								

Matrix of achievability of competencies/learning outcomes

№	Name of the discipline	A brief description of the discipline	Cycle (BD, PD)	Component (UC, OC)	Number of credits	Generated LO (Codes)
The cycle of basic disciplines					35	
University component					20	
1	History and philosophy of science	Philosophy and methodology of science as branch of philosophical knowledge. Structure of scientific knowledge. Scientific rationality. Features of the present stage of science development. Science as social institute. Natural sciences in structure of modern scientific knowledge. The history of formation of sciences about society, culture, history and person. Actual philosophical problems of specific sciences.	BD	UC	3	LO7
2	Foreign language (professional)	Extension and development of skills for practical usage proficiency language of specialty, for active application of a foreign language both in daily, and in professional communication: lexicon, grammar, possession of oral speech, written skills, audition, translation.	BD	UC	3	LO7
3	Pedagogics of the higher school	Formation of pedagogical competencies: teaching modern teaching methods and technologies and innovations in higher and postgraduate education organizations, developing professional ethics, skills to	BD	UC	5	LO7

		analyze and evaluate educational programs and teaching methods, conducting scientific research and writing scientific papers. Organization of the educational process based on a credit learning system. Education quality management system.				
4	Psychology of management	The essence of administrative processes. Object of psychology management. Psychology of activity of the organization head and of his personality psychology. Functional and structural analysis of administrative activity. The psychological problems arising between the head and the staff of the organization. A clear idea of distribution on responsibility levels of the manager.	BD	UC	3	LO2 LO7
5	Teaching practice	Formation of practical skills in teaching and learning methodology. Involvement of Master's Students in Undergraduate Studies.	BD	UC	6	LO7
Optional Component					15	
6	Personnel and financial management	Formation of the internal organizational structure of the personnel management system. Methods and strategies of personnel management. Assessment of labor activity and management of business career of pharmaceutical personnel. Technologies in HR management. Financial management mechanisms. Methodological basis of financial decision-making. Improvement of accounting, balance sheet analysis, audit.	BD	OC	4	LO1 LO2
7	Good distribution practices	Infrastructure, its place and importance in good distribution practice. Features of LS as a consumer product. Principles of Good distribution practice adopted in the EU and recommended by the world health organization (WHO) a Unified approach to the organizational process	BD	OC	4	LO3 LO4

		of wholesale sale of medicines. Compliance with and documentation of all operating procedures.				
8	Applied pharmacoecomics	International experience in pharmacoecomics and outcomes research. Evaluation of medical intervention in pharmacoecomics studies. Application of modeling methods in pharmacoecomics analysis. Algorithm for evaluation of pharmacoecomics and pharmacoepidemiological studies and publications.. Modern possibilities of using pharmacoecomics research in the promotion of medicines.	BD	OC	3	LO6 LO8
9	Good pharmaceutical practice	The concept of good practices in pharmacy is GXP. Approaches to implementation of GMP rules in Kazakhstan. Current state of drug development. Factors affecting the development of new drugs. Rules of good laboratory practice. Scope. Preclinical study. Stages and types of preclinical studies. GCP objectives, basic principles and requirements. Implementation of GCP in Kazakhstan.	BD	OC	4	LO3 LO4 LO6
Optional component					15	
10	The methodology of this dissertation works	Application of the methodology for conducting scientific research work at the stages of development, receipt, production, storage and use of medicines. Organization for conducting scientific research in accordance with the requirements of regulatory documents. Formation of skills in carrying out dissertation research using modern digital tools, including big data analysis, bibliometric platforms, artificial intelligence and machine learning. The role of digital technologies in science, scientometric indicators and digital libraries.	BD	OC	4	LO1 LO3 LO7



11	Instrumental methods of analysis	The application of a complex of modern physico-chemical methods in solving the problems posed to the researcher. In-depth study of modern physico-chemical research methods (spectral, electrochemical, etc.), the development of modern laboratory analytical and testing equipment, the use of mathematical methods for processing measurement results, as well as the introduction of artificial intelligence and digital technologies to automate data analysis processes, optimize experiments and improve the accuracy of results.	BD	OC	4	LO3 LO5 LO6 LO7
12	Phytochemical analysis of medicinal raw materials of plant and animal origin	Determination of the chemical composition of medicinal plant materials. Classification of compounds in the group of active substances. Biosynthesis of active biologically active substances. Methods of extraction from raw materials, purification of the obtained extracts. Qualitative and quantitative determination of active substances of medicinal raw materials of plant and animal origin. Numerical indicators of the good quality of medicinal raw materials. Phytochemical analysis of medicinal raw materials of plant and animal origin.	BD	OC	3	LO2 LO4 LO7
13	Medicinal plants in folk medicine	Distribution and habitat. Applied medicinal raw materials, harvesting and collection time. Morphological and anatomical characteristics of medicinal plants. Chemical composition. The influence of plants on the human body. Use in traditional medicine. General information about the methods of use and dosages of medicinal plants used in traditional medicine.	BD	OC	4	LO3 LO5 LO7
Optional component					15	

14	Personalized pharmacotherapy	Introduction to personalized pharmacotherapy. Individual factors affecting the pharmacological response. The human genome. Research in the field of pharmacogenetics and pharmacogenomics. OMICS technology. Pharmacogenetic aspects of therapy for diseases of various organs and systems. Theranostika. Pharmacogenetic test systems. Database of pharmacogenetic studies. Digital technology in personalized pharmacotherapy.	BD	OC	5	LO6
15	Rational antimicrobial therapy and prevention of infections through the use of antibiotics	Formation of knowledge and skills in the field of the rational use of antimicrobials and antibiotic prevention based on the principles of evidence-based medicine, pharmacokinetics, pharmacodynamics and antimicrobial policy. The study of the mechanisms of action and activity spectra of the main groups of antimicrobial drugs, and the principles of choosing antibacterial therapy for various infections. Antibiotic prophylaxis, irrational use and self-medication. The use of information systems and artificial intelligence in decision-making.	BD	OC	5	LO5 LO6
16	Good clinical practice (GCP)	Concepts and principles of good clinical practice. Legislative aspects of clinical research. Ethics Commission. Stages of clinical studies of drugs. The choice of study design, work with data and record keeping. Monitoring and auditing. The procedure for registration of new drugs.	BD	OC	5	LO1 LO6
Cycle of profile disciplines					49	
University component					12	
17	Fundamentals of teaching	Objectives of pharmaceutical education. Methods of activation of previous knowledge. Learning style. Teaching method. Rules and methods of work. Methods of assessment of knowledge, skills,	PD	UC	3	LO6 LO7



	methodology in pharmacy	attitudes, competencies and practical implementation. Features of teaching pharmaceutical disciplines. Research-based learning. Principles of organization of postgraduate and continuous professional development of pharmaceutical workers. Features of adult education. Self-education.				
18	Research methodology in pharmacy	Formation of a systematic understanding of research activities in pharmacy, development of skills in planning, conducting, analyzing and presenting research results in accordance with modern scientific and ethical standards. The study of basic research methods, the formulation of scientific hypotheses and research objectives. The use of digital technologies and artificial intelligence. Studying the ethical and legal aspects of conducting research, developing critical assessment skills for scientific literature, and preparing scientific publications, grant applications, and reports	PD	UC	3	LO6 LO7
19	Management and marketing at pharmaceutical companies	Organizational model. Management as a tool for managing a pharmaceutical enterprise. Strategic management in pharmacy. Personnel management. Quality management of pharmaceutical activities. Office work at the enterprises of pharmaceutical profile. Marketing planning in the implementation of pricing policy, promotion and distribution of ideas, products and services. Smart principle and situation analysis. Assortment management. Maintaining the competitive advantages of pharmaceutical companies. Artificial intelligence in the pharmaceutical business.	PD	UC	3	LO1 LO2
20	Biostatistics in pharmacy	Introduction to biostatistics. Basic concepts of probability theory. Basics of testing statistical hypotheses. Use of computer technologies	PD	UC	3	LO7 LO8



		in processing statistical material. The use of digital technologies and artificial intelligence in teaching. Use of measurement scales in a medical and biological experiment. Analysis of the use of statistical methods in articles and dissertations. The standardization method, its meaning and application. Population health statistics. Health care system statistics. Biomedical research statistics.				
21	Research Practice	Familiarization with the latest theoretical, methodological and technological achievements of domestic and foreign science, modern methods of scientific research, processing and interpretation of experimental data and their application.	PD	UC	12	LO4 LO8
Optional Component					25	
22	Pharmaceutical and biomedical aspects of drugs	Prospects for the development of pharmaceutical technology. Medical and biological aspects of drugs. Biopharmacy and effectiveness of drugs. The influence of biopharmaceutical factors on the therapeutic efficacy of drugs. Chemical state of matter. Physical state of matter. Dosage form. Auxiliary substance. Technological process. Pharmacokinetics. Biological availability of drugs. Theoretical and practical aspects of drug production and storage. Problems improvement of drugs and new pharmaceutical technologies.	PD	OC	5	LO2 LO3 LO4
23	Organizational behavior in pharmaceutical companies	Approaches to the study of organizational behavior. Systematization of human behavior in various situations arising in the process of work. Explanation of the reasons for the actions of individuals in certain conditions. The individual and the collective. Leadership in pharmaceutical companies. Management of people's behavior in the	PD	OC	4	LO7

		process of work and their improvement. Management of innovations in the organization.				
24	Management in pharmaceutical logistics	The main components in the organization of a continuous supply chain (logistics): production, acceptance of goods and input control, storage, output control, movement of the finished goods in the area of the expedition, shipment of the finished goods. Implementation of the principle of system approach in logistics. Humanization of technological processes. Development of logistics service. Logistic management. Adaptation of logistics systems in the face of environmental uncertainty. Government regulation and security in digital logistics. Digital technologies in pharmaceutical logistics. Artificial intelligence in supply chain management.	PD	OC	4	LO2 LO3
25	Management consultation	Professional management consulting in the management of pharmaceutical personnel. Specific tools of management consulting services. Organizational diagnostics in management consulting. Methods of management consulting. Types of consulting services. Consultant–client relationships organisational diagnosis Methods.	PD	OC	4	LO1 LO5 LO6
26	Technology of parapharmaceutical and nutraceutical preparations	Basic concepts, tasks, terms of the discipline «Technology of parapharmaceutical and nutraceutical drugs». Dietary supplements and public health. Natural products used in dietary supplements. Clinical efficacy of dietary supplements. The latest technologies of production of medicines used in ampelotherapy, apitherapy, aromatherapy and hirudotherapy.	PD	OC	4	LO3 LO4 LO5
27	Nanotechnology and	Formation of knowledge about the theoretical foundations and practical applications of nanotechnology and biotechnology in	PD	OC	4	LO2 LO3

	biotechnology in pharmacy	pharmacy, including the development and production of innovative medicines, delivery systems, diagnostics and personalized medicine. Modern nanoscale dosage forms and their advantages. Methods of biotechnological preparation of active pharmaceutical substances. The use of genetic engineering, cellular and enzymatic technologies in the pharmaceutical industry. Developing skills to assess the safety and effectiveness of new technologies.				LO6
Optional component					25	
28	Structural analysis of medicines	Modern structural research methods used for qualitative and quantitative determination of biologically active substances and finished medicines; theoretical foundations of the structural research methods used and the scope, accuracy of the methods used; general principles of conducting an experiment using a specific structural analysis method, including the introduction of digital technologies and artificial intelligence for processing, interpreting and visualizing the data obtained.	PD	OC	5	LO1 LO3 LO6 LO7
29	Standardization of medicinal plant materials and phytopreparations	The general importance of medicinal plants and medicinal plant materials used in standardization in modern herbal medicine. General concept and concept of standardization, standards, concept of registration, re-registration and certification of pharmaceutical products from medicinal products in the Republic of Kazakhstan. General understanding of the required quality indicators for finished pharmaceutical products. Study of quality indicators for finished dosage forms.	PD	OC	4	LO1 LO2 LO7

30	GLP rules when creating new medicines	GLP rules in drug quality control. Organization of the quality control process for medicines from the stage of processing raw materials to the production of finished products; new regulatory aspects in the field of drug circulation in the European Union. Principles of conducting preclinical research in accordance with national and international GLP standards.	PD	OC	4	LO1 LO3 LO6 LO7
31	Features of pharmacopoeial analysis of medicinal plant raw materials	Formation of a system of professional knowledge and skills in the field of pharmacopoeial analysis of medicinal plant raw materials based on the requirements of the state pharmacopoeia and international standards, knowledge of the methodology for determining the authenticity, goodness and content of active substances in medicines; development of skills for critical assessment of the quality of herbal raw materials, standardization and certification of herbal products. The use of artificial intelligence and neural networks in the diagnosis of plant raw materials and the prospects for the creation of effective and safe medicines.	PD	OC	4	LO2 LO4
32	State registration and re-registration of medicinal raw materials of plant and animal origin	General provisions of state registration and re-registration of plant and animal origin. The structure and content of the documents of state registration and re-registration of the medicinal plant raw materials dossier. The procedure for the examination. Types of expertise. Types of conclusions about the safety, effectiveness and quality of herbal drugs. Amendments to the state registration and re-registration dossier of vegetable and animal origin medicinal plant raw materials.	PD	OC	4	LO1 LO8

33	State of production and quality control of medicines	State system of quality control of medicines; The legal framework of the state system of quality control of medicines. The current state and ways to improve the standardization of medicines and pharmacopoeial articles. Analytical quality assurance of medicines in accordance with the requirements of international standards.	PD	OC	4	LO3 LO4 LO6 LO7
Optional component					25	
34	Pharmacovigilance and safety of medicines in medical organizations	Pharmacovigilance. Principles of good pharmacovigilance practice. Pharmacovigilance is a tool for regulating the processes of drug circulation. The main directions of the pharmacovigilance system. Pharmacovigilance reporting system. Risk management plan and measures to minimize them in the pharmacovigilance system, roles and responsibilities of participants in the pharmacovigilance system Characteristics of reliable pharmacovigilance systems	PD	OC	5	LO1 LO2 LO8
35	Selection and substitutability of drugs: generics and biosimilars	Modern organization of drug provision. Study of drug substitution in the health care system: clinical effectiveness, safety, economic feasibility. The procedure for determining the substitutability of medicinal products for medical use.	PD	OC	5	LO5 LO6
36	Clinical and economic expertise in clinical practice	Concepts of clinical and economic expertise. Economic evaluation of the quality of medical care. Methodology of evidence - based medicine in evaluating the efficacy and safety of medical technologies. Managing the quality of medical care and the role of clinical and economic analysis. Methods of pharmacoeconomic analysis VEN ABC analysis, analysis of the cost of the disease, cost minimization, cost-effectiveness. Assessment of the quality of life in	PD	OC	5	LO8

	materials of plant and animal origin	examination. Types of expertise. Types of conclusions about the safety, effectiveness and quality of herbal drugs. Amendments to the state registration and re-registration dossier of vegetable and animal origin medicinal plant raw materials.				
Optional component					10	
15	Pharmacovigilance and safety of medicinal products in medical organizations	Pharmacovigilance includes a system for collecting and processing data on side effects, regulating the exchange of safety information between pharmaceutical companies and regulatory authorities, assessing and managing risks associated with medicines at all stages of their life cycle, obligations to monitor and transfer data on side effects after drug registration. The use of digital technologies and artificial intelligence increases the effectiveness of exchange of information on the safety of medicines	PD	OC	5	LO1 LO2 LO8
16	Assessment of the use of drugs	Assessment of the use of medicines is a scientific and methodological approach to the analysis of the use of drugs. It is based on data from clinical practice, epidemiology and pharmacoconomics, identifies deviations from therapy standards, contributes to the optimization of treatment regimens and the formation of a rational drug policy.	PD	OC	5	LO5 LO6
Experimental research work					13	
17	Experimental research work of a student, including an	Planning and conducting experimental and research work. Collection, processing, analysis, and interpretation of data to			13	LO1 LO2 LO3 LO4 LO5 LO6

	internship and the implementation of a master's project	solve scientific problems. Application of modern research methods. Evaluation of obtained results in medical practice				LO7
		Final examination			12	
18	Design and defense of a master's project	Assessment of learning outcomes and key competencies achieved upon completion of the Master's degree program.			12	LO1 LO2 LO3 LO4 LO5 LO6 LO7
		TOTAL			60	