"APPROVED"
Rector of JSC SKMA
Zh. Seitzhanova
" 05 2025y.

EDUCATIONAL PROGRAM

Educational program code:	8D10140
Name of the educational program:	Pharmacy
Level of the educational program:	Doctorate

Shymkent, 2025 y.

The educational program 8D10140 «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 E. A Baimbetov

Advisor to the Director of Pharmaceutical Activities of «Ecopharm International» LLP Zh. D Kenzhebaev

Head of the Production Department of «Zerde-Phyto» LLP M. Zh. Zhumataev

Approved by the Methodological Council

Vice-rector for academic work M.У. 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, competitive scientific and pedagogical personnel in the field of pharmacy, science and practice
2. **Purpose of the educational program:** Training of professionally qualified, competitive, competent scientific and pedagogical personnel to meet the needs of science, education and production in the field of pharmacy.
3. **The basis of the educational program:** Creation of an effective system for training scientific personnel, capable of effectively solving the problems of pharmacy and management in health care in pharmacy on the basis of the integration of education and science, ensuring the modernization of education, science, and developing breakthrough technologies.
4. **Professional standard on the basis of which the educational program is 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. **The field of professional activity:** Health care organizers, heads of state and non-state medical and non-medical institutions. Research activities in universities.

6. **Objects of professional activity:** Organizations of health care management, organizations of health care and social security.

Types of professional activity:

- organizational and managerial;
- scientific and research activities;
- education (pedagogical).

General information

№	Characteristics of the EP	Data
1	Registration Number	8D10100018
2	Code and classification of the field of education	8D10 Healthcare
3	Code and classification of the field of study	8D101 Health Care
4	Group of Educational Programs	D140 Pharmacy
5	Code, name of the educational program	8D10140 Pharmacy
6	Type of EP	Current EP
7	ISCED level	8
8	NQF level	8
9	IQF Level	8
10	Distinctive features of the EP	No
	Partner University (JEP)	-
	Partner University (DDEP)	-
11	List of competencies	Key competencies of the graduate of the program:

		KC1 Able to effectively and successfully carry out research activities in the field of quality and safety of medicines and medicinal plant raw materials. **KC2** GMP and GPP can organize and manage the manufacturing process of pharmaceutical products in accordance with the standards of the relevant pharmaceutical practices. **KC3** Has the skills to validate analytical methods, statistical processing of test results, and prepare a report on the validation of methods in accordance with international requirements. **KC4** Able to plan, organize and manage pharmaceutical activities to create conditions for storage, transportation and quality control and sale of medicines and medical products in accordance with the requirements of the standards of relevant pharmaceutical practices. **KC5** Competent in the field of pharmaceutical development in accordance with the principles of relevant practices, capable of professional growth and self-analysis.
12	Learning Outcomes	**LO1** Organizes pharmaceutical activities in the pharmacovigilance (GVP) system and drug safety monitoring. **LO2** Forms marketing services to solve operational and strategic tasks of subjects in the field of circulation of medicines and medical devices. **LO3** Assesses the organization and conduct of work with medical professionals on the issues of rational pharmacotherapy and clinical trials of medicines (GCP) in medical organizations. **LO4** Manages the work of the clinical and pharmaceutical service in medical and pharmaceutical organizations, manufacturers of medicines and medical devices and their representatives.

		LO5 Organizes a system of external and internal audit of entities engaged in pharmaceutical activities. Plans, organizes and manages the activities of entities in the field of circulation of medicines and medical devices. **LO6** Demonstrates introspection skills, a commitment to lifelong learning, and experience for teaching at the higher and postgraduate levels, taking into account the principles of student-centered learning and assessment, developing teaching materials taking into account the integration of education, science, and innovation using digital technologies, communicating with students and colleagues while respecting the principles of inclusion. **LO7** He is able to conduct independent research and work for scientific results in the development, production, quality control and research of medicines and apply strategies for the development and support of research, including publication activity of students. Manages the organization of control over the documentation of entities engaged in pharmaceutical activities using digital technologies. **LO8** Demonstrates a deep understanding and mastery of methodological techniques in conducting modern research in pharmaceutical science and practice, including the use of artificial intelligence and digital data analysis tools, in accordance with the requirements of the current legislation of the Republic of Kazakhstan and Good Pharmaceutical Practices (GhP). **LO9** Demonstrates academic writing skills, creates, structures academic text of various genre types to solve problems of a scientific nature.
13	Form of study	In-person
14	Language of instruction	Kazakh, Russian
15	Amount of loans	180
16	Degree Awarded	Doctor of Philosophy (PhD) in the educational program 8D10140 «Pharmacy»

17	Duration of training	3 years
18	Availability of an appendix to the license for the direction of personnel training	KZ36LAA00011387 (020)
19	Availability of EP accreditation	No
	Name of accreditation body	-
	Accreditation Certificate No., Accreditation Validity Period	-
20	Information about disciplines	Annex 1.2

Annex 1

Matrix of correlation of learning outcomes in the educational program as a whole with the competencies being formed

	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9
KC1									
KC2									
KC3									
KC4									
KC5									

Annex 1.2

Competency attainability/learning outcomes matrix

№	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					**23**	
University component					**6**	
1	Scientific research methods	Formation of knowledge and skills to carry out scientific research at a high level; principles of the scientific method: formulation of hypotheses, data collection, analysis and interpretation of results, ethical issues; the ability to develop research designs and apply statistical methods, digital technologies and artificial intelligence to analyze data and interpret the results. To develop the skills of critical analysis of literature, assessment of the quality and reliability of sources, and to increase scientific effectiveness and publication activity.	BD	UC	3	LO6 LO7 LO8
2	Academic writing	Formation of knowledge and skills in text structuring, organization of scientific and educational works; formulate and substantiate their own ideas, build logical chains of	BD	UC	3	LO6 LO7 LO8

		argumentation and critically analyze sources; knowledge of various citation styles; learning to analyze and critically comprehend existing research and publications in their field; improving writing skills at the academic level; skills of introspection and evaluation of their own texts effective communication skills in compliance with the principles of inclusion, including the ability to present the results of scientific research. The use of artificial intelligence and digital technologies.				LO9
3	Teaching practice	Develops and organizes classes with undergraduates (students) (at least 10 classes). Participates in and analyzes the training sessions conducted by the teachers of the department. Participates and analyzes scientific and methodological seminars and conferences. Conducts practical activities with students in a scientific circle. Compiles articles of scientific and methodological nature. Prepares a report on scientific and pedagogical practice.	BD	UC	10	LO6
		Optional component			7	
4	The concept of marketing research in pharmacy	The main directions of marketing research in pharmacy. Pharmaceutical marketing information. Marketing research methodology. Pharmaceutical market research. Research of marketing environment of the enterprise. Research of competitors and competitiveness of the pharmaceutical organization. Benchmarking and marketing research in the	BD	OC	4	LO2 LO6 LO8

		development of marketing strategies. Analytical marketing system and the provision of results. Project management. Digital tools in the pharmaceutical business.				
5	Pharmaceutical development and process validation	Development of technology at the stage of pharmaceutical development. Requirements for the structure and volume of pharmaceutical development. Development of technology for the production of finished drugs. Validation of technological processes at the development stage. Technology transfer in pharmaceutical developUse of information technology and artificial intelligence in pharmaceutical development and process validation.ment. Description of the technological process in the development. Report on the development of the product. Preclinical studies, clinical studies, bioequivalence studies. The use of information technology and artificial intelligence in pharmaceutical development and process validation.	BD	OC	3	LO7 LO8
		Optional component			7	
6	Methodology for conducting chemical toxicological studies	The current state of analytical studies of toxicants in biological objects, new and very different methods of sample preparation of biological samples, methods for the determination of toxicants in biological media by various analytical systems. Basic tests for medicinal substances and other toxicants. Quality standards and protocols for analytical toxicology laboratories. Evaluation, interpretation and reporting of chemical and	BD	OC	4	LO1 LO6 LO8

		toxicological research results. The use of digital technologies and artificial intelligence to automate analysis and improve the accuracy of results.				
7	Physic-chemical methods of testing quality indicators	Features of the use of modern high-tech and innovative instrumental methods of analysis (IR-, NIR-spectroscopy, GC-MS / MS, HPLC-MS / MS, etc.), as well as important aspects of pharmaceutical-technological testing in medicine quality control. Approbation of the developed research analysis methodologies in accordance with the harmonization guidelines (ICH). The use of digital technologies and artificial intelligence to process data, optimize analytical processes and improve the accuracy of results.	BD	OC	3	LO6 LO7 LO8
Optional component					7	
8	Actual questions of the formulary system in a medical organization	Principles of work of the formulary system in a medical organization. Selection of drugs in the medical form of the medical organization. Proven clinical efficacy of drugs. The main functions of the formulary system. Tasks medicinal formular. Questions of standardization of pharmacotherapeutic care.	BD	OC	4	LO4
9	Actual questions of antimicrobial therapy. Antibiotic resistance	Rational choice of antibacterial drugs for empirical therapy. Step therapy. Methods of correction and prevention of unwanted adverse reactions. Molecular genetic mechanisms of antibiotic resistance. Superbugs. Map of drug resistance. New methods for	BD	OC	3	LO3

		the development and delivery of antibiotics. Innovative methods to combat bacterial infection: viruses and fecal transplantation. Antimicrobial peptides.				
Cycle of profile disciplines					**22**	
University component					**3**	
10	Biostatistics (advanced course)	Elements of measurement theory. Methods of comparison and analysis of statistical aggregates. Nonparametric test. Method of standardization, its meaning and application. Statistical packages SPSS, SAS, Stata using computer statistical programs. Statistics on the health of the population. Statistics of the health system. Development and application of statistical methods for planning and analysis of biomedical research. Modeling opportunities in health care.	BD	UC	3	LO7 LO8
11	Research Practice	The study of the latest theoretical, methodological and technological achievements of domestic and foreign science, as well as the consolidation of practical skills, the application of modern methods of scientific research, processing and interpretation of experimental data in dissertation research.	PD	UC	10	LO7
Optional component					**9**	
12	Technology of dosage forms with modified release and modified action	New dosage forms and drug delivery systems. Dosage forms with modified release. Dosage forms with the changed mechanism and character of release of medicinal substances. Principles of modification of drug delivery and General	PD	OC	3	LO6 LO7 LO8

		characteristics of delivery systems. Characteristics of drug delivery carrier systems.				
13	Management bases of good practices in pharmacy	Development of the science of quality assurance and management of medicines. The regulatory framework of the RK system of quality assurance of drugs. Basic principles of Good practices in the field of drugs in Kazakhstan. Quality management. Activities of regulators in the sphere of circulation of medicines. Quality management system of enterprises – subjects of the pharmaceutical market. quality system. Internal audits (self-inspections) of pharmaceutical quality systems. The standards of good pharmacovigilance practices (GVP). Quality audit of the pharmaceutical sector of the Republic of Kazakhstan	PD	OC	3	LO1 LO5 LO7
14	Organization of production of medicines according to GMP	Basic requirements of good manufacturing practice of medicines. Pharmaceutical quality system. Staff. Premises and equipment. Documentation. Technological process. Quality control. Development of drugs. Basic requirements for active substances used as feedstock. Clean room technology. Basic provisions and requirements of GMP. Basic principles of GMP. Specification for raw materials, packaging material, finished product. GMP and licensing system for the production of drugs.	PD	OC	3	LO6 LO7 LO8
		Optional component			**9**	
15	Good cultivation and harvesting practices (GACP) of medicinal plants	Regulations. Formation of the concept and strategy. Implementing GACP principles. Research methods in crop production. Buildings and production area. Equipment. Documentation. Seeds and seedlings. Ecological aspects of the	PD	OC	3	LO7 LO8

		cultivation of medicinal plants. Collection Harvest. Drying and primary processing of raw materials. Packaging. Storage and distribution.				
6	Modern methods of research of medicinal raw materials	Standardization of natural medicinal raw materials. Research of methods of qualitative and quantitative assessment of active components in natural raw materials using digital tools and artificial intelligence. Methods for determining the authenticity and good quality of medicinal raw materials. Macroscopic and microscopic analysis of whole, ground, cut and powdered vegetable raw materials. The range of drugs of natural origin in the global pharmaceutical market.	PD	OC	3	LO7 LO8
7	Ecological aspects and safety in obtaining medicinal plant raw materials	It is recommended to study the technology of isolation and research of medicinal raw materials from plants origin based substances and phytopreparations. Identify the relationship between the chemical structure of plant substances and their pharmacological activity. Choose nomenclature, assortment and sources of modern phytopreparations in the global pharmaceutical market.	PD	OC	3	LO1 LO2 LO8 LO9
		Optional component			6	
8	Pharmacoepidemiological and pharmacoeconomic analysis of the use of drugs in a medical organization	Methodology of pharmacoepidemiological and pharmacoeconomic analysis of drugs. Pharmacoepidemiological and pharmacoeconomic analysis of drugs for socially significant diseases. Features pharmacoepidemiology and pharmacoeconomics of medicines at the level of primary health	PD	OC	3	LO4

		care and hospital. Analysis of the clinical efficacy and safety of drugs in a medical organization				
19	Features of the use of drugs depending on age and gender	Physiological and premature aging. The theory of aging, especially the emotional-personal sphere in late maturity. Features of the use of drugs in pediatric and geriatric practice for various diseases of organs and systems .. Comorbidity and polymorbidity. Polypharmacy and undesirable drug interactions. Fall prevention. Compliance problems in the elderly. Features of the use of drugs depending on gender.	PD	OC	3	LO3
Research work					**123**	
20	Research work of a doctoral student, including an internship and a doctoral dissertation	Conducting independent research and working on scientific results. Forecasting the results of innovation activities. Analysis, evaluation and synthesis of new complex ideas. Publication of research results in international academic publications.			123	LO 1 LO 2 LO 3 LO 4 LO 5 LO 6 LO 7 LO 8 LO 9
Final examination					**12**	
21	Writing and defending a doctoral dissertation	Assessment of learning outcomes and key competencies achieved upon completion of the study of the doctoral program.			12	LO 1 LO 2 LO 3 LO 4 LO 5 LO 6 LO7 LO8 LO 9
TOTAL					**180**	