



MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION
Federal State Autonomous Educational Institution of Higher Education
Far Eastern Federal University
(FEFU)
Institute of Life Sciences and Biomedicine (School)

Collection
annotations of work programs of disciplines (modules), practices

33.05.01 Pharmacy
Specialist's Program
Clinical and Experimental Pharmacy

Mode of study: full-time
Standard term of the program
(full-time):5 years
Year of preparation: 2023

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Philosophy

The total labor intensity of the discipline is 3 credits / 108 academic hours. It is a discipline of Block 1 of the compulsory part of the EP, studied in the 1st year and ends with a test. The curriculum provides for 18 hours of lectures, 18 hours of practical classes, and 72 hours of hours for independent work of the student.

Language: English.

Objective: development of competencies of systemic reflective thinking, which can be applied in solving individual problems of self-organization and self-development of the individual, the processes of intercultural communication and social interaction in society.

Tasks:

1) To form the necessary level of fundamental knowledge about the history of the development of reflective thinking.

2) To teach basic techniques of systemic reflective thinking that allow you to perceive the phenomena of intercultural diversity.

3) To develop the skills of intercultural communication, taking into account the difference in philosophical and ethical contexts.

For successful study of the discipline, students must have formed a preliminary competence: UK-1 - Able to search, critically analyze and synthesize information, apply a systematic approach to solving problems, obtained as a result of studying the discipline "Logic". The student should be ready to study such disciplines as "Cultural Codes of Modernity", which form the competence of UK-5.4 - Understands culture as a set of signs and codes that allow identifying and defining the intercultural diversity of society in socio-historical, ethical and philosophical contexts.

Students' Competencies, Indicators of Their Achievement and Learning Outcomes in the Discipline

Name of the category (group) of competencies	Code and name of the competency (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (learning outcome in the discipline)
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Universal Competencies	UK-4 Able to carry out business communication in oral and written forms in the state language of the Russian Federation and foreign language(s)	UK-4.2 Understands the peculiarities of the behavior of selected groups of people with whom he/she works/interacts, takes them into account in his/her professional activities	<p>knows the peculiarities of the behavior of selected groups of people in the process of communication in modern society</p> <p>is able to use the techniques of building integration links and communication interaction</p> <p>possesses the skills to maintain integration interaction based on the techniques of systemic reflective thinking</p>
	UK-5 Able to perceive the intercultural diversity of society in socio-historical, ethical and philosophical contexts	UK-5.1 Perceives the intercultural diversity of society and the peculiarities of interaction in it in socio-historical, ethical and philosophical contexts	<p>knows the philosophical foundations and history of the formation of systemic reflective thinking, which makes it possible to perceive the intercultural diversity of society</p> <p>is able to use the techniques of systemic reflective thinking to perceive and describe the intercultural diversity of society</p> <p>possesses the skills to perceive the socio-historical, ethical and philosophical context of the situation of intercultural interaction</p>

To form the above competencies within the framework of the discipline "Philosophy", the following educational technologies and methods of active/interactive learning are used: discussion, work in small groups, round table.

History of Russia

The total labor intensity of the discipline is 4 credits / 144 academic hours. It is a discipline of the compulsory part of the EP, studied in the 1st year and ends with a test. The curriculum provides for lectures in the amount of 44 hours, practical classes in the amount of 72 hours, as well as 28 hours for independent work of the student.

Language: English.

Goal: to form a holistic, objective view of Russia's place in the world historical process, the laws of the historical development of society.

Tasks:

- Formation of knowledge about the patterns and stages of the historical process; the main events and processes in the history of Russia; the peculiarities of Russia's historical path and its role in the world community; basic historical facts and dates, names of historical figures.
- Formation of the ability to work independently with historical sources; critically comprehend historical facts and events, present them, defend their own point of view on topical issues of national and world history.
- Formation of skills to express one's thoughts and opinions in interpersonal communication; public speaking skills in front of an audience.
- Formation of a sense of citizenship, patriotism, and respect for historical heritage.

Students' Competencies, Indicators of Their Achievement and Learning Outcomes in the Discipline

Name of the category (group) of competencies	Code and name of the competency (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
Communication	UK-4. Able to carry out business communication in oral and written forms in the state language of the Russian Federation and foreign language(s)	UK-4.2. Understands the peculiarities of the behavior of selected groups of people with whom he works/interacts, takes them into account in his professional activities	He knows the stages of the formation of a multinational Russian society
			Is able to characterize the ethnic and religious composition of Russian society;
			Possesses the skills to explain the peculiarities of interethnic interaction in Russian society
Cross-cultural interaction	UK-5. Able to perceive the intercultural diversity of society in socio-historical, ethical and philosophical contexts	UK-5.1. Perceives the intercultural diversity of society and the peculiarities of interaction in it in socio-historical, ethical and philosophical contexts	Knows the basic theories of the historical process, the main stages of world history and the history of Russia, Causes of Historical Processes at Different Stages of History

			<p>He is able to identify the main stages of Russia's historical path, to substantiate both general historical patterns and special features of Russia's development at different stages of history;</p> <p>is able to characterize the role and place of Russia in world history,</p> <p>analyze and compare historical facts, processes, and phenomena</p> <hr/> <p>Possesses the skills to explain the role of historical knowledge in the life of modern society, respects the historical and cultural heritage of Russia and the world;</p> <p>possesses the skills of conducting a reasoned discussion based on historical examples;</p> <p>possesses the skills of searching for and using information about historical diversity and socio-cultural features of models of social development</p>
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To form the above competencies within the framework of the discipline "History", the following educational technologies and methods of active/interactive learning are used: work in small groups.

Foreign Language

The total labor intensity of the discipline is 4 credits / 144 academic hours a. It is a discipline of the compulsory part of the EP, studied in the 1st year and ends with exams. The curriculum provides for practical training in the amount of 72 hours. , as well as allocated hours for independent work of the student - 72 hours. (including 54 hours of exam preparation).

Implementation language: English.

Purpose: promotion to a higher level of the initial level of English proficiency achieved at the previous stage of education, the formation of communicative competence and its application in oral and written forms in situations of everyday communication with representatives of other cultures.

Tasks:

- systematization of existing knowledge, skills and abilities for all types of speech activity;
- increasing the initial level of foreign language proficiency achieved at the previous level of education;
- formation of intercultural competence by means of a foreign language as an important condition for interpersonal, interethnic and international communication;
- formation of educational and cognitive motivation and improvement of skills of self-educational activity in a foreign language.

For the successful study of the discipline, students must have formed preliminary competencies (communicative skills in the four main types of speech activity - speaking, listening, reading, writing; the ability to competently express their thoughts orally and in writing in compliance with the rules of pronunciation, grammatical norms in English; knowledge of phonetic, spelling, lexical, grammatical language means in accordance with the topics, spheres and situations of communication studied in the framework of the school curriculum), obtained as a result of secondary general education.

After studying the discipline, the student should be ready to study such disciplines as "Latin", "Russian language: the effectiveness of speech communication" and others that form the competencies of UK-4, UK-5.

The planned learning outcomes in the discipline, correlated with the planned results of mastering the educational program, characterize the formation of the following competence, indicators of competence achievement:

Name of the category (group) of competencies	Code and name of competence (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (learning outcome) by discipline)
Communication	UK-4 Capable of carrying out business	4.2. Understands the peculiarities of the behavior of selected	<i>Knows</i> : modern communicative technologies in the state and foreign

	communication in oral and written forms in the state language of the Russian Federation and foreign language(s)	groups of people with whom he works / interacts, takes them into account in his professional activities	languages; patterns of business oral and written communication. <i>Ability to:</i> put into practice communication technologies, methods and methods of business communication. <i>Owns:</i> methods of interpersonal business communication in the state and foreign languages, using professional language forms and means
		4.3. Competently and effectively builds business, oral and written communication with representatives of other nationalities and cultures in both foreign languages and the state language of the Russian Federation	<i>Knows:</i> the principles and rules of business communication, features of oral and written forms of speech. <i>Able to:</i> carry out competent and effective speech interaction in a professional environment. <i>Owns:</i> the culture of business speech, the skills of creating business texts
Intercultural interaction	UK-5 Able to perceive the intercultural diversity of society in socio-historical, ethical and philosophical contexts	5.2. Understands the diversity of communities in different regions based on knowledge about the peculiarities of their development and interaction	<i>Knows:</i> the essence, diversity and characteristics of different cultures, their relationship and interconnection. <i>Able to:</i> ensure and maintain mutual understanding between representatives of different cultures and be able to build communication in a world of cultural diversity. <i>Owns:</i> methods of analyzing disagreements and in intercultural communication and ways to resolve them; communication skills in a world of cultural diversity.

For the formation of the above competencies within the framework of the discipline "Foreign Language", the following distance learning technologies and methods of active / interactive learning are used: video consultation and online feedback, business / role-playing game, work in small groups, action learning.

The work program of the discipline "Foreign Language" is compiled modularly for 4 levels of foreign language proficiency (Beginner, Elementary, pre-Intermediate, Intermediate), each module includes sections.

Medical Foreign Language

The discipline " Medical Foreign Language" is designed for students studying on the educational program of higher education 33.05.01 Pharmacy, implemented on the 1,2 year in the 2-4 semesters. The total educational requirement of the discipline is 324 hours, 9 credit units.

The goal of the discipline is mastering of language knowledge (phonetic, lexical, grammatical, and spelling), formation and improvement of language skills and oral skills, as well as deepening and broadening the cultural knowledge. When implementing the practical goal of training - formation of the future expert's ability and willingness to intercultural communication - occurs a gradual and progressive strengthening of vocational orientation of the training in accordance with the necessary the adequate foreign language skills for the future professional activity of a specialist in medicine.

The tasks of discipline are - to give the students the theoretical bases of knowledge of Russian language in all its aspects, to develop practical skills and those of the communicative nature, to improve the overall language literacy; to form the skill of the proper language usage in accordance with the specific content of the discourse, the objectives of the speaker (writer), the situation and the communication environment.

For the successful study of the discipline "Medical Foreign Language", students should have the following preliminary competencies:

- understand information when reading texts of educational, reference, nonfiction/cultural nature in accordance with the specific purpose (introductory reading, studying, preview, search).
- transfer in foreign language the messages in the form of monological statements (within the determined subjects) and share information in the process of dialogical communication (in accordance with the goals, objectives and conditions of verbal interaction, as well as in relation to the content of the read/listened to text), while carrying out the certain communicative intentions within speech etiquette.
- comprehend information with direct and indirect (listening to audio recordings, telephone conversation, etc.) communication with native speakers within the determined areas and themes of communication.
- transfer in foreign language and correctly arrange the information in accordance with the objectives and tasks of communication and taking into account the receiver (recording information received while reading in the form of working notes, a plan; writing of a business letter, resume seeking employment, application, request; filling in forms, questionnaires; writing of a personal letter and postcard, etc.).
- use translation as a means of memorizing linguistic (lexical-grammatical) material from a foreign language to the mother tongue and from the mother tongue to the foreign language; ability to use translation as a means of understanding the audio- and printed texts.

The student must possess:

- the norms of modern foreign language and culture.
- the basics of dialogical and monological speech (orally and in writing);
- technique of speech activity.
- knowledge of descriptive-expressive language tools and proper usage in speech of the various kinds of tropes and figures.
- knowledge about processes of speech planning and monitoring, methods of variational interpretation of reality,
- technology of non-reflexive and emphatic listening.
- knowledge about processes of speech planning and monitoring, methods of variational interpretation of reality,
- foreign language to the extent necessary to receive information from foreign sources.

Name of the category (group) of competencies	Code and name of competence (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (learning outcome) by discipline)
Communication	UK-4 Capable of carrying out business communication in oral and written forms in the state language of the Russian Federation and foreign language(s)	4.2. Understands the peculiarities of the behavior of selected groups of people with whom he works / interacts, takes them into account in his professional activities	<i>Knows:</i> modern communicative technologies in the state and foreign languages; patterns of business oral and written communication. <i>Ability to:</i> put into practice communication technologies, methods and methods of business communication. <i>Owens:</i> methods of interpersonal business communication in the state and foreign languages, using professional language forms and means
		4.3. Competently and effectively builds business, oral and written communication with representatives of other nationalities and cultures in both foreign languages and the state language of the Russian Federation	<i>Knows:</i> the principles and rules of business communication, features of oral and written forms of speech. <i>Able to:</i> carry out competent and effective speech interaction in a professional environment. <i>Owens:</i> the culture of business speech, the skills of creating business texts
Intercultural interaction	UK-5 Able to perceive the intercultural diversity of society in socio-historical, ethical and philosophical contexts	5.2. Understands the diversity of communities in different regions based on knowledge about the peculiarities of their development and interaction	<i>Knows:</i> the essence, diversity and characteristics of different cultures, their relationship and interconnection. <i>Able to:</i> ensure and maintain mutual understanding between representatives of different cultures and be able to build communication in a world of cultural diversity. <i>Owens:</i> methods of analyzing disagreements and in intercultural

			communication and ways to resolve them; communication skills in a world of cultural diversity.
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Health and Safety

The discipline "Health and Safety" (hereinafter referred to as "Health and Safety") includes 2 sections: "Fundamentals of Life Safety" and "Fundamentals of Military Training". The total labor intensity of the discipline is 2 credits / 72 academic hours. It is a discipline of the compulsory part of the EP, the university-wide core, studied in the 2nd year and completed *with a test*. The curriculum provides for lectures in the amount of 18 hours, practical classes of 18 hours, and 36 hours for independent work of the student.

Language: English.

The discipline of Belarusian Railways is aimed at equipping future specialists with theoretical knowledge and practical skills of safe life at work, in everyday life, in emergency situations of man-made and natural origin, in the field of environmental protection, the formation of students as citizens capable and ready to fulfill military duty and duty to protect their homeland. In the course of mastering the discipline, students must master methods of analysis and identification of environmental hazards, ways to protect people, nature, economic facilities from natural and anthropogenic hazards, to master skills and abilities to organize and ensure safety at the workplace, taking into account the requirements of labor protection, elimination of undesirable consequences of the implementation of hazards. Students should develop an understanding of the basics of military development and the functioning of the Armed Forces of the Russian Federation, a high public consciousness and moral and psychological qualities of a patriotic citizen, basic knowledge and the formation of key military skills.

For successful study of the discipline "Life Safety", students should have the following preliminary competencies:

- Knowledge of the concepts of health preservation (knowledge and compliance with the norms of a healthy lifestyle and physical culture);
 - possession of self-improvement competencies (awareness of the need, need and ability to learn);
 - the ability to cognitive activity obtained as a result of studying the disciplines of the previous period of study.

Competencies of students, indicators of their achievement and learning outcomes in the discipline:

Name of the category (group) Competencies	Code and name Competencies (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
Security Life	UK-8 Able to create and maintain in everyday life and safe working conditions to preserve the natural	UK-8.1. Identifies hazardous and harmful factors, predicting the possible consequences of	Knows the characteristics and signs of hazardous and harmful factors, the possible consequences of their interaction, including contamination with radioactive, toxic substances and bacterial agents, as well as general information about nuclear, chemical and

environment, ensure the sustainable development of society, including in the threat and occurrence of emergencies and military Conflicts	their impact in everyday life, in production activities, in emergency situations, including radiation, chemical and biological contamination	biological weapons Is able to establish cause-and-effect relationships between the hazard and the possible consequences of exposure, assess the potential risk and carry out measures for radiation, chemical and biological protection Proficient in methods of identification of hazardous and harmful factors, forecasting the possible consequences of their impact in various fields of activity, including in emergency situations, and skills in the use of radiation, chemical and biological protection equipment
	UK-8.2. Offers means and methods of hazard prevention and maintenance of safe living conditions for the preservation of the natural environment and ensuring the sustainable development of society	Knows: principles, methods and means for maintaining safe living conditions and preventing hazards Is able to: select and apply specific means and methods of protection to ensure safety in various given situations Proficient in: tools and methods for preventing exposure to hazards and maintaining safe living conditions
	UK-8.3. Develops measures to protect the population and personnel in the face of hazards, including emergencies and military conflicts	Knows the basic measures necessary to protect a person from dangerous and harmful production factors, as well as in the event of emergencies of a natural, man-made nature and military conflicts, the tactical properties of the terrain, their impact on the actions of units in a combat situation; Purpose, nomenclature and symbols of topographic maps Is able to develop measures necessary to ensure the safety of the object of protection in the face of hazards and read topographic maps of various nomenclature Possesses the ability to independently develop and justify measures to protect a person in specific conditions of the implementation of dangers, including in the event of emergencies and military conflicts, as well as the skills of orientation on the terrain with and without a map
	UK-8.4. Implements methods of health-saving technologies, taking into account the physiological characteristics of the body	Knows the physiological, psychological characteristics and features of the human body, the basics of a healthy lifestyle, as well as the main ways and means of providing first aid, including in case of wounds and injuries Knows how to choose and apply technologies for the formation of a healthy lifestyle for life safety, as well as ways and means of providing first aid, including in case of wounds and injuries Proficient in basic health-saving technologies to ensure life safety, skills in the use of personal medical protective

			equipment and improvised means for first aid, including in case of wounds and injuries
		UK-8.5. Has a high sense of patriotism, considers the defense of the Motherland to be his duty and obligation, fulfills the assigned tasks provided for by the general military regulations	<p>He knows the trends and features of the development of modern international relations, the role and place of Russia and the world community, the main provisions of the Military Doctrine of the Russian Federation, the main provisions of the general military regulations of the Armed Forces of the Russian Federation, as well as the factors that determine the nature and organization of modern combined arms combat</p> <p>He is able to assess international and domestic military-political events from the position of patriotism, correctly apply and implement the provisions of the general military regulations of the Armed Forces of the Russian Federation</p> <p>He possesses combat techniques, the ability to assess geopolitical events from the position of patriotism, and the skills of training in conducting a combined arms battle</p>
		UK-8.6 Understands the need to obtain the basics of military-political and legal training for the formation of a civic position and the prevention of legal nihilism, including in terms of combating corruption, extremism, terrorism, etc.	<p>He knows the main directions of socio-economic, political and military-technical development of the Russian Federation, the legal basis for military service and the provisions of the Military Doctrine of the Russian Federation</p> <p>Is able to use the basics of military-political and legal training in the implementation of measures aimed at the formation of a civic position and the prevention of legal nihilism, including in terms of combating corruption, extremism, terrorism, etc. corruption, extremism, terrorism, etc.</p>

Foundations of Russian Statehood

The total labor intensity of the discipline is 2 credits/72 academic hours. It is a discipline of the compulsory part of the educational program, studied in the 1st year and ends with a test with a grade. The curriculum provides for lectures in the amount of 18 hours, practical 36 hours, and also allocated hours for independent work of the student - 18 hours.

Language: English.

Purpose: to form in students a system of knowledge, skills and competencies, as well as values, rules and norms of behavior related to the awareness of belonging to Russian society, the development of a sense of patriotism and citizenship, the formation of the spiritual, moral and cultural foundation of a developed and integral personality, aware of the peculiarities of the historical path of the Russian state, the originality of its political organization and the combination of individual dignity and success with the social progress and political stability of their Motherland.

Tasks:

- to present the history of Russia in its continuous civilizational dimension, to reflect its most significant features, principles and current landmarks;
- to reveal the value-behavioral content of the sense of citizenship and patriotism, which is inseparable from developed critical thinking, free development of personality and the ability to independently judge the current political and cultural context;
- to consider the fundamental achievements, inventions, discoveries and accomplishments related to the development of the Russian land and Russian civilization, to present them in an actual and significant perspective, which instills in the citizen pride and belonging to his culture and his people;
- to present the key meanings, ethical and ideological doctrines that have developed within the Russian civilization and reflect its multinational, multi-confessional and solidary (communal) nature;
- to consider the features of the modern political organization of Russian society, the causal nature and specifics of its actual transformation, the value support of traditional institutional solutions and the special polyvariance of the relationship between the Russian state and society in the federal dimension;
- to study the most probable external and internal challenges facing the Russian civilization and its statehood at the moment, to identify the key scenarios of its future development;
- to identify the fundamental value principles (constants) of Russian civilization (unity of diversity, sovereignty (strength and trust), harmony and cooperation, love and responsibility, creation and development), as well as interrelated value orientations of Russian civilizational development (such as stability, mission, responsibility and justice).

Students' Competencies, Indicators of Their Achievement and Learning

Outcomes in the Discipline

Name of the category (group)	Code and name	Code and name of the competency indicator	Name of the assessment indicator
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Competencies	Competencies (result of mastering)		(the result of learning in the discipline)
Cross-cultural interaction	UK-5. Able to perceive the intercultural diversity of society in socio-historical, ethical and philosophical contexts	UK-5.4 Demonstrates a tolerant perception of social and cultural differences, a respectful and careful attitude to historical heritage and cultural traditions	<ul style="list-style-type: none"> - knows about the key meanings, ethical and ideological doctrines that have developed within the Russian civilization - is able to maintain respectful interaction with representatives of various socio-cultural communities - possesses communication skills, taking into account the cultural characteristics and traditions of various social groups
		UK-5.5 Finds and uses information about the cultural characteristics and traditions of various social groups necessary for self-development and interaction with other people.	<ul style="list-style-type: none"> - knows the fundamental achievements, inventions, discoveries and accomplishments related to the development of the Russian land and Russian civilization, to present them in an actual and significant perspective - is able to find and use information about the cultural characteristics and traditions of various social groups necessary for self-development and interaction with other people - possesses the skills of reasoned discussion and solving problems of a worldview, social and personal nature
		UK-5.6 In his behavior, he shows a respectful attitude to the historical heritage and socio-cultural traditions of various	<ul style="list-style-type: none"> - knows the fundamental value principles of Russian civilization (such as diversity, sovereignty, harmony, trust and creation), as well as

		<p>social groups, based on knowledge of the stages of Russia's historical development in the context of world history and cultural traditions of the world.</p>	<p>the long-term value orientations of Russian civilizational development (such as stability, mission, responsibility and justice) - is able to show in his/her behavior a respectful attitude to the historical heritage and socio-cultural traditions of various social groups, based on knowledge of the stages of historical development of Russia in the context of world history and cultural traditions of the world; - possesses a developed sense of citizenship and patriotism, skills of independent critical thinking</p>
		<p>UK-5.7 Consciously chooses values and civic position; discusses and solves the problems of worldview, social and of a personal nature</p>	<p>- knows the peculiarities of the modern political organization of Russian society, the causal nature and specifics of its actual transformation, the value support of traditional institutional solutions and the special polyvariance of the relationship between the Russian state and society in the federal dimension - is able to adequately perceive current social and cultural differences, respect and take care of historical heritage and cultural traditions - possesses the skills of conscious choice of values and civic position</p>

To form the above competencies within the framework of the discipline "Fundamentals of Russian Statehood", the following educational technologies and methods of active/interactive learning are used: business game, work in small groups, round table.

Fundamentals of Economic Literacy

The total labor intensity of the discipline is 2 credits / 72 academic hours. It is a discipline of the cycle of block 1, disciplines (modules) of the compulsory part of the EP, is studied in the 1st year and ends with a test. The curriculum provides for lectures in the amount of 8 hours, practical 8 hours, and also allocated hours for independent work of the student - 56 hours.

The language of implementation is English.

Purpose:

The purpose of studying the discipline "Fundamentals of Economic Literacy" is to develop students' skills of critical economic thinking, understanding of economic processes and phenomena, ability and readiness for independent economic decision-making in various areas of life.

Task:

- acquisition of the ability to think economically, find, analyze and use economic information in all spheres of life.
- to form practical skills of economically competent conduct in the event of typical situations in various areas of life;
- make a decision on the creation and conduct of your business based on an assessment of personal potential, the economic situation in the country.
- evaluate and take responsibility for decisions, their possible consequences for themselves, their environment and society as a whole.

For the successful study of the discipline, it is desirable that the student already possesses basic knowledge (in the amount of basic school) about the sources of the family's cash income and possible areas of expenditure, about the family budget, inflation, etc.; the student must be ready to study such disciplines as "Management and Economics of Pharmacy", "Medical and Pharmaceutical" Commodity Science ... (*list*), forming competencies:

PC-3 Able to carry out measures to control (supervise) the activities of legal entities and individuals licensed for pharmaceutical activities, to comply with mandatory requirements
PC-6 Able to solve the problems of professional activity in the implementation of the release and sale of medicines and other pharmacy products through pharmaceutical and medical organizations;

PC-9 Able to take part in the planning and organization of resource provision of a pharmaceutical organization.

The planned learning outcomes in the discipline "Fundamentals of Economic Literacy", correlated with the planned results of mastering the educational program, characterize the formation of the following competencies, indicators of achievement of competencies:

Name of the category (group) Competencies	Code and name of competencies (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
	UK-9 Able to make informed economic decisions in various areas of life	UK-9.1 Predicts the results of personal actions and plans a sequence of steps to achieve a given result of entrepreneurial activity	Provides methods and tools for planning and forecasting the results of their actions, including in entrepreneurial activities. Knows how to plan professional activities to achieve results. He gets along with the skills of predicting the results of professional activity.
		UK-9.2 Applies basic economic knowledge to solve problems in various areas of life	Knows the basic laws underlying the activities of economic entities and their role in the functioning of the economy. Able to summarize and analyze the necessary economic information to solve specific theoretical and practical problems. He is proficient in the basic methods and theoretical tools for studying economic phenomena and processes to solve problems in various fields of life.

For the formation of the above competencies within the framework of the discipline "Fundamentals of Economic Literacy", the following educational technologies and methods of active / interactive learning are used: work in small groups, round table.

Fundamentals of Digital Literacy

The total labor intensity of the discipline is 3 credits / 108 academic hours. It is a discipline of the compulsory part of the EP, studied in the 1st year and ends with an exam. The curriculum provides for lectures in the amount of 8 hours, practical 8 hours, and also allocated hours for independent work of the student - 65 hours, of which 27 hours are for preparation for the exam.

Language: English.

Purpose:

To form students' initial, basic competencies in the field of working with data, an idea of trends in the development of digital technologies. Develop the skills needed to use digital technologies and Internet resources safely and effectively.

Tasks:

- knowledge of the conceptual apparatus of the digital society, digital and computer literacy;
- Knowledge of trends in the development of information and communication technologies and software tools for working with digital content;
- knowledge of the purpose and capabilities of modern information and communication technologies and software tools when working with various types of content;
- use of software tools for working with textual, numerical, graphic information, information sources, databases;
- Knowledge of information security principles.

For successful study of the discipline, students should have the following preliminary competencies: the ability to manage their time, build and implement a trajectory of self-development based on the principles of lifelong learning; Students should be ready to study such disciplines as Bioinformatics, which form competencies: the ability to use modern information technologies and software tools to solve professional problems.

The planned learning outcomes in the discipline, correlated with the planned results of mastering the educational program, characterize the formation of the following competencies, indicators of the achievement of competencies:

Name of the category (group) of competencies	Competency code and name (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (learning outcomes) by discipline)
Systems and Critical Thinking	UK-1 – Able to search, critically analyze and synthesize information, apply a	UK-1.1 – Searches, collects information using computer technologies	Knows: basic methods and techniques of searching for information of various kinds in the resource "Internet"
			Can:

systematic approach to solving problems		select appropriate methods of information technology and software tools for searching, collecting, processing and transmitting scientific information to solve standard problems
		Owns: skills of search, collection of information with the help of modern computer technologies, a systematic approach, modern software tools for solving problems
	UK-1.2 – Uses information products for processing and analyzing information, following the principles of critical assessment and verification of sources	Knows: basic methods and techniques for processing and analyzing information; Basic Principles of Critical Evaluation and Verification of Sources
		Can: critically assess the reliability of information; Process and analyze information
		Owns: skills of analysis and processing of information with the help of modern computer technologies, a systematic approach, modern software tools for solving problems
UK-4 – Able to apply modern communication technologies, including in a foreign language(s), for academic and professional interaction	UK-4.1 – Applies information products in business communication to achieve the set goal	Knows: Basic ways to organize a collaborative workflow Means of remote communication using network technologies
		Can: Use online resources wisely to implement a collaborative workflow
		Owns: skills in the use of communication technologies in order to ensure effective remote professional interaction
UK-6 – Able to identify and implement priorities for their own activities and ways to improve them based on self-	UK-6.1 – Uses digital tools to organize its work and self-development	Knows: Internet resources aimed at the competent organization of the process of work and self-learning, the main methods and techniques of working with them
		Can:

	assessment and lifelong learning		competently use Internet resources to organize your work and self-development
			Owns: skills in the use of modern information technologies for the organization of their work and self-development

To form the above competencies within the framework of the discipline "Fundamentals of Digital Literacy", the following methods / active / interactive learning are used: solving situational problems.

Latin Language (Basics of Medical Terminology)

The discipline " Latin Language (Basics of Medical Terminology) " is designed for students studying on the educational program of higher education 33.05.01 Pharmacy, implemented on the 1st year in the 1,2 semester. The total educational requirement of the discipline is 180 hours, 5 credit units

Goals of the discipline is formation of a system of competencies that contribute to the development of analytical and linguistic thinking based on familiarity with the peculiarities of pronunciation, grammatical structure and vocabulary of the Latin language.

Objectives of the discipline:

- formation of the student's skills of reading and writing in Latin, as well as the knowledge of basic grammar, vocabulary and terminology;
- formation and expansion of terminological competence of the future specialist.
- formation of the student's skills to translate texts of varying levels of complexity with a dictionary from Latin to Russian and from Russian to Latin;
- formation of an active usage of Latin ethical quotes and aphorisms that contribute to the enhancement and strengthening of the authority of both professional and general cultural competencies.

For the successful study of the discipline "Medical Latin language", students should have the following preliminary competencies:

- the ability to independently determine the goals of activities and make plans for activities;
- independently carry out, control and adjust activities;
- use all possible resources to achieve the goals and implementation of activity plans;
- choose successful strategies in different situations;
- the ability to communicate and interact productively in the process of collaborative activities:
 - readiness and ability to independent information and cognitive activity, including the ability to navigate in various sources of information, critically evaluate and interpret information received from various sources;
 - the ability to clearly, logically and accurately express your point of view, use adequate language means.

As a result of the study of this discipline the students form the following types of the universal competences:

Name of the category (group) of universal competencies	The code and name of the universal competence (the result of implementation)	Code and name of the competence achievement indicator
Communication	EC-4 Able to apply modern communication technologies, including in a foreign language(s), for academic and professional interaction	EC -4.1 The ability to use the studied lexical units of the Latin language. UC-4.2 The ability to recognize and use the studied grammatical categories and constructions of the Latin language. EC -4.3 The ability to make statements using the studied lexical and grammatical units in accordance with the rules of the Latin language

Code and name of the universal competence	The name of the evaluation indicator (the result of forming the competence)
EC -4 Able to apply modern communication technologies, including in a foreign language(s), for academic and professional interaction	Knows the basics of anatomical, clinical and pharmaceutical terminology in Latin.
	Is able to use at least 900 terminological units and term elements.
	Posses the skills of reading and writing in Latin clinical and pharmaceutical terms and prescriptions; a foreign language to the extent necessary for the possibility of obtaining information from foreign sources

To form the above competencies in the discipline «Latin» apply the following methods of active / interactive learning: lecture-discussion method drawing mind maps, advice, denotatny count, rating method.

Mathematics

The total labor intensity of the discipline is 2 credits / 72 academic hours. It is a discipline of the compulsory part, formed by the participants of educational relations of the EP, studied in the 1st year and ends with a test. The curriculum provides for lectures in the amount of 8 hours, practical 12 hours, as well as 52 hours for independent work of the student.

Language: English

Purpose:

Acquisition by students of knowledge, skills and abilities at the level of the requirements of educational standards for preparation for the study of disciplines, taking into account the requirements of these disciplines for mathematical training; development of students' algorithmic and logical thinking; improving the level of mathematical literacy and culture.

Tasks:

1. Students' study of basic mathematical concepts, formulas, statements and methods of problem solving;
2. Formation of skills to solve typical mathematical problems;
3. • Formation of skills in mastering the mathematical apparatus in relation to solving applied problems that arise in professional activity;
4. Mastering the methods of linear algebra, analytic geometry on the plane and in space, methods of differential and integral calculus, as well as basic methods for solving differential equations for solving practical problems.

In order to successfully study the discipline, students must have the following preliminary competencies acquired as a result of studying at a secondary school:

1. ability to self-organization and self-education;
2. the ability to apply the appropriate mathematical apparatus;
3. ability to communicate orally and in writing in Russian;
4. Ability to use a computer.

Students' Competencies, Indicators of Their Achievement and Learning Outcomes in the Discipline

Name of the category (group) Competencies	Code and name Competencies (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
	OPK-1 He is able to use basic biological, physicochemical,	OPK-1.2 Applies basic physicochemical and chemical methods of analysis for the	Knows the basic physicochemical and chemical methods of analysis

chemical, mathematical methods for the development, research and examination of medicines, the manufacture of medicines	development, research and examination of medicines, medicinal plant raw materials and biological objects	Able to carry out development, research and examination of medicines, medicinal plant raw materials and biological objects
		Proficient in methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects
	OPK-1.3 Applies the basic methods of physical and chemical analysis in the manufacture of medicines	Knows the basic methods of physical and chemical analysis
		Able to analyze manufactured medicines
		Proficient in methods of physical and chemical analysis in the manufacture of medicines
	OPK-1.4 Applies mathematical methods and carries out mathematical processing of data obtained in the course of drug development, as well as research and examination of medicines, medicinal plant raw materials and biological objects	Knows mathematical methods of data systems research
		Is able to carry out mathematical processing of data obtained in the course of drug development, as well as research and examination of medicines, medicinal plant raw materials and biological objects
		Proficient in methods of mathematical data processing

To form the above competencies within the framework of the discipline "Mathematics", the following educational technologies and methods of active/interactive learning are used: work in small groups, brainstorming.

Medical Physics

The discipline "Medical Physics" is intended for the direction of training on the 33.05.01 Pharmacy, students of the educational program "Clinical and Experimental Pharmacy". This course is included in the basic part of the curriculum and is implemented in the 2 course, 3 semester. The complexity of the discipline in accordance with the training curriculum is 4 credits and 144 academic hours.

Students are trained on the basis of the continuity of knowledge and skills acquired in the following disciplines: "Mathematics".

Content of the course "Medical Physics".

The subject of medical physics. Tasks, research methods. Methodological issues of medical physics. Introduction to the course of medical physics. The purpose, objectives and characteristics of the subject. The main sections of medical physics. Relationship with other disciplines. The history of the development of medical physics. The contribution of domestic and foreign scientists in the development of medical physics. The value of medical physics for theoretical and practical medicine. The relationship of medical physics with other sciences. Directions of development of modern medical physics.

Mechanics of rotational motion. Basic concepts. The equation of the dynamics of rotational motion. The concept of free axes of rotation, degrees of freedom. Centrifugation. Biomechanical properties of skeletal muscles. Biomechanics of skeletal joints. Articulation and levers in the human musculoskeletal system. Mechanical work of man. Vestibular apparatus as an inertial orientation system. The nature of sound. Physical characteristics. Characteristics of the auditory sensation. Physical basis of sound research methods in the clinic. Biophysics of hearing. The interaction of ultrasound with biological objects. Ultrasound and its use in medicine. Ultrasound diagnostic methods. Basics of ultrasound stimulation and ultrasound therapy. Ultrasound in surgery. Ultrasound in pharmacy. Flow and fluid properties. Biophysical patterns of blood flow through the vessels.

Fluid viscosity Newton's equation. Newtonian and non-Newtonian fluids. The flow of viscous fluid through the pipes. Poiseuille formula. The movement of bodies in a viscous fluid. Stokes law. Methods for determining the viscosity of the fluid. Clinical method for determining blood viscosity. Laminar and turbulent flow. Reynolds number. Biophysical patterns of blood flow through the vessels. Biophysical features of the aorta. Biophysical features of arterioles of a big circle of blood circulation.

Biological electrodynamics. The main provisions of the electromagnetic field. Maxwell material equations. The interaction of the electromagnetic field with matter. Basic equations of Maxwell. Radiation and propagation of the electromagnetic field. Electromagnetic spectrum (scale of electromagnetic waves). Transformation of the electric field by physical media. The effect of electric fields on cells. The interaction of

the electric component of the electromagnetic field with the body. Biological effect of low frequency electromagnetic field. Biological effect of high frequency electromagnetic field. Frequency-dependent biological effects of the electromagnetic field. The use of electromagnetic fields in medicine.

Ionizing radiation. Basics of Dosimetry. The physical basis of ionizing radiation. X-ray radiation. Brake X-radiation. Characteristic x-rays. Atomic x-ray spectra. Physical aspects of the interaction of x-rays with matter. The physical basis of the use of X-rays in medicine.

Radioactivity. The interaction of ionizing radiation with a substance. Biophysical basis of the effect of ionizing radiation on the body. Ionizing radiation detectors. The use of radionuclides and neutrons in medicine. Accelerators of charged particles and their use in medicine. Radiation dose and exposure dose. Dose rate. Quantitative assessment of the biological effects of ionizing radiation. Equivalent dose. Dosimetric instruments. Protection against ionizing radiation.

Goal is to form the students a holistic view of the theoretical foundations and basic physicochemical, mathematical and other natural science concepts, and methods for solving problems in biological systems.

Objectives:

- the acquisition by students of knowledge on the collection and analysis of patient complaints, his medical history, examination results, laboratory, instrumental, pathological and other studies in order to recognize the condition or establish the presence or absence of the disease;
- the acquisition by students of knowledge of medical physics, including those physical principles that underlie the functioning of cells, organs and tissues of the human body;
- the acquisition by students of knowledge of medical physics, including consideration of biophysical processes and properties related to organs, systems and tissues of the human body in health and disease;
- acquisition by students of a scientific outlook; the ability to conduct an active dialogue on the scientific issues of physical research; skills to present the results in the form of written (scientific article) and oral communications (reports).

Competencies of students, indicators of their achievement and learning outcomes in the discipline:

Name of the category (group) Competencies	Code and name Competencies (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
Professional Methodology	OPK-1 He is able to use basic biological, physicochemical, chemical, mathematical	OPK-1.2 Applies basic physicochemical and chemical methods of analysis for the development, research and examination of medicines,	Knows the basic physicochemical and chemical methods of analysis; Able to carry out development, research and examination of

	methods for the development, research and examination of medicines, the manufacture of medicines	medicinal plant raw materials and biological objects	medicines, medicinal plant raw materials and biological objects; He is proficient in methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects.
		OPK-1.3 Applies the main methods of physicochemical analysis in the manufacture of medicines	Knows the basic methods of physical and chemical analysis; Able to analyze manufactured medicines; He is proficient in the methods of physical and chemical analysis in the manufacture of medicines.
		OPK-1.4 Applies mathematical methods and carries out mathematical processing of data obtained in the course of drug development, as well as research and examination of medicines, medicinal plant raw materials and biological objects	Knows mathematical methods; Is able to carry out mathematical processing of data obtained in the course of drug development, as well as research and examination of medicines, medicinal plant raw materials and biological objects; Proficient in methods of mathematical data processing.

For the formation of the above competencies within the discipline "Physics", the following educational technologies and methods of active/interactive learning are used: work in small groups, round tables.

Chemistry, Medical Chemistry

The discipline "Chemistry, Medical Chemistry" is intended for students enrolled in the educational program of higher education on 33.05.01 Pharmacy, is included in the basic part of the curriculum, is implemented on the 1st year in the 1st and 2nd semester. The total complexity of the discipline is 288 hours, 8 credits.

In developing the work program of the discipline, the Federal State Educational Standard of Higher Education in the specialty 33.05.01 Pharmacy (specialty level) has been used.

The content of the discipline covers a range of issues related to the study of the laws of thermodynamics and bioenergy, colligative properties of solutions, ionic equilibria, electrochemistry, chemical kinetics and catalysis, organic chemistry, analytical chemistry and physical and chemical methods of analysis. Mastering the discipline "Chemistry" is necessary for the subsequent study of such disciplines as «Pharmacology», «Physical and Colloidal Chemistry», «Analytical Chemistry», «Toxicological Chemistry», «Biochemistry».

Goal of studying the discipline is to master the future specialists in the basics of chemical and physicochemical knowledge, which are necessary for the study of processes occurring in a living organism, when they become qualitatively new physiological phenomena.

Objectives of the discipline:

- Master the skills of conducting scientific research to establish the relationship between the physicochemical properties of substances and their pharmacological activity. To study the basic laws of chemical kinetics and thermodynamics in order to determine the possibility of the occurrence and direction of bioenergy processes;

- Be able to apply the laws of chemical kinetics to increase the speed of the main and blocking side processes;

- To be able to apply physical and chemical methods for analytical and environmental purposes.

- Learn how to use the methods of inorganic, physical, analytical and organic chemistry to solve specific problems of biology and medicine.

As a result of studying this discipline, the students form the following professional competencies (elements of competencies).

For successful study of the discipline, students must have the following preliminary competencies: UK-1, UK-6, UK-8, obtained as a result of studying the disciplines Fundamentals of Digital Literacy, Life Safety, the student must be ready to study such disciplines as Toxicological Chemistry, Pharmaceutical Chemistry, Biotechnology, Pharmaconutrition, forming competencies PC-2.1; PP-2.2; PP-2.3; PP-4.1; PP-4.2; PC-4.3; PC-7.1.SC-8.1; PC-8.2; PC-8.3; PC-8.5.

Students' Competencies, Indicators of Their Achievement and Learning Outcomes in the Discipline

Name of the category (group) Competencies	Code and name Competencies (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
Professional Methodology	OPK-1 is able to use basic biological, physicochemical, chemical, mathematical methods for the development, research and examination of medicines, the manufacture of medicines.	OPK-1.2 Applies basic physicochemical and chemical methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects	knows the basic physicochemical and chemical methods of analysis
			is able to carry out the development, research and examination of medicines, medicinal plant raw materials and biological objects
			possesses the skills of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects
		OPK-1.3 Applies the main methods of physicochemical analysis in the manufacture of medicines	knows the basic methods of physical and chemical analysis
			is able to analyze manufactured medicines
			possesses the skills of physical and chemical analysis in the manufacture of medicines

To form the above competencies will be applying the following methods of interactive learning: active reading, problem lectures, debriefing.

Physical and Colloidal Chemistry

The total labor intensity of the discipline is 5 credits / 180 academic hours. It is a discipline of the compulsory part of the EP, studied in the 1st and 2nd years and ends with a test and an exam, respectively. The curriculum provides for lectures in the amount of 26 hours, practical/laboratory 30 hours, and also allocated hours for independent work of the student - 70 hours, of which 54 hours. to prepare for the exam.

Language: English.

Purpose: to form students' knowledge of the basic ideas and laws of physical chemistry; to reveal their physical meaning, to develop students' competent ability to apply theoretical laws to solve specific problems, the ability to predict the direction of physical and chemical processes and phenomena in a living organism.

Tasks:

1. Study of the laws of thermodynamics and thermodynamic properties of substances in order to determine the possibility and direction of biochemical and technological processes;
2. Ability to apply the laws of chemical kinetics to increase the speed of the main processes and block the secondary processes;
3. • Ability to use the properties of various dispersed systems and surface phenomena in medical biochemistry;
4. Development of chemical thinking;
5. Formation of knowledge and skills in the use of methods of instrumental physical and chemical data analysis.

For successful study of the discipline, students must have the following preliminary competencies: UK-1, UK-6, UK-8, obtained as a result of studying the disciplines Fundamentals of Digital Literacy, Life Safety, the student must be ready to study such disciplines as Toxicological Chemistry, Pharmaceutical Chemistry, Biotechnology, Pharmaconutrition, forming competencies PC-2.1; PP-2.2; PP-2.3; PP-4.1; PP-4.2; PC-4.3; PC-7.1.SC-8.1; PC-8.2; PC-8.3; PC-8.5.

Students' Competencies, Indicators of Their Achievement and Learning Outcomes in the Discipline

Name of the category (group) Competencies	Code and name Competencies (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
Professional Methodology	OPK-1 is able to use basic biological, physicochemical, chemical, mathematical methods for the	OPK-1.2 Applies basic physicochemical and chemical methods of analysis for the development, research and examination of medicines, medicinal	knows the basic physicochemical and chemical methods of analysis
			is able to carry out the development, research and examination of medicines, medicinal plant raw

	development, research and examination of medicines, the manufacture of medicines.	plant raw materials and biological objects	materials and biological objects
			possesses the skills of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects
		OPK-1.3 Applies the main methods of physicochemical analysis in the manufacture of medicines	knows the basic methods of physical and chemical analysis
			is able to analyze manufactured medicines
			possesses the skills of physical and chemical analysis in the manufacture of medicines

To form the above competencies within the discipline "Physical and Colloidal Chemistry", the following educational technologies and methods of active/interactive learning are used: business game, work in small groups, round table.

Analytical Chemistry

The total labor intensity of the discipline is 8 credits / 288 academic hours. It is a discipline of the compulsory part of the EP, it is studied in the 2nd year and ends *with an exam*. The curriculum provides for lectures in the amount of 36 hours, laboratory 72 hours, as well as allocated hours for independent work of the student - 180 hours, of which 54 hours. to prepare for the exam

Implementation language : English

Purpose:

- formation of systemic knowledge of the basic laws of chemical processes, chemical structure and properties of inorganic compounds for the ability to solve chemical problems of pharmacology.

Tasks:

- formation of students' understanding of the goals, objectives and methods of analytical chemistry, their importance in the practical activities of the pharmacist;
- formation of students' systematic knowledge of the laws of chemical behavior of the main classes of inorganic compounds in conjunction with their structure to use this knowledge as a basis for studying at the molecular level the processes occurring in a living organism;
- formation of students' skills of independent work with educational and reference literature on analytical chemistry.

For the successful study of the discipline, students must have the following preliminary competencies: UK-1.1; UK-1.2; UK-5.1; OPK-1.2; OPK-1.3, obtained as a result of studying the disciplines "Philosophy", "Introduction to Pharmacy, History of Pharmacy", "Informatics with the Basics of Bioinformatics", "Mathematics", "Physics", "General and Inorganic Chemistry", "Physical and Colloidal Chemistry", "Organic Chemistry", the student must be ready to study such disciplines as "Biochemistry", "Pharmacognosy", "Pharmaceutical Chemistry", "Toxicological Chemistry", which form the competencies of PC-1. 2; AboutPC-1. 3; AboutPC-2. 1; PC-8. 1; PC-8. 2; PC-8. 3.

Competencies of students, indicators of their achievement and learning outcomes in the discipline

Name of the category (group) Competencies	Code and name competencies (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
Professional methodology	OPK-1. Able to use basic biological, physicochemical, chemical, mathematical methods for the development, research and examination of medicines, the	OPK-1.2 Applies basic physicochemical and chemical methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects	Knows the basic physicochemical and chemical methods of analysis. Possesses the skills to carry out the development, research and examination of medicines, medicinal plant raw materials and biological objects. Knows how to use the methods of analysis for the development,
		OPK-1.3	Knows the basic physicochemical and chemical methods of analysis. Possesses the skills to carry out the development, research and examination of medicines, medicinal plant raw materials and biological objects. Knows how to use the methods of analysis for the development,

	manufacture of medicines		research and examination of medicines, medicinal plant raw materials and biological objects.
		OPK-1.3 Applies the basic methods of physicochemical analysis in the manufacture of medicines	Knows the basic methods of physical and chemical analysis. Knows how to analyze manufactured medicines. He is proficient in the methods of physical and chemical analysis in the manufacture of medicines.

To form the above competencies within the framework of the discipline "Analytical Chemistry", the following educational technologies and methods of active / interactive learning are used: a business game, work in small groups, a group experiment, an online course.

History of Medicine, Bioethics, Deontology

The discipline "History of Medicine, Bioethics, Deontology" is designed for students studying on the educational program of higher education 33.05.01 Pharmacy, implemented on the 2nd year in the 3,4 semester. The total educational requirement of the discipline is 180 hours, 5 credit units

The goals and objectives of discipline:

goals: training of a medical specialist who has deeply learned the humanitarian foundations of his profession, who has knowledge of the socio-cultural context of both Russian and international medical activities, in which the regulation of human relations is subordinate to the task of preserving human health, as well as the formation of the moral consciousness of future doctors, the introduction to the moral tradition of domestic medicine through the direct transfer of moral experience from teachers to students.

Objectives:

- to teach students a historical and analytical approach in an objective assessment of medical, hygienic knowledge about human health and disease at various stages of human development;

-to study the patterns and nodal issues of medicine in general, its characteristic features and distinctive features at various stages of development;

-to study the emergence and development of certain special biomedical, hygienic and clinical areas;

-to study the moral foundations (professional and personal) of medical activity;

-to teach how to regulate and resolve bioethical conflicts;

-study the principles of behavior of medical personnel aimed at maximizing the usefulness of treatment and eliminating unfavorable omissions in medical activities;

-to master the cultural experience of mankind, to determine the significance of the place of morality in social relations.

As a result of studying this discipline, students form the following universal competencies:

Competencies of students, indicators of their achievement and learning outcomes in the discipline

Name of the category (group) Competencies	Code and name competencies (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
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Intercultural interaction	UK-5. Able to analyze and take into account the diversity of cultures in the process of intercultural interaction.	UK-5.1 Analyzes the current state of society on the basis of scientific historical knowledge	Knows the current state of society Able to analyze the current state of society Possesses the skills of scientific historical knowledge
Ethics and deontology	OPK - 4 Able to carry out professional activities in accordance with ethical standards and moral principles of pharmaceutical ethics and deontology of intercultural interaction	OPK-4.1 Carries out interaction in the system "pharmaceutical worker-visitor of a pharmacy organization" in accordance with the norms of pharmaceutical ethics and deontology	Knows the norms of pharmaceutical ethics and deontology Knows how to interact in the system "pharmaceutical worker-visitor of a pharmacy organization" Possesses the skills of interaction in the system "pharmaceutical worker-visitor of a pharmacy organization"
		OPK-4.2 Carries out interaction in the system "pharmacist-medical worker" in accordance with the norms of pharmaceutical ethics and deontology	Knows the norms of pharmaceutical ethics and deontology Knows how to interact in the system "pharmacist-medical worker" Possesses the skills of interaction in the system "pharmacist-medical worker"

Biology

The discipline "Biology" is intended for students of the 1st course of the specialty "General Medicine" in accordance with the requirements of the Federal State Educational Standard of Higher Education in this specialty. The discipline "Biology" is included in the basic part of the curriculum

The total complexity of the discipline is 6 credits, 216 hours. The curriculum provides lectures (36 hours), practical classes (54 hours), laboratory classes (18 hours), independent work (144 hours). Discipline is implemented on the 1 course in 1 and 2 semesters.

"Biology" is a fundamental natural science discipline for students of the specialty "General Medicine". It serves as a bridge between school biological preparation and the upcoming development of the whole complex of modern biomedical sciences.

Mastering this discipline is necessary as the preceding one for the disciplines of the natural science and professional cycles of the Federal State Educational Standard of the specialty "General Medicine". Being the theoretical basis of medicine in general, biology is of particular importance for the mastery of such disciplines as anatomy, histology and cytology, physiology, biological chemistry, biophysics, genetics, immunology, fundamentals of ecology and nature conservation. For students of this specialty, biology is especially important as the fundamental basis of medicine in general.

Goal of the development of the discipline "Biology" is to acquaint the student with the basic provisions, laws, concepts of modern biology, identify the actual problems and prospects of biological science. Biology is designed to instill in students a natural-science view of medical problems and tasks, teach them to understand the human body as a physico-chemical system, and the causes of diseases and pathologies as specific material factors, internal or due to the external environment.

Objectives of the discipline:

- obtaining knowledge about the manifestations of the fundamental properties of living at the main evolutionary-defined levels of the organization;
- study of the chemical composition of the cell, the structure and functions of proteins, carbohydrates, lipids, nucleic acids;
- understanding of the basics of cell theory;
- prove the physico-chemical nature of life, manifested in the process of metabolism;
- know the essence of genetic information and the mechanism of its implementation (protein biosynthesis) Central dogma of molecular biology; mechanisms of regulation of gene activity;
- consider the laws and mechanisms of cell reproduction (mitosis and meiosis) and organisms based on the replication of genetic information (DNA);

- to study the forms and mechanisms of reproduction of organisms, periodization of ontogenesis, peculiarities of human ontogenesis;
- to consider the laws of genetics and their importance for medicine, the main laws of heredity and variability, hereditary diseases of a person;
- know the current topical hypotheses of the origin of life, the basic laws and principles of biological evolution;
- understand the basics of anthropogenesis and the anthropogenic evolution of the biosphere, strategic objectives for the conservation of biodiversity and nature conservation
- consider the basic laws of the functioning of the biosphere and ecosystems;
- understanding of parasitism as a form of biotic relationships; the characteristic of the main parasitic representatives of unicellular, flat and roundworms, arthropods; knowledge of preventive measures for parasitic diseases.

The content of the discipline covers a range of the most fundamental questions of general biology: manifestations of the fundamental properties of a living person at the main evolutionarily determined levels of the organization; chemical composition, structure and functioning of the cell as an elementary living system; structure and implementation scheme of genetic information; forms and mechanisms of reproduction of organisms; periodization and ontogeny mechanisms; laws of genetics and their importance for medicine; anthropogenesis and the theory of evolution; basic laws of the biosphere and ecology; parasitism as a form of biotic bonds, the main parasites of man.

To successfully study the “Biology” discipline, students should have the following preliminary competences established within the framework of general (school) education:

1. To know the material of the discipline "Biology" at the level of the school course.
2. To be able to formulate your thoughts logically and competently using special terms, the ability to build holistic, coherent and logical statements with competent use of biological terms and argumentation of their judgments, to be able to work with literature and keep a synopsis, highlighting the main idea from the information flow.
3. To possess common basic methods of studying the world around us, such as observation, experience, analysis; understand the essence of cause-effect relationships.

As a result of studying this discipline, students form the following professional competencies (elements of competencies):

Code and the wording of the competence of the AT FEFU	Stages of competence formation	
GPC-1.1 Applies basic biological methods of analysis for the development, research and examination of medicines and medicinal plant materials	Knows	Knows the basic biological methods of analysis
	Is able to	Able to apply the main biological methods of analysis for the development, research and examination of medicines and medicinal plant materials

	Possesses	Owns methods of analysis for the development, research and examination of medicines and medicinal plant materials
GPC-3.1 Complies with the norms and rules established by authorized state authorities when solving problems of professional activity in the field of drug circulation	Knows	Knows the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines
	Is able to	Able to solve the problems of professional activity in the field of circulation of medicines
	Possesses	Owns methods of compliance with the norms and rules established by the authorized state authorities in solving the problems of professional activity in the field of circulation of medicines
GPC-3.2 Takes into account, when making management decisions, economic and social factors that affect the financial and economic activities of pharmaceutical organizations	Knows	Knows the economic and social factors that affect the financial and economic activities of pharmaceutical organizations
	Is able to	Knows how to take into account economic and social factors when making managerial decisions
	Possesses	Owns methods of accounting for economic and social factors

To form the aforesaid competences in the frames of the “Biology” discipline, the following methods of active/interactive education are used:

Lecture classes:

1. Lecture-visualisation
2. Lecture-conversation

Practical classes:

1. Seminar-debate
2. Detailed conversation
3. Seminar-press-conference

Medical Plants

The total labor intensity of the discipline is 10 credits/ 360 academic hours. It is a discipline of the compulsory part of the EP, it is studied for 1 (1,2 semesters) and 2 courses (3 semesters) and ends with credit in the 1st year (1,2 semester) and the exam in the 2nd year (3 semester). The curriculum provides for lectures in the amount of 24 hours, practical / laboratory 36 hours, and also allocated hours for independent work of the student -300 hours, of which control – 54 hours.

Implementation language : English

Purpose:

Purpose: mastering fundamental and systemic knowledge in the field of biological laws of the plant world, which are of the greatest interest to pharmacy, in the development of interest in the specialty and understanding of the importance of the rational use of medicinal plant raw materials of the flora of the Russian Federation, in preparation for the study of a special pharmaceutical discipline - "Pharmacognosy".

Tasks:

- ensuring the logical connection and continuity of students' natural science knowledge about the organization of the living world at different system levels;
- study of biological patterns of development of the plant world;
- study of the main provisions of the doctrine of the cell, its structure;
- acquaintance with the variety of morphological and anatomical structures of plant organs;
- study of plant groups, including medicinal species studied in the course of pharmacognosy;
- familiarization with the diagnostic signs of plants that are used in the determination of raw materials;
- acquaintance with the basic physiological processes occurring in the plant organism;
- formation of ideas about the ecology, phytocenology and geography of plants;
- acquaintance with rare and endangered plant species subject to protection and listed in the "Red Book";
- formation of skills for the preparation of temporary micropreparations and histochemical reactions;
- formation of skills of anatomical and morphological description of plants and identification of plants by determinants;
- formation of students' practical skills in collecting and drying the herbarium;
- formation of students' skills and abilities to conduct geobotanical descriptions of phytocenoses;
- formation of students' skills for solving problematic and situational problems;

- formation of students' skills in the use of scientific botanical literature;
- formation of the student's skills of communication with the team

The results of training in the discipline (module) should be correlated with the indicators of achievement of competencies established in the BRI.

The totality of the planned learning outcomes in the discipline (module) should ensure the formation of all the competencies established by the BRI in the graduate.

Competencies of students, indicators of their achievement and learning outcomes in the discipline

Name of the category (group) Competencies	Code and name competencies (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
Able to use basic biological, physicochemical, chemical, mathematical methods for the development, research and examination of medicines, the manufacture of medicines	OPK-1 is able to use basic biological, physicochemical, chemical, mathematical methods for the development, research and examination of medicines, the manufacture of medicines	OPK-1.1	Knows the basic biological methods of analysis Able to apply basic biological methods of analysis for the development, research and examination of medicines and medicinal plant raw materials Owns methods of analysis for the development, research and examination of medicines and medicinal plant raw materials
		OPK-1.2	Applies basic physicochemical and chemical methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects. Able to carry out the development, research and examination of medicines, medicinal plant raw materials and biological objects. He is proficient in methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects.

For the formation of the above competencies within the framework of the discipline "Botany", the following educational technologies and methods of active / interactive learning are used: work with handouts, such as herbariums, preparations; work in small groups.

Human Normal Physiology

The discipline "Human Normal Physiology" is designed for students studying on the educational program of higher education 33.05.01 Pharmacy, implemented on the 2nd year in the 3,4 semester. The total educational requirement of the discipline is 252 hours, 7 credit units

Goals and objectives of the discipline

Goal: to form students' systemic knowledge about the vital activity of the whole organism and its individual parts, about the main patterns of functioning and mechanisms of their regulation when interacting with each other and with environmental factors, about the physiological foundations of clinical and physiological research methods used in clinical practice.

Objectives:

the formation of students' skills in analyzing the functions of the whole organism from the standpoint of integral physiology, analytical methodology and the basics of medicine;

formation of a systematic approach among students in understanding the physiological mechanisms underlying the interaction with environmental factors and the implementation of adaptive strategies of the human body to maintain normal functioning from the standpoint of the concept of functional systems;

study by students of methods and principles of studying the state of the regulatory and homeostatic systems of the body in laboratory practice and their applicability in clinical practice;

the study by students of the role of higher nervous activity in the regulation of physiological functions of a person and the purposeful management of the body's reserve capabilities in normal and pathological conditions;

familiarization of students with the basic principles of modeling physiological processes and creating computer models for studying and purposefully controlling body functions;

teaching students methods for assessing the functional state of a person, the state of regulatory and homeostatic mechanisms in various types of purposeful activities;

formation of the foundations of clinical thinking based on the analysis of the nature and structure of interorgan and intersystem interactions from the position of integrative physiology for the future practical activity of a general practitioner.

To study this discipline, students should have the following preliminary competencies: Be able to logically and competently formulate their thoughts using special terms, build coherent, coherent and logical statements with the competent use of anatomical and physiological terms; work on the creation of projects, portfolios, presentations, conduct scientific activities under the guidance of a teacher, work with

additional literature.

As a result of studying this discipline, students form the following general professional competencies of graduates and indicators of their achievement:

Code and name of general professional competence (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
<p>OPK-2</p> <p>Able to apply knowledge about morphofunctional features, physiological states and pathological processes in the human body to solve professional problems</p>	<p>OPK-2.1 analyzes the pharmacokinetics and pharmacodynamics of a drug based on knowledge of morphofunctional features, physiological states and pathological processes in the human body</p>	<p>Knows the morphofunctional features, physiological states and pathological processes in the human body that may affect the pharmacokinetics and/or pharmacodynamics of the drug used.</p>
		<p>Is able to analyze the pharmacokinetics and pharmacodynamics of a drug based on knowledge of morphofunctional features, physiological states and pathological processes in the human body.</p>
		<p>Possesses information on the possible impact of human conditions on the pharmacokinetics and pharmacodynamics of drugs</p>
	<p>OPK-2.2 Explains the main and side effects of drugs, the effects of their combined use and interaction with food, taking into account morphofunctional features, physiological conditions and pathological processes in the human body</p>	<p>Knows the main and side effects of medications, their dependence on human conditions</p>
		<p>Able to explain the main and side effects of drugs, the effects of their combined use and interaction with food, taking into account morphofunctional features, physiological states and pathological processes in the human body</p>
		<p>Possesses the skills to explain information to consumers and medical professionals about the main and side effects of medicines</p>
	<p>OPK-2.3 Takes into account morphofunctional features, physiological conditions and pathological processes in the human body when choosing over-the-counter medicines and other pharmacy products</p>	<p>Has systematic knowledge of the main symptoms and syndromes of the most common diseases. Peculiarities of the action of drugs in certain morphofunctional features, physiologic and pathological conditions of a person.</p>
		<p>Able to assess and recognize complaints, conditions that require a doctor's consultation. Take into account morphofunctional features, physiological states and pathological processes in the human body when choosing over-the-counter medicines.</p>
		<p>Possesses the skill of correctly interpreting knowledge and recognizing conditions, complaints of pharmacy visitors that require a doctor's consultation when choosing over-the-counter medicines. Skills in the selection of suitable over-the-counter medicines based on morphofunctional features, physiological and pathological conditions of a person.</p>

Human Microbiology, Virology

The discipline " Human Microbiology, Virology" is intended for students enrolled in the educational program 33.05.01 Pharmacy is included in the basic part of the curriculum. Discipline is implemented in 2 course in 3-4 semesters.

In developing of the work program of the discipline, the Federal State Educational Standard of Higher Education in the specialty 33.05.01 Pharmacy, the curriculum for training specialists in the specialty 33.05.01 Pharmacy, were used.

The total complexity of the discipline is 7 test units, 252 hours. The curriculum provides lectures (36 hours), laboratory classes (36 hours), practical classes (72 hours), independent work of students (108 hours).

Students form a conscious understanding of the relationship between microorganisms and human health, the importance of the environment and the micro world in the development of diseases, which is a necessary prerequisite for studying such disciplines as therapy, surgery, infectious diseases. Students take an active part in carrying out scientifically grounded and effective therapeutic measures, preventing diseases, and promoting a healthy lifestyle.

A special feature in the construction and content of the course is the use of active learning methods, software and hardware, a fund of methodological, evaluation and electronic means of discipline maintenance.

The content of the discipline covers contemporary issues of general microbiology, clinical microbiology, sanitary microbiology. The general part of microbiology is presented by the history of the subject, general courses of bacteriology, virology, concept of inflectional process, including chemotherapy, the ecology of microorganisms. The private course of microbiology includes the study of individual nosological forms of infectious diseases: etiology, pathogenesis, epidemiology, clinical presentation, and prevention (course of bacteriology, virology, mycology, protozoology).

The discipline "Microbiology, virology" is logically and meaningfully connected with such courses as general and inorganic chemistry, organic chemistry, analytical chemistry, biology, botany, physiology with the basics of anatomy, pathology.

Goal of studying the discipline of microbiology, virology is the formation of medical thinking among students, based, inter alia, on the knowledge of the biological properties of microorganisms and their role in the development of diseases and the formation of immunity; the use of modern methods of diagnosing infectious diseases, biological preparations for the specific prophylaxis and treatment of infectious human diseases.

Objectives of microbiology, virology as a profile educational discipline:

1. Obtaining of theoretical knowledge in the field of systematics and nomenclature of microorganisms, their morphology, physiology, identification, role in nature, in infectious and non-infectious human pathology.

2. Obtaining knowledge on the mechanisms of interaction of microbes with the human body, the pathogenesis of infectious diseases; methods of microbiological diagnostics, principles of etiotropic treatment and specific prophylaxis of diseases, use of basic antibacterial, antiviral and biological preparations.

3. Formation of a systematic approach to the analysis of scientific medical information, including the identification of aerobic and anaerobic microorganisms from the studied material, based on micro preparations of biological objects and knowledge of the biological properties of pathogens.

Code and name of general professional competence (result of development)	Code and name of the competency achievement indicator
OPK-2 Able to apply knowledge about morphofunctional features, physiological states and pathological processes in the human body to solve professional problems	OPK-2.1 analyzes the pharmacokinetics and pharmacodynamics of a drug based on knowledge of morphofunctional features, physiological states and pathological processes in the human body

Code and name of the competency achievement indicator	The name of the assessment indicator (the result of training in the discipline)
OPK-2.1 analyzes the pharmacokinetics and pharmacodynamics of a drug based on knowledge of morphofunctional features, physiological states and pathological processes in the human body	Knows the morphofunctional features, physiological states and pathological processes in the human body that may affect the pharmacokinetics and/or pharmacodynamics of the drug used.
	Is able to analyze the pharmacokinetics and pharmacodynamics of a drug based on knowledge of morphofunctional features, physiological states and pathological processes in the human body.
	Possesses information on the possible impact of human conditions on the pharmacokinetics and pharmacodynamics of drugs

Human Immunology

The discipline " Human Immunology" is intended for students enrolled in the educational program 33.05.01 Pharmacy, is included in the basic part of the curriculum. Discipline is implemented in the 3 course, 5th semester, is a basic discipline.

In developing the work program of the discipline, the Federal State Educational Standard of Higher Education (level of training of highly qualified personnel) in the specialty 33.05.01 Pharmacy was used. 33.05.01 Pharmacy (the level of training of highly qualified personnel), the curriculum for preparing students for the General Education and Training Program "Clinical and Experimental Pharmacy (in English)". The total complexity of the discipline is 144 hours, 4 credits.

Goal of the course: mastering the knowledge of the general laws of development, structure and function of the body's immune system in normal conditions and in diseases caused by impaired immune mechanisms, as well as the basic principles of diagnosis, treatment of immune-mediated human diseases.

Objectives:

1. Acquisition by students of knowledge about the basic structural and functional features of the immune system.

2. Acquisition by students of knowledge about the causes of development, immunopathogenesis and clinical manifestations of the main immunodeficiency, allergic and other diseases of the immune system.

3. Training students in the most important methods of assessing the immune status using modern molecular genetic, immunological and cellular technologies; allowing to detect defects in the immune system.

4. Formation of ideas about the leading role of immunogenetic factors in the development and functioning of the immune system, the development of immunopathologies.

5. Formation of approaches to the formulation of the immune diagnosis and the development of tactics for the treatment and prevention of diseases of the immune system.

To solve these problems, a course of thematic lectures, laboratory and practical classes is planned.

As a result of studying this discipline, students form the following professional competencies.

Code and name of general professional competence (result of development)	Code and name of the competency achievement indicator
OPK-2 Able to apply knowledge about morphofunctional features, physiological states and pathological	OPK-2.1 analyzes the pharmacokinetics and pharmacodynamics of a drug based on knowledge of morphofunctional features, physiological states and pathological processes in the human body

processes in the human body to solve professional problems	
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Code and name of the competency achievement indicator	The name of the assessment indicator (the result of training in the discipline)
OPK-2.1 analyzes the pharmacokinetics and pharmacodynamics of a drug based on knowledge of morphofunctional features, physiological states and pathological processes in the human body	Knows the morphofunctional features, physiological states and pathological processes in the human body that may affect the pharmacokinetics and/or pharmacodynamics of the drug used.
	Is able to analyze the pharmacokinetics and pharmacodynamics of a drug based on knowledge of morphofunctional features, physiological states and pathological processes in the human body.
	Possesses information on the possible impact of human conditions on the pharmacokinetics and pharmacodynamics of drugs

Human Pathological Physiology

The discipline "Human Pathological Physiology" is designed for students studying on the educational program of higher education 33.05.01 Pharmacy, implemented on the 3rd year in the 5,6 semester. The total educational requirement of the discipline is 288 hours, 8 credit units.

Goal of mastering the discipline: the formation of students' ability to effectively solve professional medical tasks based on the pathophysiological analysis of data on pathological processes, conditions, reactions and diseases using knowledge of general patterns and mechanisms of their occurrence, development and completion, as well as to formulate principles (algorithms, strategies) and methods for their detection, treatment and prevention.

Objectives:

- study of molecular, cellular, tissue, organ, system and intersystem mechanisms of typical pathological processes;
- Studying the causes, mechanisms of development and outcomes of specific diseases developing in individual organs and systems;
- analysis of the nature of the clinical manifestations of the main pathological processes;
- familiarization with the principles of pathogenetic treatment of diseases of individual organs and systems;
- teach the ability to conduct pathophysiological analysis of data on pathological syndromes, pathological processes, forms of pathology and individual diseases.

As a result of studying this discipline, the following general professional competencies are formed among students:

As a result of studying this discipline, students form the following universal competencies:

Code and name of general professional competence (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
OPK-2 Able to apply knowledge about morphofunctional features, physiological states and pathological processes in the human body to solve professional	OPK-2.1 analyzes the pharmacokinetics and pharmacodynamics of a drug based on knowledge of morphofunctional features, physiological states and pathological processes in the	Knows the morphofunctional features, physiological states and pathological processes in the human body that may affect the pharmacokinetics and/or pharmacodynamics of the drug used.
		Is able to analyze the pharmacokinetics and pharmacodynamics of a drug based on knowledge of morphofunctional features, physiological states and pathological processes in the human body.

Code and name of general professional competence (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
problems	human body	Possesses information on the possible impact of human conditions on the pharmacokinetics and pharmacodynamics of drugs
	OPK-2.2 Explains the main and side effects of drugs, the effects of their combined use and interaction with food, taking into account morphofunctional features, physiological conditions and pathological processes in the human body	Knows the main and side effects of medications, their dependence on human conditions
		Able to explain the main and side effects of drugs, the effects of their combined use and interaction with food, taking into account morphofunctional features, physiological states and pathological processes in the human body
		Possesses the skills to explain information to consumers and medical professionals about the main and side effects of medicines
	OPK-2.3 Takes into account morphofunctional features, physiological conditions and pathological processes in the human body when choosing over-the-counter medicines and other pharmacy products	Has systematic knowledge of the main symptoms and syndromes of the most common diseases. Peculiarities of the action of drugs in certain morphofunctional features, physiologic and pathological conditions of a person.
		Able to assess and recognize complaints, conditions that require a doctor's consultation. Take into account morphofunctional features, physiological states and pathological processes in the human body when choosing over-the-counter medicines.
		Possesses the skill of correctly interpreting knowledge and recognizing conditions, complaints of pharmacy visitors that require a doctor's consultation when choosing over-the-counter medicines. Skills in the selection of suitable over-the-counter medicines based on morphofunctional features, physiological and pathological conditions of a person.

Biochemistry

The discipline "Biochemistry" is designed for students enrolled in the educational program of higher education 33.05.01 «Pharmacy», is included in the basic part of the curriculum, implemented in the 2nd year in the 3rd and 4th semesters. The total complexity of the discipline is 252 hours, 7 credits, 36 hours of lectures, practical classes-72 hours, laboratory classes-36 hours, independent work of students-72 hours, including 36 hours to prepare for the exam.

In the development of the working program of the discipline used the Federal state educational standard of higher education in the specialty 31.05.01 33.05.01 Pharmacy (level of training specialty).

Modern biochemistry is an extensive field of knowledge, including a number of sections. The most important of them are Bioorganic chemistry, dynamic biochemistry, molecular biology, functional biochemistry. Formed as an independent industry and medical biochemistry, including all of the above sections, and not only in the part that is relevant to human health and disease. Medical biochemistry studies the molecular basis of human physiological functions, molecular mechanisms of pathogenesis of diseases (molecular pathology), the biochemical basis of the prevention and treatment of disease, biochemical diagnostics of diseases and monitoring the effectiveness of treatment. Biological chemistry together with such medical and biological disciplines as biology and General genetics, normal human anatomy, histology, normal physiology forms students' knowledge about the structure and functioning of a healthy body, and together with pathophysiology, pathological anatomy and pharmacology-knowledge about the essence of common pathological processes and the most common diseases, the mechanisms of action of drugs.

Knowledge of biochemistry is fundamental in the education of the doctor, serve as the basis for the study of subsequent theoretical disciplines and the formation of clinical thinking of the doctor in the medical departments.

The discipline "Biochemistry" is logically and meaningfully connected with such courses as General and inorganic chemistry, physiology, histology, biology.

The course program is based on the basic medical knowledge gained by students:
ability to abstract thinking, analysis, synthesis;

the willingness to solve common tasks of professional activity with the use of information and bibliographic resources, biomedical terminology, information and communication technologies, taking into account the main requirements for information security;

the readiness to use basic physical and chemical, mathematical and other natural science concepts and methods in solving professional problems.

Competencies of students, indicators of their achievement and learning outcomes

in the discipline

Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
<p>OPK-2.1 Analyzes the pharmacokinetics and pharmacodynamics of the drug based on knowledge of morphological and functional features, physiological conditions and pathological processes in the human body</p>	<p>Knows the main pathways of metabolism of amino acids, proteins, carbohydrates, lipids, nucleotides, nucleic acids and the main disorders of their metabolism in the human body</p>
	<p>Able to assess the informativeness of various biochemical determinations for blood and urine analysis in some pathological conditions (diabetes mellitus, pathology of the liver, kidneys, heart)</p>
	<p>Possesses the skills to solve biochemical and professional problems</p>
<p>OPK-2.2 Explains the main and side effects of drugs, the effects of their combined use and interaction with food, taking into account morphological and functional features, physiological conditions and pathological processes in the human body</p>	<p>Knows the principles of biochemical analysis and clinical and biochemical laboratory diagnosis of diseases</p>
	<p>Knows how to use measuring equipment when performing biochemical studies</p>
	<p>Possesses the skills of making a preliminary diagnosis based on the results of laboratory examination of patients</p>
<p>OPK-2.3 Takes into account morphological and functional features, physiological conditions and pathological processes in the human body when choosing over-the-counter medicines and other pharmacy products</p>	<p>New areas of research in the development of biochemical and physicochemical technologies in health care</p>
	<p>Identify areas of research and problems in the development of biochemical and physicochemical technologies in health care</p>
	<p>New methods in the development of biochemical and physicochemical technologies in health care</p>

Pharmacology

The total labor intensity of the discipline is 10 credits / 360 academic hours. It is a discipline of the compulsory part of the EP, it is studied in 3-4 courses and ends *with an exam*. The curriculum provides for lectures in the amount of 54 hours, practical classes - 108 hours, and also allocated hours for independent work of the student - 198 hours, of which 27 hours. to prepare for the exam.

Implementation language : English

The purpose of the program is the assimilation by students of the main provisions of general pharmacology and pharmacology of individual body systems, the mechanisms of action of drugs, knowledge of molecular targets for drugs, the development of complex thinking among future specialists, which makes it possible to predict the positive and negative aspects of the effects of drugs, as well as their combinations, the formation of the ability to apply the knowledge gained in professional activities.

Tasks:

- to form students' understanding of the role and place of pharmacology among the fundamental and medical sciences, about the directions of development of the discipline and its achievements;

- to acquaint students with the history of the development of pharmacology, the activities of the most prominent persons of medicine and pharmacy, the contribution of domestic and foreign scientists to the development of world medical science;

- to acquaint students with the main stages and fundamental approaches to the creation of medicines;

- to acquaint students with the features of the use of basic dosage forms, various types of classifications of medicines, types of dosage forms, features of pharmacokinetics and pharmacodynamics of medicines;

- to teach to analyze the effect of drugs on the totality of their pharmacological effects, mechanisms and localization of action, pharmacokinetic parameters;

- to form the ability to assess the possibilities of choosing and using medicines based on ideas about their properties for effective and safe pharmacotherapy, prevention of human diseases;

- to teach students to recognize possible side effects and toxicological manifestations when using medicines;

- to teach students the principles of prescriptions and prescriptions, the ability to prescribe medicines in various dosage forms.

For the successful study of the discipline, students must have the following preliminary competencies: OPK-2,1 , OPK-6.2, obtained as a result of studying the disciplines: physiology with the basics of anatomy, microbiology, virology, pathology, biochemistry, informatics with the basics of bioinformatics, basics of nutrition ; the student must be ready to study such disciplines as pharmaceutical informatics, medical

genetics, immunology, pharmaceutical technology, clinical pharmacology, forming the competencies of PC-1.6, PC-5.6 , PC-7.1.

Competencies of students, indicators of their achievement and learning outcomes in the discipline Pharmacology:

Name of the category (group) Competencies	Code and name competencies (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
Professional methodology	OPK-2 Able to apply knowledge about morphological and functional features, physiological conditions and pathological processes in the human body to solve professional problems	OPK-2.1 Analyzes the pharmacokinetics and pharmacodynamics of the drug based on knowledge of morphological and functional features, physiological conditions and pathological processes in the human body	<p>Knows morphofunctional features, physiological conditions and pathological processes in the human body</p> <p>Able to analyze the pharmacokinetics and pharmacodynamics of the drug</p> <p>Possesses methods of analysis of pharmacokinetics and pharmacodynamics of the drug based on knowledge of morphofunctional features, physiological conditions and pathological processes in the human body</p>
		OPK-2.2 Explains the main and side effects of drugs, the effects of their combined use and interaction with food, taking into account morphological and functional features, physiological conditions and pathological processes in the human body	<p>Knows the main and side effects of drugs, the effects of their combined use and interaction with food</p> <p>Knows how to explain the main and side effects of drugs, the effects of their combined use and interaction with food, taking into account morphological and functional features, physiological conditions and pathological processes in the human body</p> <p>Owens methods for establishing the main and side effects of drugs, the effects of their combined use and interaction with food</p>

Research & Development	PC-1. Able to participate in research to assess the efficacy and safety of medicines	PC-1.1. Conducts a study of pharmacological activity and other types of activity of various compounds in laboratory animals	<p>Knows protocols, plans, programs for research (testing) of various compounds on laboratory animals</p> <p>Knows how to develop and implement a protocol, plan, program for studying the effect of various compounds on laboratory animals</p> <p>He is proficient in methods for studying various types of activity of the studied compounds on laboratory animals</p>
		PC-1.2. Determines the pharmacokinetic parameters of substances in laboratory animals	<p>Knows the theoretical foundations for determining the pharmacokinetic parameters of substances in laboratory animals</p> <p>Able to determine the pharmacokinetic parameters of substances in laboratory animals</p> <p>He is proficient in methods for determining the pharmacokinetic parameters of substances in laboratory animals</p>
		PC-1.3. Conducts a study of the bioavailability of substances on various models in vitro and in vivo	<p>Knows the theoretical foundations of studying the bioavailability of substances in various models in vitro and in vivo</p> <p>Able to study the bioavailability of substances in various models in vitro and in vivo</p> <p>He is proficient in methods of studying the bioavailability of substances on various models in vitro and in vivo</p>
pharmaceutical	PC-7 Capable of providing pharmaceutical information and advice on the dispensing and sale of medicines for medical use and other pharmacy products	PC-7.3. Decides on the replacement of the prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure on the basis of information on groups of drugs and synonyms within one international nonproprietary name and prices for them, taking into account the biopharmaceutical	<p>Knows the theoretical basis for making a decision on replacing a prescribed drug with synonymous or similar drugs in the prescribed manner on the basis of information on groups of drugs and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical characteristics of dosage forms</p> <p>Is able to make a decision on the replacement of the</p>

		characteristics of dosage forms	prescribed drug with synonymous or similar drugs in accordance with the established procedure on the basis of information on groups of drugs and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical characteristics of dosage forms Possesses methods for making a decision on the replacement of a prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure based on information on groups of drugs and synonyms within one international nonproprietary name and prices for them, taking into account the biopharmaceutical characteristics of dosage forms
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For the formation of the above competencies within the framework of the discipline "Pharmacology", the following educational technologies and methods of active / interactive learning are used: work in small groups.

Emergency care in simulated conditions

The discipline "Emergency assistance in simulated conditions" is intended for students enrolled in the educational program 33.05.01 Pharmacy, is included in the basic part of the curriculum, is implemented in the 6th year in the semester. The total labor intensity of the discipline is 108 hours, 3 credits. The curriculum provides for practical classes (54 hours) and independent work of the student (54 hours). The study of the discipline ends with a test.

In the development of the work program of the discipline, the Federal State Educational Standard of Higher Education in the specialty 33.05.01 Pharmacy (the level of training of the specialist), the curriculum for training students were used.

In the process of studying the discipline, students acquire knowledge about the practical basics of emergency and emergency medical care at the prehospital stage in life-threatening conditions.

Goal of mastering the discipline is to improve the students' professional competencies in providing emergency and immediate assistance to the patient in simulated conditions in accordance with the federal state educational standard.

Objectives: To form the student's professional competencies related to the labor functions of a doctor:

1. examination of patients in a condition requiring emergency and emergency care;
2. on carrying out preventive measures, sanitary and educational work to prevent conditions requiring the provision of medical care in an emergency and urgent form; monitoring their effectiveness;
3. to assess the safety of the patient, medical personnel and the personal safety of the doctor in providing assistance to the patient;
4. on the use of special equipment for diagnosing the patient's condition in accordance with the current procedures for the provision of medical power, clinical recommendations for the provision of medical power, taking into account the standards of medical care;
5. for cardiopulmonary resuscitation and defibrillation with cardiac arrest in simulated conditions (on a mannequin).

As a result of studying this discipline, students form the following general professional and professional competencies:

Name of the category of competencies	Code and name of competence (the result of mastering)	Code and name of the competency achievement indicator
	OPK-5 Able to provide first aid on the territory of a pharmaceutical organization in case of emergency	OPK-5.1 Establishes the fact of the occurrence of an emergency condition in a visitor to a pharmacy organization, in

	conditions for visitors before the arrival of the ambulance team	which first aid is necessary, including when exposed to agents of chemical terrorism and hazardous chemicals OPK-5.2 Conducts first aid activities for visitors in emergency conditions before the arrival of the ambulance team OPK-5.3 Uses medical means of protection, prevention, medical care and treatment of lesions by toxic substances of various nature, radioactive substances and biological agents
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Code and name of universal competence (the result of mastering)	Code and name of the competency achievement indicator	
OPK-5.1 Establishes the fact of the occurrence of an emergency condition in a visitor to a pharmacy organization, in which first aid is necessary, including when exposed to agents of chemical terrorism and hazardous chemicals	Knows	etiology, pathogenesis, pathomorphology, clinical picture, course, outcome of emergency and emergency conditions requiring medical care in an emergency and urgent form; diagnosis and differential diagnosis of the main emergency and urgent syndromes and diseases; Current procedures for the provision of medical care
	Can	diagnose and provide medical care for the following life-threatening conditions in accordance with the current procedures for the provision of medical care;
	Owns	methodology for examining patients with conditions requiring emergency and emergency care in order to establish a nosological or syndromic diagnosis in accordance with the current procedures for the provision of medical care, clinical recommendations for the provision of medical care, taking into account the standards of medical care
OPK-5.2 Conducts first aid activities for visitors in emergency conditions before the arrival of the ambulance team	Knows	Basics of basic cardiopulmonary resuscitation
	Can	Perform a cardiopulmonary resuscitation algorithm.
	Owns	The method of using the basic CPR algorithm in simulated conditions using a specialized dummy.
OPK-5.3 Uses medical means of protection, prevention, medical care	Knows	the main preparations and characteristics of specialized equipment and medical devices that

and treatment of lesions by toxic substances of various nature, radioactive substances and biological agents		are used to diagnose patient conditions that require emergency and urgent medical care
	Can	use specialized equipment and medical devices for cardiopulmonary resuscitation and defibrillation in cardiac arrest, for emergency care for injuries, fractures, bleeding
	Owens	methods of using specialized equipment and medical devices for cardiopulmonary resuscitation and for emergency care.

Hygiene

The discipline "Hygiene" is intended for students enrolled in the educational program 33.05.01 Pharmacy, is included in the basic part of the curriculum.

Discipline is realized on 3, 4 courses, 6, 7 semesters.

In the development of the working program of the discipline used the Federal state educational standard of higher education in the specialty 33.05.01 Pharmacy, the curriculum for training specialists in the specialty 33.05.01 Pharmacy.

The total complexity of the development of the discipline is 6 credits, 216 hours. The curriculum provides 36 hours of lectures, 108 hours of practical training and independent work of the student (72 hours.).

Development of students ' conscious understanding of the relationship of human health with the environment, factors and living conditions, work is a necessary prerequisite for their active participation in the conduct of evidence-based and effective therapeutic measures, disease prevention, promotion of healthy lifestyles.

The study of hygiene is of particular importance in the formation of medical activity, in solving the list of problems for the prevention of diseases listed in the Federal state educational standard, in the development of environmental thinking of students.

Goal of the discipline "Hygiene" is the formation of students ' natural science worldview, preventive thinking on the basis of hygienic and environmental knowledge, competencies in systemic fundamental knowledge, skills in hygiene and human ecology, necessary for the subsequent practice of the doctor.

Objectives:

- acquisition of students ' knowledge in the field of human hygiene and ecology, a systematic understanding of the interaction of the body and various environmental factors;
- formation of students ' practical knowledge, skills and abilities to identify and assess environmental pollution, the development of sanitary and hygienic and anti-epidemic measures;
- mastering the methods of hygienic assessment of the main environmental factors affecting the health of the population;
- formation of motivation to preserve and strengthen health;
- knowledge of the basics of legislation on sanitary-epidemiological and environmental well-being of the population, international and national hygienic and environmental standards;
- teaching students statistical methods of work with hygienic and environmental information;
- development of skills in the study of scientific literature and official statistical surveys.

A special feature in the construction and content of the course is the use of active learning methods, software and hardware, Fund methodical, evaluation and electronic means of discipline.

The discipline " Hygiene "is logically and meaningfully connected with such courses as "Biology","Human Microbiology, Virology", "General and medical chemistry", "Medical Informatics, Medical Statistics ".

Competencies of students, indicators of their achievement and learning outcomes in the discipline

Name of the category (group) of competencies	Code and the name of the competence (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
Adapting to production conditions	OPK-3 Able to carry out professional activities taking into account specific economic, environmental, social factors within the framework of the system of legal regulation of the circulation of medicines	OPK-3.1 Complies with the rules and regulations established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines	Knows the rules and regulations established by the authorized state authorities in solving the problems of professional activity in the field of circulation of medicines Able to solve the problems of professional activity in the field of circulation of medicines Owns methods of compliance with the norms and rules established by the authorized state authorities in solving the problems of professional activity in the field of circulation of medicines
		OPK-3.2 Takes into account when making management decisions economic and social factors that affect the financial and economic activities of pharmaceutical organizations	Knows the economic and social factors influencing the financial and economic activities of pharmaceutical organizations Knows how to take into account economic and social factors when making management decisions Owns methods of accounting for economic and social factors

Toxicological Chemistry

The total labor intensity of the discipline is 8 credits / 288 academic hours. It is a discipline of the compulsory part of the EP, is studied in the 3rd year and ends with an exam. The curriculum provides for lectures in the amount of 36 hours, practical classes 72 hours, and also allocated hours for independent work of the student - 214 hours, of which 27 hours for control.

Implementation language: English

Purpose: the formation of students' necessary theoretical knowledge, practical skills and abilities necessary for the competent conduct of chemical and toxicological analysis of narcotic drugs, medicinal and psychotropic substances, "volatile" poisons, metal compounds, pesticides and other toxicologically important substances in objects of biological and non-biological origin, as well as for the correct assessment of the results obtained.

Objectives:

- formation of students' knowledge about the basic principles, the procedure for organizing, conducting chemical and toxicological analysis and analytical diagnostics of acute and chronic poisoning;
- formation of students' scientific knowledge about the physical and chemical properties of poisons, about the basic laws of the process of biotransformation of toxic substances in the human body, general patterns and specific mechanisms of the damaging effect of toxic substances, the occurrence, development and outcomes of intoxications, the principles of their detection and the main methods of detoxification;
- development of modern methodological approaches to chemical and toxicological analysis of objects of biological and non-biological origin;
- formation of skills in the application of a complex of modern chemical and physicochemical methods of analysis for the detection and quantification of toxic substances;
- formation of the ability to interpret the data of chemical and toxicological analysis, taking into account the processes of biotransformation of toxic substances and the capabilities of analytical research methods;
- acquisition of the skill of documenting laboratory and expert research.

For the successful study of the discipline "Toxicological Chemistry", students must have the following preliminary competencies: the ability to apply modern communication technologies, including in a foreign language, for academic and professional interaction (UK-4); the ability to understand the principles of modern information technologies and use them to solve the problems of professional activity (OPK-6); the ability to use the basic biological, physicochemical, chemical, mathematical methods for the development, research and examination of medicines, the manufacture of medicines (OPK-1) obtained

as a result of studying the disciplines: foreign language, biology, botany, general and inorganic chemistry, analytical, organic, physical and colloidal chemistry, the student must be ready to study such disciplines as pharmacology, clinical pharmacology, pharmaceutical technology, forming competencies OPK-2 (the ability to apply knowledge about morphological and functional features, physiological conditions and pathological processes in the human body to solve professional problems), PC-1 (with the ability to participate in research in the field of evaluating the efficacy and safety of medicines).

Competencies of students, indicators of their achievement and learning outcomes in the discipline

Name of the category (group) of competencies	Code and name of competencies (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
DIC	OPK-1 is able to use basic biological, physicochemical, chemical, mathematical methods for the development, research and examination of medicines, the manufacture of medicines	OPK-1.2 Applies basic physicochemical and chemical methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects	<p>Knows:</p> <ul style="list-style-type: none"> - principles of quality assurance of analytical diagnostics and forensic examination; - basic principles of selection, storage and transportation of objects of analysis; - capabilities and sensitivity limits of chemical and physicochemical methods used for the analysis of toxic substances; - the main directions of development of chemical and toxicological analysis and the activities of chemical and toxicological laboratories, centers for the treatment of acute poisoning, forensic medical examination bureaus, narcological dispensaries. <p>Can:</p> <ul style="list-style-type: none"> - independently conduct forensic chemical studies of material evidence and biological material for the presence of various toxic substances, using a set of modern physicochemical and chemical methods of analysis; - explain the essence of phenomena, processes, events; - analyze the results obtained, applying theoretical knowledge in the field of biochemical and analytical toxicology, and give conclusions based on the results of the examination; - to carry out analytical diagnostics of alcohol, drug and substance abuse poisoning in the biological environments of the human body; - document the conduct of laboratory and expert studies, draw up an act of forensic

			<p>chemical examination.</p> <p>Possesses the skills:</p> <ul style="list-style-type: none"> - the use of chemical and instrumental methods of analysis for the detection and quantification of toxic substances, narcotic drugs and their metabolites; - rapid diagnostics for acute intoxication, as well as alcoholic, narcotic and substance abuse intoxication; - work with objects of analysis of biological and non-biological origin; - terminological apparatus of the study area.
		OPK-1.3 Applies the basic methods of physicochemical analysis in the manufacture of medicines	<p>Knows the basic methods of physicochemical analysis used in the manufacture of medicines.</p> <p>Knows how to use the basic methods of physicochemical analysis in the manufacture of medicines.</p> <p>He has the skills to use the basic methods of physical and chemical analysis in the manufacture of medicines.</p>

For the formation of the above competencies within the framework of the discipline "Toxicological Chemistry", the following educational technologies and methods of active / interactive learning are used: a business game, work in small groups, preparation of a report and presentation, discussions, solving situational problems, excursions.

Preclinical Research and Pharmaceutical Registration

The discipline "Preclinical Research and Pharmaceutical Registration" is intended for students enrolled in the educational program 33.05.01 Pharmacy, is included in the basic part of the curriculum.

Discipline is realized on 4 course, 7 semester.

In the development of the working program of the discipline used the Federal state educational standard of higher education in the specialty 33.05.01 Pharmacy, the curriculum for training specialists in the specialty 33.05.01 Pharmacy.

The total complexity of the development of the discipline is 3 credits, 108 hours. The curriculum provides 8 hours of lectures, 8 hours of practical training and independent work of the student (92 hours.).

The purpose of mastering the discipline "Preclinical Research and Pharmaceutical Registration" is the formation of systemic knowledge, skills, professional competencies in conducting preclinical studies of new drugs necessary for the treatment, prevention and diagnosis of diseases.

Objectives of the Preclinical Research and Pharmaceutical Registration discipline:

- to teach students to plan preclinical studies of drugs of different groups and select models to evaluate the pharmacological action of a new agent;
- familiarize students with the standard protocols of preclinical studies of the OECD;
- Teach students how to perform simple procedures with small laboratory animals (weighing, labeling, intraperitoneal, subcutaneous, intravenous injections, intragastric injection of drugs, etc.).

Professional competencies of graduates and indicators of their achievement:

For successful study of the discipline "Pharmaceutical Development", students should have the following universal competencies of graduates and indicators of their achievement:

Name of the category (group) of universal competencies	Universal Competency Code and Name (result of mastering)	Code and name of the competency indicator
Project development and implementation	UK-2. Able to manage a project at all stages of its life cycle	UK-2.1 Formulates a project task and a way to solve it through the implementation of project management on the basis of the problem
		UK-2.2 Develops the concept of the project within the framework of the designated problem: formulates the goal, objectives, justifies the relevance, significance, expected results

Name of the category (group) of universal competencies	Universal Competency Code and Name (result of mastering)	Code and name of the competency indicator
		MC – 2.3 Offers procedures and mechanisms for assessing the quality of the project, infrastructural conditions for the implementation of the project results
Teamwork & Leadership	UK-3. Able to organize and lead the work of a team, developing a team strategy to achieve a set goal.	UK-3.1 Organizes the work of the team, including on the basis of collegial decisions
		UK-3.2 Resolves conflicts and contradictions in business communication on the basis of taking into account the interests of all parties; creates a working atmosphere, a positive emotional climate in the team
Civic position	UK-10. Able to form an intolerant attitude towards corrupt behavior	UK-10.1 Analyzes the current legal norms that ensure the fight against corruption in various spheres of life, as well as ways to prevent corruption and form an intolerant attitude towards it
		UK-10.2 Plans, organizes and conducts activities that ensure the formation of citizenship and the prevention of corruption in society
		UK-10.3 Complies with the rules of public interaction based on intolerance to corruption

Pharmacognosy

The total labor intensity of the discipline is 9 credits / 324 academic hours. It is a discipline of Block B1. O.2 of the 9th part of the EP, it is studied in the 3rd year and ends with an exam. The curriculum provides for lectures in the amount of 36 hours, practical 90 hours, as well as allocated hours for independent work of the student - 190 hours. (including 27 hours of exam preparation)).

Implementation language: English

Purpose: to form students' knowledge, skills and practical skills on the general and special part of pharmacognosy, which are based on

issues of rational use of resources of medicinal plants, taking into account scientifically based recommendations for the procurement, standardization, quality control, storage and processing of medicinal plant materials, as well as ways of using raw materials and the use of medicinal herbal remedies in pharmaceutical practice.

Tasks:

- Formation of theoretical knowledge about medicinal plants and medicinal plant raw materials used in medical practice.

- Formation of practical skills in the analysis of medicinal plants and medicinal plant raw materials used in medical practice.

- Development of communication skills suitable for working with medicinal plants and medicinal raw materials, used rationally and effectively in medical practice.

- Formation of legal competence, application and development of safety rules when working in a chemical laboratory, as well as technical documentation regulating the requirements for the quality of LRS.

- Development of motivation among students in the study and development of the discipline "Pharmacognosy" and the formation of students' general understanding of medicinal plants and medicinal plant raw materials used in medicine, suitable for performing professional tasks of a future specialist.

- To consider the basic concepts of pharmacognosy, methods of pharmacognostic analysis, the tasks of pharmacognosy at the present stage and its significance for the practical activities of the pharmacist;

Study

- the main stages of the development of pharmacognosy, modern directions of scientific research in the field of medicinal plants;

- characteristics of the raw material base of medicinal plants;

- organization of procurement of medicinal plant materials; procurement organizations and their functions;

- a system of state measures for the rational use and protection of medicinal plants;

- methods of resource research to establish natural reserves of medicinal plant raw materials;
- general principles of rational harvesting of medicinal plant raw materials and measures for the protection of natural, exploited thickets of medicinal plants;
- nomenclature of cultivated medicinal plants; basic methods of their cultivation;
- classification system of medicinal plant raw materials (chemical, pharmacological, botanical, morphological);
- nomenclature of medicinal plant raw materials and medicines of plant and animal origin, approved for use in medical practice and for use in industrial production;
- basic information about the distribution and habitat of medicinal plants used in scientific medicine;
- the influence of environmental factors on the development of the raw material mass of medicinal plants and the accumulation of biologically active substances;
- methods of macroscopic and microscopic analyses of whole medicinal raw materials. Analysis of fees;
- morphological and anatomical features of medicinal plant raw materials approved for use in medical practice, possible impurities;
- the main groups of biologically active substances of natural origin and their most important physicochemical properties; pathways of biosynthesis of the main groups of biologically active substances;
- methods of isolation and purification of the main biologically active substances from medicinal plant materials;
- basic methods of qualitative and quantitative determination of biologically active substances in medicinal plant raw materials; biological standardization of medicinal plant raw materials;
- quality indicators of raw materials and methods for their determination;
- requirements for packaging, labeling, transportation and storage of medicinal plant raw materials in accordance with the NTD;
- requirements for the results of the analysis of medicinal plant materials;
- rights and obligations of specialists working in the field of standardization, certification of medicinal plant raw materials;
- the main ways and forms of use of medicinal plant raw materials in pharmaceutical practice and industrial production;
- basic information on the use of medicines of plant and animal origin in medicine;
- safety rules when working with medicinal plants and medicinal raw materials.

For the successful study of the discipline, students must have the following preliminary competencies: OPK-1.2, PC-4.1, obtained as a result of studying the disciplines: Latin, botany, analytical chemistry, organic chemistry, the student must be

ready to study such disciplines as biological chemistry, pharmaceutical chemistry, technology of dosage forms that form the competencies of PC-8.4, PC-8.5, PC-4.1.

General professional competencies of students, indicators of their achievement and learning outcomes in the discipline

Code and name of general professional competence (result of development)	Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
OPK-1 Able to use basic biological, physicochemical, chemical, mathematical methods for the development, research and examination of medicines, the manufacture of medicines	OPK -1.2 Applies basic physicochemical and chemical methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects	Knows the main groups of biologically active compounds of natural origin and their most important physicochemical properties, biosynthesis pathways of the main groups of biologically active substances; methods of isolation and purification, the main biologically active substances from medicinal plant materials; The main methods of qualitative and quantitative determination of biologically active substances in medicinal plant raw materials, biological standardization of medicinal plant raw materials.
		Can to determine the main numerical indicators (moisture, ash, extractives) by the methods provided for by the ND; to carry out the acceptance of medicinal plant materials, to take samples necessary for its analysis, according to ND.; to carry out statistical processing and registration of the results of pharmacognostic analysis, to make a conclusion about the goodness of LRS in accordance with the requirements of the ND.
		Possesses the skills the technique of carrying out qualitative and microchemical reactions to the main biologically active substances contained in medicinal plants and raw materials (polysaccharides, essential oils, vitamins, cardiac glycosides, saponins, anthracene derivatives, coumarins, flavonoids, tannins, alkaloids, etc.); technique of quantitative analysis.

Professional competencies of students, indicators of their achievement and learning outcomes in the discipline

Task type	Code and name of professional competence (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
Pharmaceutical	PC-4 Able to take part in measures to ensure the quality of medicines in industrial	PC-4.1 Conducts sampling at various stages of the technological cycle	Knows - knows the rules for sampling at various stages and the basics of the stages of the technological cycle and the principles of operation of

	production		<p>specialized equipment provided for use in a particular technological process;</p> <ul style="list-style-type: none"> - structure and principles of operation specialized equipment intended for use in professional activities during sampling; - possibilities and limitations of the use of specialized equipment for pharmacognostic analysis; - rules for processing documents in accordance with the established procedure <p>knows how - knows how to select and analyze</p> <p>The content of regulatory documents in order to solve professional problems;</p> <ul style="list-style-type: none"> - apply basic methods and techniques sampling using regulatory and regulatory and technical documentation; - take samples necessary for its analysis, in accordance with the current requirements; <p>possesses the skills</p> <ul style="list-style-type: none"> - skills of independent work on sampling at the right stage of the production process; - normative, reference and scientific literature for solving professional problems
	PC-8 Able to participate in monitoring the quality, efficacy and safety of medicines and medicinal plant raw materials	PC-8.4 Conducts pharmacognostic analysis of medicinal plant raw materials and medicinal herbal preparations	<p>Knows</p> <ul style="list-style-type: none"> - features of qualitative and quantitative control; - work on the control of medicines in pharmaceutical conditions <p>Organizations;</p> <ul style="list-style-type: none"> - methods of macroscopic and microscopic analyses of whole and crushed medicinal raw materials and LRP; - morphological and anatomical diagnostic features of medicinal plant materials, approved for use in medical practice, possible impurities; - the main groups of biologically active compounds of natural origin and their the most important physicochemical properties, ways of biosynthesis of

			<p>the main groups of biologically active substances;</p> <ul style="list-style-type: none">- methods of isolation and purification, basic biologically active substances from medicinal plant materials;- basic methods of qualitative and quantitative determination of biologically active substances in medicinal plant raw materials and LRP, biological standardization of medicinal plant raw materials;- main ways and forms of use medicinal plant raw materials in pharmaceutical practice and industrial production;- basic information on the use of herbal medicines in medical practice and of animal origin.
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			<p>Knows how to conduct high-quality and microchemical reactions to the main biologically active substances, contained in medicinal plants and raw materials (polysaccharides, fatty and essential oils, vitamins, cardiac glycosides, saponins, anthracene derivatives, phenylpropano-ides, coumarins, flavonoids, tannins substances, alkaloids, etc.);</p> <ul style="list-style-type: none">- analyze according to the methods of quantitative determination, Provided for by the relevant ND, for medicinal plant raw materials for the content of fatty and essential oils, cardiac glycosides, saponins, alkaloids, anthracene derivatives, tannins, phenylpropanoids, flavonoids, coumarins, vitamins, etc.;- to determine the main numerical indicators (humidity, ash, extractives) by the methods provided for by the ND;- carry out the acceptance of the drug vegetable raw materials, select samples required for its analysis, according to the ND;- carry out statistical processing and registration of the results of pharmacognostic analysis;- to make a conclusion about the benignity of LRS in accordance with the requirements of the ND;- able to participate in monitoring quality, efficacy and safety of medicines and medicinal plant materials.
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			<p>Possesses the skills</p> <ul style="list-style-type: none"> - pharmacognostic methods analysis of medicinal plant raw materials and medicinal herbal preparations; - skills and techniques for conducting high-quality and microchemical reactions to the main biologically active substances contained in medicinal plants and raw materials (polysaccharides, essential oils, vitamins, cardiac glycosides, saponins, anthracene derivatives, coumarins, flavonoids, tannins, alkaloids, etc.)
		<p>PC-8.5 Informs, in accordance with the procedure established by law, about the non-compliance of the medicinal product for medical use with the established requirements or about the discrepancy between the data on the efficacy and safety of the medicinal product and the data on the medicinal product contained in the instructions for its use</p>	<p>Knows - the main types and content of regulatory documents in the field of drug circulation to ensure the mode and conditions of storage;</p> <ul style="list-style-type: none"> - all-Russian classifications of medicines (drugs) and other pharmacy products, approved by the authorized bodies of state power; - the main provisions of regulatory documents <p>Can</p> <ul style="list-style-type: none"> - apply regulatory documents in the field of circulation of drugs and medical devices to solve professional problems; <p>Possesses - skills of independent work on the search and application of regulatory legal documents for solving professional problems;</p> <ul style="list-style-type: none"> - normative, reference and scientific literature for solving professional problems

Physical Training and Sport

The discipline "physical education", is intended for students enrolled in the educational program of higher education 33.05.01 Pharmacy, is included in the basic part of the curriculum, is implemented on the 1st year in 1 semester. The total complexity of the discipline is 72 hours, 2 credits. Of these, lectures (2 hours), practical classes (68 hours), independent work (2 hours)

The program of the course is based on the basic knowledge acquired by students in the framework of the secondary education school.

The academic discipline "physical culture and sport" is consistently associated with the following disciplines "safety".

The main content of the discipline "physical culture and sport" is the general theoretical aspects of physical culture, the practical development of funds (exercises) from the basic types of motor activity (athletics, sports (volleyball)) for the formation of physical culture of the individual.

Goal of studying the discipline is to form the physical culture of the individual and the ability to use the various means of physical culture and sports to preserve and promote health, psychophysical training and self-preparation for future professional activities.

Objectives:

1. The formation of knowledge and skills in the implementation of the basic types of motor activity (athletics, sports (volleyball)), aesthetic and spiritual development of students.

2. The development of physical abilities by means of basic types of motor activity to promote health and maintain physical and mental performance.

3. Education of socially significant qualities and the formation of needs for a healthy lifestyle for effective professional self-realization.

To successfully study the discipline "Physical Culture and Sport", students should have the following preliminary competencies:

- the ability to use the basic forms and types of physical activity for the organization of a healthy lifestyle, active recreation and leisure;
- possession of general methods of strengthening and maintaining health, maintaining health, preventing disease prevention.

Because of studying this discipline, students form the following general cultural competence:

The code and the wording of competence	Stages of formation of competence	
UK-7.1 Understands the role of physical culture and	Knows	Knows the importance of the role of physical culture and sports in modern society, in human life, preparing him for social and professional activities, the importance

sports in modern society, in human life, preparing him for social and professional activities, the importance of physical culture and sports activity in the structure of a healthy lifestyle and the features of planning an optimal motor regimen, taking into account the conditions of future professional activity	Able to	Able to organize independent physical education classes
	Possesses	Possesses the skills of planning the motor mode, taking into account professional activities
UK-7.2 Uses self-control methodology to determine the level of health and physical fitness in accordance with the regulatory requirements and conditions of future professional activity	Knows	Knows the means and methods of self-control to determine the level of health and physical fitness
	Able to	Able to apply the basic methods of self-control in the process of physical education and sports
	Possesses	Has the ability to determine the state of health, the level of development of physical qualities and motor skills
UK-7.3 Maintains the proper level of physical fitness to ensure full-fledged social and professional activities, regularly engaging in physical exercises	Knows	Knows the main provisions of the theory and methodology of physical culture and sports
	Able to	Able to ensure the preservation and strengthening of individual health with the help of basic motor actions and basic sports
	Possesses	Owens the technologies of planning physical improvement and methods of practicing various types of motor activity

Elective Courses in Physical Training and Sport

Working program discipline "Physical training"(« Elective Courses in Physical Training and Sport ») is intended for students enrolled in the educational program 33.05.01 Pharmacy. Discipline is implemented in 1,2,3 courses, 2,3,4,5,6 semesters. Total complexity of the discipline "Physical training"(«Elective Courses in Physical Training and Sport») is 328 academic hours.

The discipline "Physical training"(«Elective Courses in Physical Training and Sport») refers to the choice disciplines of the variable part of the curriculum. The course is a continuation of the discipline " Physical Training and Sport"

The purpose of the discipline is the formation of the physical culture of the individual, the formation of the ability of the directed use of various means of physical culture and sports to preserve and promote health, psychophysical training and self-preparation for future professional activities.

Tasks of the discipline:

- formation of physical culture of the personality of the future professional who is in demand in the modern labor market;
- development of physical qualities and abilities, improvement of the functional capabilities of the body, strengthening individual health;
- enrichment of individual experience in practicing specially-applied physical exercises and basic sports
- mastering the system of professional and vital practical skills;
- mastering the system of knowledge about physical education, their role in the formation of a healthy lifestyle;
- mastering the skills of creative cooperation in collective forms of exercise.

To study the discipline "Physical training"(«Elective Courses in Physical Training and Sport») successfully, the following preliminary competences should be formed:

- the ability to use a variety of means of physical activity in individual physical education classes, focused on improving body efficiency, preventing diseases;
- presence of interest and habits to practice physical culture and sports systematically;
- knowledge of the system of personal and public hygiene, knowledge of the rules of regulation of physical activity.

As a result of studying this discipline, the following general cultural competencies are formed.

Competence code and formulation	Stages of forming the competence	
UC-7.1 Understands the role of physical culture and	Knows	Knows the importance of the role of physical culture and sports in modern society, in human life, preparing him for social and professional activities, the importance
	Can	Able to organize independent physical education classes

<p>sports in modern society, in human life, preparing him for social and professional activities, the importance of physical culture and sports activity in the structure of a healthy lifestyle and the features of planning an optimal motor regimen, taking into account the conditions of future professional activity</p>	<p>Possesses</p>	<p>Possesses the skills of planning the motor mode, taking into account professional activities</p>
<p>UC-7.2 Uses self-control methodology to determine the level of health and physical fitness in accordance with the regulatory requirements and conditions of future professional activity</p>	<p>Knows</p>	<p>Knows the means and methods of self-control to determine the level of health and physical fitness</p>
	<p>Can</p>	<p>Able to apply the basic methods of self-control in the process of physical education and sports</p>
	<p>Possesses</p>	<p>Has the ability to determine the state of health, the level of development of physical qualities and motor skills</p>
<p>UC-7.3 Maintains the proper level of physical fitness to ensure full-fledged social and professional activities, regularly engaging in physical exercises</p>	<p>Knows</p>	<p>Knows the main provisions of the theory and methodology of physical culture and sports</p>
	<p>Can</p>	<p>Able to ensure the preservation and strengthening of individual health with the help of basic motor actions and basic sports</p>
	<p>Possesses</p>	<p>Owens the technologies of planning physical improvement and methods of practicing various types of motor activity</p>

Aromatherapy

The total labor intensity of the discipline is 2 credits

108 academic hours. It is a discipline formed by the participants in the educational relations of a part of the EP, it is studied in the 2nd year of the fourth semester and ends with an exam. The curriculum provides for lectures in the amount of 4 hours, practical classes - 4 hours, as well as allocated hours for independent work of the student - 100 hours.

Implementation language: English

Brief annotation of the discipline:

Today, more than 3000 species of plants are known that contain essential oils. The effect of fragrances on the human soul and body has been known for a long time. According to the generally accepted version, people learned to isolate fragrant substances from plants about 7000 years ago.

Most of the known essential oils and their components have a high biological activity - bactericidal, antiseptic, anti-inflammatory, antioxidant, antitumor effect, increase the body's resistance, have a positive effect on the nervous system, have a beneficial effect on the emotional and mental health of a person, etc. All this leads to their widespread use in phytoergonomics - a new direction of science that combines various knowledge on the use of plants to maintain and restore human performance, in particular aromatherapy.

Aromatherapy is the oldest science of using essential oils in cosmetology, therapy, psychology, perfumery, eroticism, as well as in spiritual practices and religious rites. Quite often, this science is called art, since aromas always cause a cascade of sincere emotions, provide a revision and restoration of impeccable order in the subconscious, where a person tends to sloppily dump information about significant life events. Essential oils are multicomponent mixtures of volatile organic compounds (aromatic hydrocarbons), mainly terpenes and terpenoids, produced by the plant (roots, wood, leaves, shoots, inflorescences, petals) and causing their fragrance. However, you should know that a number of natural aromatic essences have a pronounced toxic, hallucinogenic, cardiotoxic effect (for example, essential oil of wormwood, belladonna, yarrow, lily of the valley, thuja, tansy) and are never used for aromatherapy.

The course of lectures will give students a general idea of the formation of aroma in plants, the physiological characteristics of the olfactory organs in humans and animals, methods for measuring the "strength" and structure of aroma and the ability to influence it with the help of chemical means. After the course of lectures, students will be able to put into practice essential oils or their combinations to improve psychological health, increase the emotional background and treat various diseases.

The purpose of mastering the discipline: "Aromatherapy" consists in the formation of students' systemic knowledge in the field of obtaining and using essential oils from medicinal and promising plants, as well as the conditions of pharmacological use as therapeutic and prophylactic agents in order to develop professional thinking for solving problems in pharmaceutical development, standardization and cosmetic, medical use. Based on the study of the discipline, the specialist prepares for the following types of professional activity:

1. Production activities.
2. Research and outreach activities.

Objectives of the discipline:

- acquaintance with the history of aromatherapy, the physiological effect of aromatherapy, indications and contraindications for the use of aromatic agents.
- acquisition by students of knowledge about the variety of medicinal plants-sources of aromatic substances;
- study of aromatherapy technologies, which is one of the elements of cosmetology and pharmaceutical technology.
- formation of skills to obtain aromatic oils;
- formation of students' skills and abilities for the standardization of aromatic substances;
- mastering the technique of aromatherapy, the study and application of Spa-procedures
- acquisition of skills in working with e-firm and oils and with the use of applications in modern medicine.

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (the result of mastering)	Code and name of the competency achievement indicator
Expert-analytical	PC-8 Able to participate in monitoring the quality, efficacy and safety of medicines and medicinal plant raw materials	PC-8.4 Conducts pharmacognostic analysis of medicinal plant raw materials and medicinal herbal preparations

Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
PC-8.4	Knows the theoretical foundations of pharmacognostic analysis of medicinal plant raw materials and medicinal herbal preparations
	Able to conduct pharmacognostic analysis of medicinal plant raw materials and medicinal herbal preparations
	He is proficient in the method of pharmacognostic analysis of medicinal plant raw materials and medicinal herbal preparations

Pharmaceutical Consulting

The total labor intensity of the discipline is 7 credits / 252 academic hours. It is a discipline of Block B1. B.02 of the EP part, studied in the 5th year and ends with an exam. The curriculum provides for lectures in the amount of 12 hours, practical 18 hours, and also allocated hours for independent work of the student - 222 hours, of which 27 hours are for preparation for the exam.

Language: English

Objective: mastering the discipline is: to teach the future pharmacist the methodology for choosing the most effective and safe drugs or their combinations for the information of doctors based on the knowledge of pharmacodynamics, pharmacokinetics, pharmacogenetics, pharmacoepidemiology, pharmacoconomics, drug interactions, adverse drug reactions, principles of evidence-based medicine. Methods for monitoring the efficacy and safety of drugs, control and analytical methods in specialized laboratories. Correct analogue substitution of medications. Competently conduct pharmaceutical counseling of patients based on the doctor's recommendations. To teach the ethical aspects of the "doctor-patient-pharmacist" relationship in pharmacotherapy, the culture of behavior of a pharmacist in the treatment process, legal and ethical issues of testing new drugs.

Tasks:

- Teaching students methods of monitoring the efficacy and safety of pharmacotherapy (to determine adequate clinical, laboratory, functional parameters of drug therapy and the simplest, accessible and informative methods for assessing the efficacy and safety of therapy)

- Training students in the preparation of medical and pharmaceutical documentation (documentation of the established form for the storage, registration and release of medicines from the pharmacy), compilation of a formulary list of synonymous and analogue replacement of medicines.

- Formation of students' skills in pharmaceutical counseling of patients and doctors for individualized, controlled, safe and effective pharmacotherapy.

- Formation of skills necessary to solve certain research and applied problems in the field of clinical pharmacology using knowledge of the basic requirements of information security.

- Formation of students' skills of communication with the team, partners, patients or their relatives visiting the pharmacy, taking into account ethics and deontology.

- Acquisition by students of knowledge and skills of quick use of official electronic and other information resources in order to obtain prompt and up-to-date information on the availability of a drug in the pharmaceutical market of Russia and the region, as well

as information on instructions for the use of medicines, prices of a drug in the pharmaceutical market of Russia and the region.

- Teaching students the theoretical foundations and possibilities of using non-verbal communication and managing emotional verbal communication in order to provide personalized medicines to patients.

- Teaching students methods of forming speech and behavioral modules and in order to provide personalized medicines to patients.

- Teaching students the basic principles of merchandising in the design of a pharmacy;

- Teaching students the types of services provided in a pharmacy organization;

- Training students in the legal foundations of consulting and informing consumers of pharmaceutical services;

- Teaching students the basics of professional and business communication

Professional Competencies of Students, Indicators of Their Achievement and Learning Outcomes in the Discipline

Task type	Code and name of professional competence (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
pharmaceutical	PC-6.2 Sells and dispenses medicines for medical use and other pharmacy products to individuals, as well as releases them to the subdivisions of medical organizations, monitoring compliance with the procedure for dispensing medicines for medical use and other pharmacy products with pharmaceutical consulting and provision of pharmaceutical information		Knows the procedure for dispensing pharmaceuticals for medical use and other pharmacy products.
			Is able to evaluate pharmaceuticals and pharmacy products in terms of appearance, packaging, and labeling. Maintain cash documents.
			Possesses the ability to carry out accounting and release of medicines and other pharmacy products in pharmacy organizations in accordance with the established requirements.

<p>PP-7.1 Provides information and consulting assistance to visitors of the pharmacy organization in the selection of medicines and other pharmacy products, as well as on their rational use, taking into account the biopharmaceutical features of dosage forms</p>		<p>Know the sources of information used in the compilation of formulary lists and reference books, regulatory documents on advertising and information about medicines, the importance of information in the professional activity of a pharmacist, the algorithm for studying the patient's quality of life, the principles of the 6th drug rational use of medicines, the concept of "meta-analysis", the levels of evidence of clinical trials.</p> <p>Be able to inform the population, medical and pharmaceutical workers about medicines, their analogues and substitutes.</p> <p>Know how to determine the information needs of consumers of medicines, provide information and consulting services.</p>
<p>PC-7.3 Makes a decision on the replacement of the prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure on the basis of information on groups of medicinal products and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical characteristics of dosage forms</p>		<p>Knows the international nonproprietary names of medicines and their corresponding trade names; - information about the manufacturer of medicines and pharmacy products; - therapeutic and pharmacological properties of medicines, methods of administration, dosage, indications and contraindications for the use of medicines; - the principle of interchangeability of medicines; - rules for storage and destruction of medicines; - Measures to prevent drug overdose.</p> <p>Is able to control compliance with the procedure for dispensing medicines for medical use and other pharmacy products; - keep records on the movement of tangible and financial assets; - calculate prices for medicines and pharmacy products in accordance with the requirements of current regulatory legal acts; - to provide pharmaceutical advice to visitors of a pharmacy organization and medical workers of medical institutions; - prevent, eliminate conflict situations in the sale or sale of medicines and pharmacy products.</p> <p>Proficient in pharmaceutical consulting of a pharmacy visitor in</p>

			<p>terms of choosing an over-the-counter drug and pharmacy products; - pharmaceutical consulting of the pharmacy visitor in terms of the rational use of medicines and pharmacy products; - pharmaceutical consulting of the pharmacy visitor in terms of his/her therapeutic, pharmacological and pharmaceutical features:</p> <ul style="list-style-type: none">- pharmaceutical consulting of the pharmacy visitor in terms of interchangeability of medicines; -pharmaceutical informing of the pharmacy visitor in terms of preferential drug provision; -pharmaceutical informing of the pharmacy visitor in terms of state registration or cancellation of the state registration of the medicinal product; -pharmaceutical informing of the pharmacy visitor in terms of preferential drug provision; -pharmaceutical informing of the pharmacy visitor in terms of the procedure for contacting the supervisory authorities with reports of adverse side effects when taking medicines in circulation.
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Marketing and Merchandising

The discipline "Marketing and Merchandising" is one of the variable training courses and provides the study of the theoretical foundations of merchandising in the activities of commercial enterprises. The study of the discipline "Marketing and Merchandising" introduces students to the basic provisions of merchandising. Within the framework of this discipline, merchandising is considered, first of all, as a field of marketing. In the process of studying the discipline "Marketing and Merchandising", students should have an understanding of the importance of merchandising as a field of activity, its role in the development of trade and the market, and the application of merchandising methods in practice. And also to have an idea of the possibilities of analyzing the results of the use of merchandising tools in the activities of enterprises.

The total labor intensity of the discipline is 5 credits / 180 academic hours. It is a discipline of the compulsory part of the EP, it is studied in the 4th year, in the seventh semester it ends with a test, in the eighth semester it ends with an exam. The curriculum provides for lectures in the amount of 20 hours, practical 36 hours, and also allocated hours for independent work of the student - 124 hours, of which 27 hours. to prepare for the exam.

Implementation language: English

Purpose:

The purpose of mastering the discipline is to form a clear idea of merchandising among students as a set of activities carried out on the trading floor and aimed at promoting a particular product, brand or packaging

Tasks:

The objectives of the course include:

- to form a holistic view of merchandising as a discipline with the possibility of practical application in the activities of a store or trading floor;
- to acquaint students in detail with the principles and methods of merchandising, the main directions of product promotion, the goals and methods of research in this area, with the principles of developing a special approach to the sale of goods;
- to equip students with deep and specific knowledge in the field of the store's sales policy in order to use them in the practical activities of the organization;
- provide practical skills for the use of merchandising in the activities of the company both as managers, marketers, and as an entrepreneur in business.
- Development of communication skills through the introduction of new terms and concepts through the use of modern digital technologies, as well as the participation of students in interactive methods of mastering educational material.

For the successful study of the discipline, students must have the following preliminary competencies: PC-6.5; PC-10.1; PC-10.2; PC-2.2, obtained as a result of

studying the disciplines "Introduction to Pharmacy, History of Pharmacy", the student must be ready to study such disciplines such as "Pharmaceutical Consulting", "Management and Economics of Pharmacy", forming competencies and UK-6.2; UK-6.3; UK-6.4; UK-9.1; UK-9.2; PC-6.1; PC-6.2; PC-6.3; PC-6.4; PC-6.5; PC-3.1; PC-3.2; PC-9.1; PC-9.2; PC-9.3; PC-9.4; PC-9.5; PC-9.6 ; PC-9.7.

Competencies of students, indicators of their achievement and learning outcomes in the discipline

Name of the category (group) Competencies	Code and name competencies (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
manufacturing	PC-2 Able to take part in the selection, justification of the optimal technological process and its implementation in the production of medicines for medical use	PC-2.2 Carries out the conduct of the technological process in the industrial production of medicines	Knows the theoretical foundations of the technological process in the industrial production of medicines Knows how to carry out the technological process in the industrial production of medicines Possesses the skills of conducting the technological process in the industrial production of medicines
pharmaceutical	PC-6 Able to solve the problems of professional activity in the implementation of the release and sale of medicines and other pharmacy products through pharmaceutical and medical organizations	PC-6.5 Carries out pre-sale preparation, organizes and conducts the display of medicines and pharmacy assortment in the trading floor and (or) showcases of the departments of the pharmacy organization	Knows the theoretical foundations of pre-sale preparation, organizes and conducts the display of medicines and pharmacy assortment goods in the trading floor and (or) showcases of the departments of the pharmacy organization Knows how to carry out pre-sale preparation, organizes and conducts the display of medicines and pharmacy assortment goods in the trading floor and (or) showcases of the departments of the pharmacy organization Possesses the skills of pre-sale preparation, organizes and conducts the display of medicines and goods of the pharmacy assortment in the trading floor and (or) showcases of the departments of the pharmacy organization
organizational and managerial	PC-10 Able to organize and manage the pharmaceutical activities of a pharmaceutical organization	PC-10.1. Able to plan the activities of a pharmaceutical organization	Knows the activities of a pharmaceutical organization Knows how to plan the activities of a pharmaceutical organization Possesses the skills to plan the activities of a pharmaceutical organization

		PC-10.2. Organizes the work of a person of a pharmaceutical organization	Knows the work of the staff of a pharmaceutical organization Knows how to organize the work of the staff of a pharmaceutical organization Possesses the skills of organizing the work of the personnel of a pharmaceutical organization
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For the formation of the above competencies within the discipline

"Marketing and merchandising" uses the following educational technologies and methods of active/interactive learning: business game, work in small groups, round table, field trips to pharmacy organizations and training centers for training.

Medical and Pharmaceutical Biotechnology

The total labor intensity of the discipline is 3 credits / 108 academic hours. It is a discipline of the compulsory part of the EP, it is studied in the 4th year and ends with an test. The curriculum provides for lectures in the amount of 18 hours. , practical 36 hours. , laboratory 18 hours. , as well as allocated hours for independent work of the student - 36 hours.

Implementation language: English.

Purpose: the formation and development of general professional and professional competencies necessary for professional activities in the field of pharmaceutical biotechnology for the production of drug substances, as well as preventive and diagnostic tools by biotechnological methods of synthesis and transformation, as well as a combination of biological and chemical methods.

Tasks:

1) study of technological modes of cultivation of microorganisms-producers, cultures of tissues and cells of plants and animals for the production of biomass, its components, metabolic products, directed biosynthesis of biologically active compounds and other products, the study of their composition and methods of analysis, technical and economic evaluation criteria, the creation of effective compositions of biological products and the development of methods for their application;

2) study of processes and apparatus of microbiological synthesis, including physicochemical kinetics, hydrodynamics, mass and heat transfer in fermentation apparatus, thickening of biomass, separation of cell suspensions, drying, granulation, extraction, isolation, fractionation, purification, control and storage of final target products;

3) mastering the methods and means of developing new technological processes based on microbiological synthesis, biotransformation, biocatalysis, immunosorption, biodestruction, biooxidation, the creation of closed technological schemes of microbiological production, the latter, taking into account environmental issues;

4) mastering the methods and means of developing scientific and methodological foundations for the use of standard biosystems at the molecular, cellular, tissue and organismic levels in scientific research, quality control and safety assessment of the use of medical and veterinary biological products (biological (including immunobiological) active pharmaceutical ingredients and medicines for medical use);

5) teaching students the ability to correctly assess the compliance of biotechnological production with the rules of Good Manufacturing Practice (GMP), environmental safety requirements in relation to biological objects and target products used in production.

For the successful study of the discipline, students must have the following preliminary competencies:

- uses basic physicochemical and chemical methods of analysis for the development,

research and examination of medicines, medicinal plant raw materials and biological objects;

- uses the main methods of physicochemical analysis in the manufacture of medicines;

- and analyzes the pharmacokinetics and pharmacodynamics of the drug based on knowledge of morphofunctional features, physiological conditions and pathological processes in the human body; o explains the main and side effects of drugs, the effects of their combined use and interaction with food, taking into account morphological and functional features, physiological conditions and pathological processes in the human body,

Competencies obtained as a result of studying the disciplines of organic chemistry, biochemistry, microbiology, immunology, the student must be ready to study such disciplines as pharmaceutical chemistry, management and economics of pharmacy, linear pharmacology, pharmaceutical technology, forming competencies:

- with the help to manufacture medicines and take part in the technology of production of finished medicines;

- with the opportunity to take part in the selection, justification of the optimal technological process and its implementation in the production of medicines for medical use;

- Be able to participate in research to assess the efficacy and safety of medicines.

Competencies of students, indicators of their achievement and learning outcomes in the discipline:

Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
PC-2.1 Develops technological documentation for the industrial production of medicines	Knows: –the specifics of the production of biological (including immunobiological) active pharmaceutical ingredients and medicines for medical use, determined by the nature of the product and production technology; –methodological materials on technological preparation of production; –licensing requirements for the production of medicines; –the main regulatory documents related to the production, quality control, environmental safety, storage of biotechnological means obtained by biotechnological methods, as well as to biological objects and their producers
	Can: –use new methods and techniques in the development, production and circulation of biological (including immunobiological) active pharmaceutical ingredients and medicines for medical use; –make adjustments to the draft action plans submitted for approval to accelerate the development of advanced technological solutions in the production processes of medicines obtained by biotechnological methods
	Owns:

Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
	<ul style="list-style-type: none"> –skills of practical work with regulatory documentation, laboratory, pilot regulations, etc.; –skills in taking measures to accelerate the development of advanced biotechnological processes in production; –skills in the introduction of new methods and techniques in the field of development, production and circulation of biological (including immunobiological) active pharmaceutical ingredients and medicines for medical use; –skills in implementing proposals to improve technologies for the production of new medicines obtained by biotechnological methods
<p>PC-2.2 Carries out the conduct of the technological process in the industrial production of medicines</p>	<p>Knows:</p> <ul style="list-style-type: none"> –the main producers and methods of obtaining biotechnological medicinal substances, their physical, chemical and pharmacological properties; –biotechnological processes in the production and resources of natural biocenoses as sources of biologically active substances (BAS); –modern achievements of biological sciences and biomedical technologies for the manufacture of biological (including immunobiological) active pharmaceutical ingredients and medicines for medical use; –methods of optimization of biotechnological processes associated with the production of medicines; –Prospects for the technical development of a pharmaceutical organization. <p>Can:</p> <ul style="list-style-type: none"> –carry out biotechnological processes for the production and manufacture of medicines; –obtain finished dosage forms from medicines of biotechnological origin; –carry out the isolation and purification of biologically active substances from biomass and culture liquid; –regulate and improve the biotechnological process in order to obtain a high-quality final product <p>Owns:</p> <ul style="list-style-type: none"> –the ability to develop and maintain the technological process in the industrial production of biological (including immunobiological) active pharmaceutical ingredients and medicines for medical use; –the ability to carry out technological processes in the production and manufacture of medicines and biological (including immunobiological) active pharmaceutical ingredients and medicines for medical use
<p>PC-2.3 Carries out control of the technological process in the industrial production of medicines</p>	<p>Knows:</p> <ul style="list-style-type: none"> –the main regulatory documents related to the production, quality control, compliance with environmental safety, storage of biotechnological means obtained by biotechnological methods, as well as to biological objects - their producers; –methods for determining the benignity of microorganisms-producers, determining the concentration of viable cells and their enzymatic activity;

Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
	<ul style="list-style-type: none"> –requirements for the production, standardization, quality control and compliance with the environmental safety of medicines obtained by biotechnological methods; –analytical methods and methods of visual control of the technological process of production of biological (including immunobiological) active pharmaceutical ingredients and medicines for medical use <p>Can:</p> <ul style="list-style-type: none"> –develop and evaluate regulatory and recording documentation related to technological processes; –carry out step-by-step control and standardization of the resulting drugs (determination of the antimicrobial activity of antibiotics, the activity of enzyme preparations, the viability of microorganisms; –ensure compliance with industrial hygiene, environmental protection, occupational health and safety; –choose the optimal storage conditions for therapeutic and diagnostic drugs and evaluate their quality during long-term storage <p>Owns:</p> <ul style="list-style-type: none"> –control requirements under the Rules of Good Manufacturing Practice of the Eurasian Economic Union.

For the formation of the above competencies within the discipline "Biotechnology" uses the following educational technologies and methods of active/interactive learning: business game, work in small groups, round table.

Pharmaceutical Technology

The total labor intensity of the discipline is 16 credits / 576 academic hours. It is a discipline of the part formed by the participants in the educational relations of the EP, is studied in the 3rd-5th year and ends with an exam. The curriculum provides for lectures in the amount of 40 hours. , practical 144 hours. , as well as allocated hours for independent work of the student - 428 hours, of which 54 hours. to prepare for the exam.

Implementation language: English

Purpose: formation of system knowledge, skills, professional competencies in the development and manufacture of medicines in various dosage forms.

Tasks:

- ✓ The study of the theoretical foundations and the acquisition of professional skills and abilities in the preparation of various dosage forms and preparations;
- ✓ Study of the main trends in the development of pharmaceutical technology, new directions in the creation of modern dosage forms and therapeutic systems;
- ✓ Study of the organization of the process of manufacturing medicines in pharmacies and industrial enterprises in accordance with approved regulatory documents
- ✓ To teach students to carry out step-by-step control of the production of medicines, their standardization and biopharmaceutical evaluation.
- ✓ To teach students to make the choice of optimal excipients, a rational way to obtain a drug, technology and equipment.

For the successful study of the discipline, students must have the following preliminary competencies: OPK-1.2; OPK-1.3, OPK-2.1; OPK-2.2; PC-7.3; PC-1.1; PC-1.2; PC-1.3, PC-4.1; PC-4.2; PC-4.3; PC-8.1; PC-8.2; PC-8.3; PC-8.5 obtained as a result of studying the disciplines "Analytical Chemistry", "Pharmaceutical Chemistry", "Pharmacology", the student must be ready to study such disciplines as "Pharmaceutical development" "Standardization of medicinal plant raw materials and preparations", forming the competencies of UK-2.1; UK-2.2; UK-2.3; UK-3.1; UK-3.2; UK-10.1; UK-10.2; UK-10.3 PC-8.1.

Competencies of students, indicators of their achievement and learning outcomes in the discipline

Name of the category (group) Competencies	Code and name competencies (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
Research & Development	PC-1 Able to participate in research to assess the efficacy and safety of medicines	PC -1.3 Conducts a study of the bioavailability of substances on various models in vitro and in vivo	Knows the theoretical foundations of studying the bioavailability of substances in various models in vitro and in vivo Able to study the bioavailability of substances in various models in vitro and in vivo Possesses the skills to study the bioavailability of substances on

			various models in vitro and in vivo
manufacturing	PC-2 Able to take part in the selection, justification of the optimal technological process and its implementation in the production of medicines for medical use	PC-2.1 Develops technological documentation for the industrial production of medicines	Knows the theoretical foundations of the development of technological documentation in the industrial production of medicines Knows how to develop technological documentation in the industrial production of medicines Possesses the skills of developing technological documentation in the industrial production of medicines

		PC-2.2 Carries out the conduct of the technological process in the industrial production of medicines	Knows the theoretical foundations of the technological process in the industrial production of medicines Knows how to carry out the technological process in the industrial production of medicines Possesses the skills of conducting the technological process in the industrial production of medicines
		PC-2.3 Carries out control of the technological process in the industrial production of medicines	Knows the theoretical foundations of process control in the industrial production of medicines Able to control the technological process in the industrial production of medicines Possesses the skills to control the technological process in the industrial production of medicines
pharmaceutical	PC-5 Capable of manufacturing medicines and taking part in the technology of production of finished medicines	PC-5.1 Carries out activities to prepare the workplace, technological equipment, medicines and excipients for the manufacture of medicines in accordance with recipes and (or) requirements	Knows the theoretical foundations of the preparation of the workplace, technological equipment, medicines and excipients for the manufacture of medicines in accordance with recipes and (or) requirements Knows how to carry out activities to prepare the workplace, technological equipment, medicines and excipients for the manufacture of medicines in accordance with recipes and (or) requirements Possesses the skills of preparing the workplace, technological equipment, medicines and excipients for the manufacture of medicines in accordance with recipes and (or) requirements
		PC-5.2 Manufactures medicines, including carrying out intra-pharmacy procurement and serial production, in accordance with established rules and taking into account the compatibility of drugs and excipients, controlling	Knows the theoretical foundations of the manufacture of medicines, including carrying out intra-pharmacy procurement and serial production, in accordance with the established rules and taking into account the compatibility of drugs and excipients, controlling quality at all stages

		<p>quality at all stages of the technological process</p>	<p>of the technological process Able to manufacture medicines, including carrying out intra-pharmacy procurement and serial production, in accordance with the established rules and taking into account the compatibility of drugs and excipients, controlling quality at all stages of the technological process Possesses the skills of manufacturing medicines, including carrying out intra-pharmacy procurement and serial production, in accordance with the established rules and taking into account the compatibility of drugs and excipients, controlling quality at all stages of the technological process</p>
		<p>PC-5.3 Packs, labels and (or) prepares manufactured medicines for dispensing</p>	<p>Knows the theoretical foundations of packaging, labeling and (or) registration of manufactured medicines for release Knows how to package, label and (or) issue manufactured medicines for release Possesses the skills of packaging, labeling and (or) registration of manufactured medicines for dispensing</p>
		<p>PC-5.4 Registers data on the manufacture of medicines in accordance with the established procedure, including keeping subject-quantitative records of groups of medicines and other substances subject to such accounting</p>	<p>Knows the theoretical foundations of registration of data on the manufacture of medicines in accordance with the established procedure, including keeping subject-quantitative records of groups of medicines and other substances subject to such accounting Is able to register data on the manufacture of medicines in accordance with the established procedure, including keeping subject-quantitative records of groups of medicines and other substances subject to such accounting Possesses the skills of registering data on the manufacture of medicines in accordance with the established procedure, including keeping subject-quantitative records of groups of medicines and other</p>

			substances subject to such accounting
		PC - 5.5 Manufactures medicines, including serial production, in the field when providing assistance to the population in emergency situations	<p>Knows the theoretical foundations of the manufacture of medicines, including serial production, in the field when providing assistance to the population in emergency situations</p> <p>Able to manufacture medicines, including serial production, in the field when providing assistance to the population in emergency situations</p> <p>Possesses the skills of manufacturing medicines, including serial production, in the field when providing assistance to the population in emergency situations</p>
		PC - 5.6 Carries out the selection of excipients of dosage forms, taking into account the influence of biopharmaceutical factors	<p>Knows the theoretical foundations of the selection of excipients of dosage forms, taking into account the influence of biopharmaceutical factors</p> <p>Able to carry out the selection of excipients of dosage forms, taking into account the influence of biopharmaceutical factors</p> <p>Possesses the skills of selecting excipients of dosage forms, taking into account the influence of biopharmaceutical factors</p>

For the formation of the above competencies within the framework of the discipline "Pharmaceutical Technology", the following educational technologies and methods of active / interactive learning are used: work in small groups, discussion, problem method, experimental practical exercises.

Clinical Pharmacology

The discipline "Clinical pharmacology" is designed for students studying on the educational program of higher education 33.05.01 Pharmacy, implemented on the 4th year in the 8 semester. The total educational requirement of the discipline is 144 hours, 4 credit units

The goals: development of competencies in clinical pharmacology, skills and skills in selection of rational pharmacotherapy taking into account knowledge of pharmacodynamics, pharmacokinetics, interaction of drugs, undesirable drug reactions and principles of evidence-based medicine for effective, safe and rational pharmacotherapy.

Discipline objectives:

- formation of knowledge on the main issues of clinical pharmacology (pharmacodynamics, pharmacokinetics, pharmacogenetics, drug interactions, undesirable drug reactions, pharmacoeconomics, pharmacoepidemiology);

- formation of ideas about sections of clinical pharmacology that regulate rational choice of drugs: evaluation of effectiveness and safety, drug form, pharmacoeconomics, pharmacoepidemiology;

- to consolidate knowledge in the field of general and private clinical pharmacology in the light of the latest achievements of basic and clinical medicine, as well as pharmacotherapy from the perspective of evidence-based medicine;

- to form the concept of the use of various groups of drugs for diseases of internal organs and emergency conditions; their change in case of malfunction of various organs and systems; interactions with other drugs; undesirable drug reactions; indications and contraindications to the use of drugs; results of meaningful randomized controlled drug trials;

- developing skills to study scientific literature and official statistical reviews;

- knowledge of the basis of legislation in the field of drug circulation.

To successfully study the discipline of "Clinical Pharmacology," trainees should have the following preliminary competencies:

- knowledge of basic knowledge in anatomy, physiology, physics, chemistry

- knowledge of the etiology, pathogenesis and clinic of socially significant diseases

- obeying ethics and deontology in communication with patients

For the successful study of the discipline, students must have the following preliminary competencies: UK-2.1, UK-2.2, UK-2.3, UK-3.1, UK-3.2, UK-3.3, UK-5.1, UK-5.2, UK-5.3, UK-5.4, UK-5.5., OPK-1.1, OPK-1.2, OPK-1.3, OPK-1.4, OPK-2.1, OPK-2.2, OPK-2.3, OPK-4.1, OPK-4.2, PC-1.4, PC-1.6, PC-1.7, PC-4.1, PC-4.2, PC-4.3, obtained as a result of studying disciplines: B1. O.13 History of

pharmacy, B1. O.16 Physiology with the basics of anatomy, B1. O.17 Microbiology, B1. O.18 Pathology, B1. O.19 Biochemistry, B1. O.20 Pharmacology, B1. O.25 Toxicological chemistry, B1. V.03 Pharmaceutical counseling, the student must be ready to study such disciplines as B1. B.07 Clinical pharmacology, forming competencies PC-1.1, PC-1.2, PC-1.3, PC-1.5, PC-7.1, PC-7.2, PC-7.3.

Competencies of students, indicators of their achievement and learning outcomes in the discipline

Type of tasks of professional activity:	Code and name of professional competence	Code and name of the indicator for achieving universal competence
Research & Development	PC-1. Able to participate in research to assess the efficacy and safety of medicines	PC-1.1. Conducts a study of pharmacological activity and other types of activity of various compounds in laboratory animals
		PC-1.2. Determines the pharmacokinetic parameters of substances in laboratory animals
		PC-1.3. Conducts a study of the bioavailability of substances on various models in vitro and in vivo
		PC-1.5. Conducts the development of methods and the study of pharmacokinetics at the preclinical and clinical level
pharmaceutical	PC-7 Capable of providing pharmaceutical information and advice on the dispensing and sale of medicines for medical use and other pharmacy products	PC-7.1. Provides information and consulting assistance to visitors of the pharmacy organization in the selection of medicines and other goods of the pharmacy assortment, as well as on their rational use, taking into account the biopharmaceutical characteristics of dosage forms
		PC-7.2. Informs medical professionals about medicines, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical characteristics of dosage forms

		PC-7.3. Decides on the replacement of the prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure on the basis of information on groups of drugs and synonyms within one international nonproprietary name and prices for them, taking into account the biopharmaceutical characteristics of dosage forms
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Code and name of the indicator for achieving universal competence	Learning outcomes by disciplines (modules), practices
PC-1.1. Conducts a study of pharmacological activity and other types of activity of various compounds in laboratory animals	Knows the theoretical foundations of the study of pharmacological activity and other types of activity of various compounds in laboratory animals
	Able to study the pharmacological activity and other types of activity of various compounds in laboratory animals
	He is proficient in methods of studying pharmacological activity and other types of activity of various compounds on laboratory animals
PC-1.2. Determines the pharmacokinetic parameters of substances in laboratory animals	Knows the theoretical foundations for determining the pharmacokinetic parameters of substances in laboratory animals
	Able to determine the pharmacokinetic parameters of substances in laboratory animals
	He is proficient in methods for determining the pharmacokinetic parameters of substances in laboratory animals
PC-1.3. Conducts a study of the bioavailability of substances on various models in vitro and in vivo	Knows the theoretical foundations of studying the bioavailability of substances in various models in vitro and in vivo
	Able to study the bioavailability of substances in various models in vitro and in vivo
	He is proficient in methods of studying the bioavailability of substances on various models in vitro and in vivo
PC-1.5. Conducts the development of methods and the study of pharmacokinetics at the preclinical and clinical level	Knows the theoretical foundations of the development of methods and the study of pharmacokinetics at the preclinical and clinical level
	Able to carry out the development of methods and the study of pharmacokinetics at the preclinical and clinical level

	He is proficient in methods for the development of methods and the study of pharmacokinetics at the preclinical and clinical levels
PC-1.6 Uses knowledge in the field of medical genetics, immunology, epidemiology and therapeutics in conducting research in the field of evaluating the efficacy and safety of medicines	Knows the theoretical foundations of research in the field of assessing the efficacy and safety of medicines
	Able to use knowledge in the field of medical genetics, immunology, epidemiology and therapy to conduct research in the field of evaluating the efficacy and safety of drugs
	Owens methods of conducting research in the field of assessing the efficacy and safety of medicines
PC-7.1. Provides information and consulting assistance to visitors of the pharmacy organization in the selection of medicines and other goods of the pharmacy assortment, as well as on their rational use, taking into account the biopharmaceutical characteristics of dosage forms	Knows the theoretical foundations of information and consulting assistance to visitors of the pharmacy organization when choosing medicines and other products of the pharmacy assortment, as well as on their rational use, taking into account the biopharmaceutical characteristics of dosage forms
	Is able to provide information and consulting assistance to visitors of the pharmacy organization when choosing medicines and other goods of the pharmacy assortment, as well as on their rational use, taking into account the biopharmaceutical characteristics of dosage forms
	He is proficient in methods of information and consulting assistance to visitors of the pharmacy organization when choosing medicines and other goods of the pharmacy assortment, as well as on their rational use, taking into account the biopharmaceutical characteristics of dosage forms
PC-7.2. Informs medical professionals about medicines, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical characteristics of dosage forms	Knows the theoretical foundations of informing medical workers about drugs, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical characteristics of dosage forms
	Knows how to inform medical professionals about drugs, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical characteristics of dosage forms
	Owens methods of informing medical workers about drugs, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical characteristics of dosage forms

<p>PC-7.3. Decides on the replacement of the prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure on the basis of information on groups of drugs and synonyms within one international nonproprietary name and prices for them, taking into account the biopharmaceutical characteristics of dosage forms</p>	<p>Knows the theoretical basis for making a decision on replacing a prescribed drug with synonymous or similar drugs in the prescribed manner on the basis of information on groups of drugs and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical characteristics of dosage forms</p>
	<p>Is able to make a decision on the replacement of the prescribed drug with synonymous or similar drugs in accordance with the established procedure on the basis of information on groups of drugs and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical characteristics of dosage forms</p>
	<p>Possesses methods for making a decision on the replacement of a prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure based on information on groups of drugs and synonyms within one international nonproprietary name and prices for them, taking into account the biopharmaceutical characteristics of dosage forms</p>

Pharmaceutical Chemistry

The total labor intensity of the discipline is 16 credits / 576 academic hours. It is a discipline of the part of the EP, formed by participants in educational relations, is studied in 3-4 courses and ends with an exam. The curriculum provides for lectures in the amount of 48 hours, practical 144 hours, and also allocated hours for independent work of the student - 303 hours, of which 81 hours for preparing for the exam.

Implementation language: English

Purpose: formation of system knowledge, skills, professional competencies for the development and quality control of medicines in various dosage forms; familiarization of students with the methodology of creation, standardization, assessment of the quality and safety of medicines based on the general laws of chemical and biological sciences, their particular manifestations and the history of the use of drugs in accordance with the applied nature of pharmaceutical chemistry, to perform professional tasks of the pharmacist.

Tasks:

- to give an idea of the basic laws of the relationship between the structure, physicochemical, chemical and pharmacological properties of medicines, the methods of their production, methods of qualitative and quantitative analysis, bioavailability, prediction of possible transformations of drugs in the body and during storage;
- to give orientation in the properties and analysis of medicines in accordance with modern requirements for quality, features of production and prospects for the creation of effective and safe medicines;
- to present an integral system of theoretical foundations of pharmaceutical chemistry, to show the relationship of processes in the development of new and improvement, unification and validation of existing methods of quality control of medicines at the stages of development, production and consumption;
- Consider ways to implement the general principles of pharmaceutical chemistry:
 - in the creation of new medicinal substances;
 - when assessing the quality of medicines;
- teach how to organize and perform the analysis of medicines using modern chemical and physicochemical methods;
- formation of the ability to control the quality of medicines in accordance with legislative and regulatory documents;
- to form the skills and abilities necessary for the activities of the pharmacist

in the field of organization and conduct of quality control of medicines in accordance with the development prospects and in connection with the achievements of constantly developing fundamental physicochemical and biomedical sciences.

For the successful study of the discipline, students must have the following preliminary competencies: OPK-1, OPK-2, obtained as a result of studying the disciplines General and Inorganic Chemistry, Physical and Colloidal Chemistry, Analytical Chemistry, Organic Chemistry, Toxicological Chemistry, Pharmacognosy, Physics, Biochemistry, the student must be ready to study such disciplines as *Pharmaceutical Development*, *Pharmaceutical Technology*, *Management and Economics of Pharmacy*, *Fundamentals of Clinical Laboratory Diagnostics*, Forming the Competencies of UK-2, UK-10, PC-1, PC-2, PC-5, PC-6.

Competencies of students, indicators of their achievement and learning outcomes in the discipline

Name of the category (group) Competencies	Code and name competencies (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
Professional competence (control and permissive type of tasks)	PC-4 Able to take part in measures to ensure the quality of medicines in industrial production	PK-4.1 Conducts sampling at various stages of the technological cycle	Knows the theoretical foundations of sampling at various stages of the technological cycle Able to carry out sampling at various stages of the technological cycle Possesses the skills of sampling at various stages of the technological cycle
		PC-4.2 Develops regulatory documents to ensure the quality of medicines in industrial production	Knows the theoretical foundations of the development of regulatory documents to ensure the quality of medicines in industrial production Able to develop regulatory documents to ensure the quality of medicines in industrial production Possesses the skills to develop regulatory documents to ensure the quality of medicines in industrial production
		PC-4.3 Prepares reports on measures to ensure the quality of medicines in industrial production	Knows the theoretical foundations of reporting on measures to ensure the quality of medicines in industrial production Able to compile reports on measures to ensure the quality of medicines in industrial production Possesses the skills of compiling reports on measures to ensure the

			quality of medicines in industrial production
Professional competence (expert-analytical type of tasks)	PC-8 Able to participate in monitoring the quality, efficacy and safety of medicines and medicinal plant raw materials	PC-8.1 Conducts pharmaceutical analysis of pharmaceutical substances, excipients and medicines for medical use of factory production in accordance with quality standards	Knows the theoretical foundations of pharmaceutical analysis Able to conduct pharmaceutical analysis of pharmaceutical substances, excipients and medicines for medical use of factory production in accordance with quality standards Possesses the skills of pharmaceutical analysis
		PC-8.2 Supervises the preparation of reagents and titrated solutions	Knows the theoretical foundations of the preparation of reagents and titrated solutions Able to control the preparation of reagents and titrated solutions Possesses the skills to control the preparation of reagents and titrated solutions
		PC-8.3 Standardizes prepared titrated solutions	Knows the theoretical foundations of standardization Able to standardize prepared titrated solutions Possesses the skills of standardization of titrated solutions
		PC-8.5 Informs, in accordance with the procedure established by law, about the non-compliance of the medicinal product for medical use with the established requirements or about the discrepancy between the data on the efficacy and safety of the medicinal product and the data on the medicinal product contained in the instructions for its use	Knows the procedure established by law for informing about the non-compliance of the medicinal product Is able to inform about the non-compliance of the medicinal product for medical use with the established requirements or about the discrepancy between the data on the efficacy and safety of the medicinal product and the data on the medicinal product contained in the instructions for its use Possesses the skills of informing about the non-compliance of the medicinal product for medical use with the established requirements or about the discrepancy between the data on

			the efficacy and safety of the medicinal product and the data on the medicinal product contained in the instructions for its use
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For the formation of the above competencies within the framework of the discipline "Pharmaceutical Chemistry", the following educational technologies and methods of active / interactive learning are used: a business game, work in small groups, a round table, experimental practical classes.

Management and Economics of Pharmacy

The total labor intensity of the discipline is 13 credits / 468 academic hours. It is a discipline and, formed by participants in educational relations, is studied for 4-5 courses and ends with an exam. The curriculum provides for lectures in the amount of 36 hours, practical 108 hours, as well as allocated hours for independent work of the student - 324 hours (including 27 hours of exam preparation).

Implementation language: English

Purpose: to train specialists who are able to solve the problems of providing qualified, timely, affordable, high-quality pharmaceutical care and ensuring guarantees of the safety of the use of medicines.

Objectives:

- Formation of theoretical knowledge about the activities for the sale of medicines and other pharmaceutical products in accordance with applicable industry standards;
- Formation of theoretical knowledge about trade and procurement activities in order to ensure maximum profitability of enterprises through the effective use of market mechanisms;
- Formation of theoretical knowledge about the organization of correct and accurate operational accounting for the movement of goods and funds;
- Formation of knowledge on compliance with the requirements of regulatory documents on the rules for dispensing medicines;
- Formation of theoretical knowledge about organizational activities to provide medicines to citizens entitled to social assistance;
- Formation of theoretical knowledge about the organization and conduct of procurement of medicines and other pharmacy products to meet state and municipal needs;
- Formation of theoretical knowledge on the organization of the activities of organizations engaged in the field of circulation of medicines and the management of their structural divisions;
- In the development of students' skills in compiling current organizational and accounting documentation of departments of pharmaceutical enterprises and organization, including plans, estimates, applications for materials, equipment, instructions, as well as reporting on approved forms, using electronic resources;
- On training students to ensure measures for certification of workplaces, labor protection, prevention of industrial injuries, prevention of environmental violations;
- Teaching students to use the basic methods and means of obtaining, storing, processing information, obtaining information from various sources, using digital technologies, compliance with information security requirements;

- Teach the student to define the goals of the organization and develop plans to achieve them;

- Providing students with practical skills in organizing and monitoring the achievement of their goals;

- To teach the student to plan, control and organize the provision of pharmaceutical care to the population and health facilities;

- And raise questions about the history of pharmacy, management, marketing in pharmacy.

- Develop the student's communication skills through the use of digital technologies.

- To involve the student in interactive methods of mastering educational material.

Universal competencies of students, indicators of their achievement and learning outcomes in the discipline

Code and name of universal competence (result of mastering)	Code and name of the indicator for achieving universal competence	Name of the assessment indicator (the result of training in the discipline)
UK-6 Able to determine and implement the priorities of their own activities and ways to improve them on the basis of self-esteem and lifelong education	UK-6.2 Formulates the basic principles of self-organization and self-development; highlights the main stages of its educational activities;	Knows and formulates the goals of personal and professional development and the conditions for achieving them, based on individual and personal characteristics, life goals and the development of the social situation.
		Knows how to plan his work and personal time.
		Possesses the skills to assess their own resources and their limits (personal, situational, temporary), and optimally use them for the successful completion of the assigned task; Able to determine the priorities of their own activities and self-development and ways to improve them on the basis of self-esteem; plan independent activities in solving professional problems.
	UK-6.3 Plans your own time; defines strategic, tactical and operational tasks; creates a program of educational activities	Knows the technologies for acquiring, using and updating socio-cultural and professional knowledge, skills and abilities; methods of self-development and self-education
		Knows how to prioritize personal growth and ways to improve their own activities based on self-esteem; decision-making and their implementation in terms of professional and personal self-improvement

		Possesses the skills to manage their own time; technologies for the acquisition, use and updating of socio-cultural and professional knowledge, skills and abilities; methods of self-development and self-education
	UK-6.4 Designs the trajectory of personal and professional development	Knows the theoretical foundations of self-development, self-realization, self-improvement, as well as ways and methods of using one's own potential.
		Knows how to find an activity approach in the study of personal development; Self-assessment methods.
		Owens the basic techniques of effective management of your own time
UK-9 Able to make informed economic decisions in various areas of life	UK-9.1 Predicts the results of personal actions and plans a sequence of steps to achieve a given result of entrepreneurial activity	Knows the basic principles of the functioning of the economy and economic development, the goals and forms of state participation in the economy, methods of personal economic and financial planning , the main financial instruments used to manage personal finances
		Knows how to apply the principles of functioning of the economy and economic development; methods of personal economic and financial planning , the main financial instruments used to manage personal finances
		He is proficient in personal economic and financial planning methods , the main financial instruments used to manage personal finances
	UK-9.2 Applies basic economic knowledge to solve problems in various areas of life	Knows the theoretical basis for making informed economic decisions, apply economic knowledge in the performance of practical tasks.
		Able to analyze information to make informed economic decisions, apply economic knowledge in the performance of practical tasks.
		Owens methods of information analysis for making informed economic decisions, apply economic knowledge in the performance of practical tasks.

Professional competencies of students, indicators of their achievement and learning outcomes in the discipline

Task type	Code and name of professional competence (the result of mastering)	Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
pharmaceutical	PC-3 Able to carry out measures to control (supervise) the activities of legal entities and individuals licensed for pharmaceutical activities, to comply with mandatory requirements	PC-3.1 Conducts an examination of licensing documents for compliance with mandatory requirements and conditions for the implementation of pharmaceutical activities	Knows about the requirements for licensing documents for compliance with mandatory requirements and conditions for the implementation of pharmaceutical activities
		Knows how to conduct an examination of licensing documents for compliance with mandatory requirements and conditions for the implementation of pharmaceutical activities	
		Possesses the skills of conducting an examination of licensing documents for compliance with mandatory requirements and conditions for the implementation of pharmaceutical activities	
		PC-3.2 Participates in the examination of the compliance of facilities and employees with licensing requirements and conditions for the implementation of pharmaceutical activities	Knows about the examination of compliance of facilities and employees with licensing requirements and conditions for carrying out pharmaceutical activities
		Is able to conduct an examination of the compliance of facilities and employees with licensing requirements and conditions for the implementation of pharmaceutical activities	
		Possesses the skills of conducting an examination of the compliance of facilities and employees with licensing requirements and conditions for carrying out pharmaceutical activities	
	PC-6 Able to solve the problems of professional activity in the implementation of the release and sale of medicines and other pharmacy	PC-6.1 Conducts pharmaceutical examination of prescriptions and invoice requirements, as well as their registration and taxiing in accordance with the established	Knows the rules for conducting pharmaceutical examination of prescriptions, requirements.
			Knows how to conduct an examination, taxiing of recipes and requirements, for compliance with current regulatory documents.

products through pharmaceutical and medical organizations	procedure	Possesses knowledge of the provisions of regulatory documents governing prescriptions and requirements.
	PC-6.2 Sells and dispenses medicines for medical use and other pharmacy products to individuals, as well as dispenses them to the divisions of medical organizations, monitoring compliance with the procedure for dispensing medicines for medical use and other goods of the pharmacy assortment with pharmaceutical consulting and the provision of pharmaceutical information	Knows the procedure for dispensing drugs for medical use and other pharmacy products.
		Able to evaluate drugs and pharmacy products by appearance, packaging, labeling. Keep cash documents.
		Possesses the ability to carry out accounting and dispensing of drugs and other goods of the pharmacy assortment in pharmacy organizations in accordance with the established requirements.
	PC-6.3 Carries out office work on the maintenance of cash, organizational, administrative, reporting documents for retail sales	Knows the requirements for maintaining accounting documentation.
		Knows how to maintain cash, organizational, administrative, reporting documents.
		Owens modern information and communication technologies that provide pharmaceutical activities.
	PC-6.4 Carries out office work on the maintenance of organizational, administrative, payment reporting documents for wholesale sales	Knows the requirements for record keeping, organizational, administrative, payment reporting documents for wholesale sales
		Knows how to carry out office work on the maintenance of organizational, administrative, payment reporting documents for wholesale sales
		Possesses the skills of record keeping, organizational, administrative, payment reporting documents for wholesale sales
PC-6.5 Carries out pre-sale preparation, organizes and conducts the display of medicines and pharmacy assortment	Knows the criteria for conducting pharmaceutical examination of prescriptions and dispensing medicines to outpatients; Knows the criteria for pricing finished and extemporal medicines	

	goods in the trading floor and (or) showcases of the departments of the pharmacy organization	Knows how to conduct pre-sale preparation, organize and carry out the display of medicines and pharmacy assortment in the department of finished medicines and over-the-counter dispensing
		Possesses the skills in the sale and dispensing of medicines for medical use and other pharmacy products to individuals
PC-9 Able to participate in the planning and organization of resource provision of a pharmaceutical organization	PC-9.1 Determines the economic indicators of inventories of medicines and other goods of the pharmacy assortment	Knows the economic indicators of inventories of medicines and other pharmacy products
		Knows how to determine the economic indicators of inventories of medicines and other goods of the pharmacy assortment
		Possesses the skills to determine the economic indicators of inventories of medicines and other goods of the pharmacy assortment
	PC-9.2 Selects the best suppliers and organizes procurement processes based on the results of market research of suppliers of medicines for medical use and other pharmacy products	Knows how to choose the best suppliers and organizes procurement processes based on the results of market research of suppliers of medicines for medical use and other pharmacy products
		Knows how to select the best suppliers and organizes procurement processes based on the results of market research of suppliers of medicines for medical use and other pharmacy products
		Possesses the skills of choosing the best suppliers and organizes procurement processes based on the results of market research of suppliers of medicines for medical use and other pharmacy products
	PC-9.3 Supervises the execution of contracts for the supply of medicines for medical use and other goods of the pharmacy assortment	Knows the process of supplying medicines for medical use and other pharmacy products to the pharmacy organization.
		Able to control the execution of contracts for the supply of medicines for medical use and other pharmacy products
		Possesses the skills of control over the execution of contracts for the supply of medicines for medical use and other pharmacy products

	<p>PC-9.4 Conducts acceptance control of incoming medicines and other goods of the pharmacy assortment, checking and drawing up accompanying documents in accordance with the established procedure</p>	<p>He knows how the acceptance control of incoming medicines and other goods of the pharmacy assortment is carried out.</p> <p>Knows how to carry out acceptance control of incoming medicines and other goods of the pharmacy assortment, checks and draws up accompanying documents in accordance with the established procedure</p> <p>Possesses the skills of acceptance control of incoming medicines and other goods of the pharmacy assortment, checking and drawing up accompanying documents in accordance with the established procedure</p>
	<p>PC-9.5 Carries out the withdrawal from circulation of medicines and pharmacy products that have become unusable, expired, falsified, counterfeit and poor-quality products</p>	<p>Knows about the withdrawal from circulation of medicines and pharmacy products that have become unusable, expired, falsified, counterfeit and poor-quality products</p> <p>Knows how to withdraw from circulation medicines and pharmacy products that have become unusable, expired, falsified, counterfeit and poor-quality products</p> <p>Owens regulatory documentation on the withdrawal from circulation of medicines and pharmacy products that have become unusable, expired, falsified, counterfeit and poor-quality products</p>
	<p>PC-9.6 Carries out subject-quantitative accounting of medicines in accordance with the established procedure</p>	<p>Knows the requirements for maintaining subject-quantitative accounting of medicines</p> <p>Is able to carry out subject-quantitative accounting of medicines in accordance with the established procedure</p> <p>Possesses the skills of maintaining subject-quantitative accounting of medicines in accordance with the established procedure</p>
	<p>PC-9.7 Organizes control over the availability and storage conditions of medicines for medical use and other pharmacy</p>	<p>Knows the rules for storing medicines for medical use and other pharmacy products</p> <p>Knows how to monitor the availability and storage conditions of medicines for medical use and other</p>

		products	pharmacy products
			Owns the organization of control over the availability and storage conditions of medicines for medical use and other goods of the pharmacy assortment

Clinical Laboratory Diagnostics

Discipline Clinical Laboratory Diagnostics is included in the variable part of the curriculum discipline of choice, implemented on 4 year in the 8 semester. The total complexity of the discipline is 108 hours, 3 credits.

In the development of the working program of the discipline used the Federal state educational standard of higher education in the specialty 33.05.01 Pharmacy (level of training specialty).

The purpose is to form knowledge about the principles of laboratory diagnostics of pathological metabolic processes, detection and monitoring of various diseases, to apply the knowledge gained in solving clinical problems.

Objectives:

- * familiarization with the range of laboratory methods taking into account the organizational structure of health care institutions and the cost of research;

- * familiarization with the qualitative capabilities of modern laboratory studies, taking into account the sensitivity, specificity, acceptable variation of methods;

- * study of indications and contraindications to examinations;

- * establishment of continuity of outpatient, inpatient, preoperative laboratory examination;

- * analysis of possible causes of false results, distortions associated, including pharmacotherapy and improper preparation of the patient for the study (providing pre-analytical stage);

- * training in the rules of the pre-analytical stage. formation of skills of analytical work with information (educational, scientific, normative-reference and other sources).

Competencies of students, indicators of their achievement and learning outcomes in the discipline Fundamentals of Clinical Laboratory Diagnostics:

Name of the category (group) Competencies	Code and name Competencies (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
Scientific and research	PC-1 Able to take part in research in the field of assessment of the efficacy and safety of medicines	PC-1.1 Conducts studies of pharmacological activity and other activities of various compounds in laboratory animals	Knows about the peculiarities of the anatomy and physiology of laboratory animals, their maintenance, methods of testing various compounds depending on their physical and chemical properties Able to select the most optimal methods for research, evaluate and interpret the results obtained Proficient in methods of studying pharmacological activity

		PC-1.5 Conducts development of methods and pharmacokinetics research at the preclinical and clinical level	Knows about pharmacokinetic research methods, pharmacokinetic processes depending on age, sex, individual characteristics of the body, and dosage form Able to develop methods for studying pharmacokinetics at certain stages Proficient in pharmacokinetic research methods at various levels
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Internal Therapy, Occupational Diseases

Discipline "Internal Therapy, Occupational Diseases" is proposed for students enrolled in the educational program 33.05.01 Pharmacy and included in the basic part of the curriculum.

Discipline is implemented on 4, in 7, 8, semesters.

Development of the working program of the discipline was made in accordance with the Federal state educational standard of higher education in the specialty 33.05.01 Pharmacy and curriculum of training in the specialty 33.05.01 Pharmacy

The total complexity of the discipline studying is 7 credits, 252 hours. The curriculum provides 36 hours of lectures, 126 hours of practical training, 63 hours of independent self-work of the student including 27 hours for preparing to exam).

A special feature in the construction and content of the course is the use of active learning methods, software and hardware, assessment fund, evaluation and electronic tools.

The study of the discipline "Internal therapy, occupational diseases" is based on the basic knowledge gained in the study of fundamental and clinical disciplines: Human Normal Physiology, Human Microbiology, Virology, Human Immunology, Human Pathological Physiology, Pharmacology; Hygiene.

As a result of the studying of these disciplines student should have the following preliminary competencies:

Goal: development of skills of clinical diagnostics and treatment principles in the typical forms of the most common diseases of the internal organs.

Objectives:

- formation of knowledge on etiology, pathogenesis, classification, clinical manifestation, complications, prognosis, treatment, prevention of diseases of internal organs;
- formation of knowledge on the principles of differential diagnostics and clinical diagnosis;
- development of ability to collect anamnesis and clinical examination of the patient according to the systems; identify the main clinical criteria of the disease; interpretation of the results of laboratory and instrumental studies; drawing up a plan of examination, medical tactics and appointment of complex treatment;
- formation of skills of substantiation and formation of preliminary and clinical diagnosis;
- development of emergency skills in some emergency situations.

As a result of the development of the program of faculty therapy the student should be formed general cultural, general professional and professional competence.

Name of the category of universal competencies	Code and name of the graduate's universal competence	Code and name of the indicator of achievement of universal competence	Learning outcomes by disciplines (modules), practices
Life safety	UK-8. Able to create and maintain safe living conditions in everyday life and in professional activities to preserve the natural environment, ensure the sustainable development of society, including in the event of a threat and the occurrence of emergencies and military conflicts	UK-8.4 Implements methods of health-saving technologies, taking into account the physiological characteristics of the body	<p>Knows the physiological, psychological characteristics and characteristics of the human body, the basics of a healthy lifestyle, as well as the main methods and means of providing first aid, including for wounds and injuries</p> <p>Knows how to choose and apply technologies for the formation of a healthy lifestyle for life safety, as well as methods and means of providing first aid, including in case of injuries and injuries</p> <p>Possesses basic health-saving technologies to ensure life safety, skills in the use of individual medical protective equipment and improvised means for first aid, including in case of injuries and injuries</p>
	PC-7 Able to provide pharmaceutical information and advice when dispensing and selling medicines for medical use and other	PC-7.1 Provides information and consulting assistance to visitors of the pharmacy organization when choosing medicines and other pharmacy products, as well as on their rational use, taking into account the biopharmaceutical features of dosage forms	Knows the theoretical foundations of information and consulting assistance to visitors to a pharmacy organization when choosing medicines and other pharmacy products, as well as on their rational use, taking into account the

	<p>pharmacy products</p>		<p>biopharmaceutical features of dosage forms</p> <p>Able to provide information and consulting assistance to visitors of a pharmacy organization when choosing medicines and other pharmacy products, as well as on their rational use, taking into account the biopharmaceutical features of dosage forms</p> <p>Owens methods of information and consulting assistance to visitors of a pharmacy organization when choosing medicines and other pharmacy products, as well as on their rational use, taking into account the biopharmaceutical features of dosage forms</p>
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Medical Informatics, Medical Statistics

The discipline "Medical Informatics, Medical Statistics" is intended for students enrolled in the educational program 33.05.01 Pharmacy, it is included in the basic part of the curriculum.

Discipline is realized on the 2nd course, it is the basic discipline.

In developing the work program of the academic discipline, the Federal State Educational Standard of Higher Education, specialty 33.05.01 Pharmacy, curriculum for training specialists in the profile of the medical case.

The total complexity of the discipline is 108 hours, 3 credit units. The curriculum provides for lectures in the amount of 18 hours, practical 18 hours, laboratory work and 36 hours, also allocated hours for independent work of the student - 36 hours.

Goal of the course: the formation of competencies in theoretical knowledge, skills and habits of collecting, processing and analyzing statistical data obtained at different stages of scientific research necessary for the subsequent professional activities of specialists.

Objectives:

- to form a knowledge system on the statistical processing of biomedical research data;
- show the possibility of using multidimensional statistical methods for processing information and analyzing experimental data;
- familiarize with the methods of systematization of experimental material in the interpretation of scientific facts;
- use specialized software designed for statistical data analysis.

To solve these problems, a course of thematic lectures, practical classes and laboratory work is planned.

Students' Competencies, Indicators of Their Achievement and Learning Outcomes in the Discipline

Name of the category (group) Competencies	Code and name Competencies (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
Research & Development	PC-1. Able to take part in research in the field of assessing the efficacy and safety of medicines	PC-1.4 • Draws up the results of research, conducts statistical processing of the results	Knows the basic methods of statistical data processing Able to document research results and carry out statistical processing of the results obtained Proficient in statistical processing of results

Methods of Statistical Analysis in Pharmacy

The total labor intensity of the discipline is 3 credits / 108 academic hours. The total complexity of the discipline is 108 hours, 3 credit units. The curriculum provides for lectures in the amount of 18 hours, practical 18 hours, laboratory work and 36 hours, also allocated hours for independent work of the student - 36 hours.

Language: English

Purpose:

Formation of competencies in theoretical knowledge, skills and abilities for collecting, processing and analyzing statistical data obtained at different stages of scientific research, necessary for the subsequent professional activities of specialists.

Tasks:

1. To form a system of knowledge on statistical processing of data from medical and biological research;
2. To show the possibilities of using multivariate methods of statistics for information processing and data analysis of experimental material;
3. To introduce the methods of systematization of experimental material in the interpretation of scientific facts;
4. Use specialized software designed for statistical analysis of data.

For successful study of the discipline, students must have the following preliminary competencies: UK-1.1; UK-1.2; UK-4.1; UK-6.1, obtained as a result of studying the disciplines "Fundamentals of Digital Literacy", the student should be ready to study such disciplines as "Bioinformatics", "Pharmaceutical Informatics", which form the competencies of UK-1.1; UK-1.2; OPC-6.1; OPC-6.2; OPK-6.3; OPK-6.4.

Students' Competencies, Indicators of Their Achievement and Learning Outcomes in the Discipline

Name of the category (group) Competencies	Code and name Competencies (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
Research & Development	PC-1. Able to take part in research in the field of assessing the efficacy and safety of medicines	PC-1.4 • Draws up the results of research, conducts statistical processing of the results	Knows the basic methods of statistical data processing Able to document research results and carry out statistical processing of the results obtained Proficient in statistical processing of results

To form the above competencies within the framework of the discipline "Methods of Statistical Analysis in Pharmacy", the following educational technologies and methods of active/interactive learning are used: discussion, work in small groups, independent work, tests.

Genetics

The total labor intensity of the discipline is 4 credits / 144 academic hours. It is a discipline of Block B1. B.02 of the EP part, studied in the 2nd year and ends with a test. The curriculum provides for lectures in the amount of 18 hours, practical 18 hours, laboratory work 18 hours, and also allocated hours for independent work of the student - 90 hours.

Language: English

Objective: to study the phenomena of heredity and variability in humans at all levels of their organization and existence: molecular, cellular, organismic, and population.

Tasks:

– to provide students with the necessary theoretical and practical knowledge in various areas of molecular genetics;

– deepening and consolidation of theoretical knowledge, its comprehensive use in the process of production activities. The learning outcomes of the discipline (module) should be correlated with the indicators of competence achievement established in the BRI.

The totality of the planned learning outcomes in the discipline (module) should ensure the formation of all the competencies established by the BRI in the graduate.

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name Competencies (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
Research & Development	PC-1 Able to take part in research in the field of assessing the efficacy and safety of medicines	PC-1.6 Uses knowledge in medical genetics, immunology, epidemiology and therapeutics to conduct research to assess the efficacy and safety of medicines	Knows the theoretical foundations of research in the field of assessing the efficacy and safety of medicines He is able to use his knowledge in the field of medical genetics, immunology, epidemiology and therapy to conduct research in the field of assessing the efficacy and safety of drugs Proficient in research methods in the field of assessing the efficacy and safety of medicines

Pharmacogenetics

The total labor intensity of the discipline is 4 credits / 144 academic hours. It is a discipline of the elective part of the EP, studied in the 3rd year and ends with an test. The curriculum provides for lectures in the amount of 18 hours, practical 18 hours, laboratory 18 hours, well as 90 hours for independent work of the student.

Language: English.

Objective: formation of general professional and professional competencies in the field of scientific worldview on the role of genetic factors in the individual response of cells and organisms to the introduction of various substances, including drugs, population features in the distribution of frequencies of allelic variants of genes that control the metabolism of drug compounds.

Tasks:

- development of modern theoretical ideas about the genetic control of the metabolism of drug compounds;
- development of modern bioinformatics databases to form the ability to apply experimental research methods in practice;
- formation of skills for presenting scientific information in oral reports and demonstration material.

For successful study of the discipline, students should have the following preliminary competencies:

- conducts studies of pharmacological activity and other types of activity of various compounds on laboratory animals;
- studies the bioavailability of substances in various in vitro and in vivo models;
- analyzes the pharmacokinetics and pharmacodynamics of the drug based on knowledge of morphofunctional features, physiological states and pathological processes in the human body;
- explains the main and side effects of drugs, the effects of their combined use and interaction with food, taking into account morphofunctional features, physiological states and pathological processes in the human body,

Competencies are obtained as a result of studying the disciplines of clinical pharmacology, pharmacology, biochemistry, about the student should be ready to study such disciplines as the basics of clinical laboratory diagnostics, pharmaceutical technology, pharmaceutical development, forming competencies:

- manufactures medicines, including intra-pharmacy procurement and serial production, in accordance with the established rules and taking into account the compatibility of drugs and excipients, controlling quality at all stages of the technological process;

- selects excipients and dosage forms taking into account the influence of biopharmaceutical factors;

- conducts the development of methods and pharmacokinetics research at the preclinical and clinical level.

Competencies of students, indicators of their achievement and learning outcomes in the discipline:

Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
<p>PC-1.6 Uses knowledge in the field of medical genetics, immunology, epidemiology and therapeutics in conducting research in the field of assessing the efficacy and safety of medicines</p>	<p>Knows: qualitative and quantitative analysis of medicines, the basics of qualitative (macroscopic and microscopic) analysis of LRS of various morphological groups; qualitative and quantitative analysis of biologically active substances in medicinal plant raw materials; characteristics of the raw material base of medicinal plants; general principles of rational harvesting of medicinal plant raw materials and measures for the protection of natural, exploited thickets of medicinal plants; classification system of medicinal plant raw materials (chemical, pharmacological, botanical, morphological); nomenclature of medicinal plant raw materials and herbal medicines permitted for use in medical practice; basic requirements of the State Pharmacopoeia for the quality of medicines, methods and methods of biological, chemical and physicochemical methods of analysis applicable to drug testing; ways and methods of quality control and quantitative analysis of medicines by chemical, physical and physicochemical methods; GMP, GLP, GCP requirements for testing, development and registration of new drugs; theoretical foundations of biopharmacy, pharmaceutical factors influencing the therapeutic effect in the industrial production of dosage forms; modern pharmaceutical technologies for the production of medicines; prospects for the development of pharmaceutical technology; up-to-date nomenclature of excipients.</p> <p>Can: plan the analysis of substances and dosage forms; select methods and techniques necessary for drug analysis; recognize medicinal plants by external signs in nature; use the macroscopic method of analysis to determine the authenticity of medicinal plant raw materials; Identify medicinal plant raw materials in whole and crushed form with the help of appropriate determinants; recognize impurities of foreign plants when analyzing raw materials; plan the analysis of medicines in accordance with their medicinal products and assess their quality based on the results obtained; prepare reagents, standard, titrated and test solutions, carry out their control; interpret the results of UV and IR spectrometry to confirm the identity of drug</p>

Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
	<p>substances; Use different types of chromatography in drug analysis and interpret its results. to determine the quantitative content of medicinal substances in substances and dosage forms by titrimetric methods; to determine the quantitative content of medicinal substances in substances and dosage forms by physicochemical methods; analyze and control the quality of pharmacy-made medicines in accordance with the current requirements; to select modern excipients in the development of dosage forms, taking into account the influence of biopharmaceutical factors; predict and assess adverse drug reactions, know the procedure for their registration; determine the optimal dosage regimen adequate to the therapeutic tasks; to offer optimal technological and instrumental schemes for the production of medicines, methods for optimizing the technology of already produced medicines.</p> <p>Owens: skills in conducting stage-by-stage quality control when receiving medicines; skills in interpreting the results of drug analysis to assess their quality; • skills of rational procurement of LRS; identification of medicinal plants by external signs in living and herbarized species; skills in drug analysis; equipment for its use in titrimetric, gravimetric and chromatographic and other tests of drugs; • skills in conducting drug analysis by biological methods; skills in the selection of excipients or their substitution in order to develop new or optimize the technology of manufactured medicines; ways of using regulatory, reference and scientific literature to solve professional problems; skills in interpreting the results of drug analysis to assess their quality.</p>

For the formation of the above competencies within the discipline "Pharmacogenetics" uses the following educational technologies and methods of active/interactive learning: business game, work in small groups, round table.

Phytochemistry

The total labor intensity of the discipline is 4 credits / 144 academic hours. It is a discipline of the elective part of the EP, studied in the 3rd year and ends with an test. The curriculum provides for laboratory 18 hours, well as 126 hours for independent work of the student.

The purpose of mastering the discipline "Phytochemistry" is the formation of systemic knowledge, skills, professional competencies for the standardization of herbal remedies and medicinal plant materials.

Language: English.

Objectives of the discipline "Phytochemistry":

- to reveal the basic concepts of standardization and quality control of herbal remedies and medicinal plant materials;
- to acquaint with the objects and subjects of this type of activity, to consider the methods used in the standardization of medicines;
- to study the methodological aspects of the examination, its goals, objectives, types and means.

The place of the discipline in the structure of the OBOR HE (in the curriculum): "Standardization of medicinal plant raw materials and preparations" is part of the educational program formed by the participants in educational relations (elective discipline).

The totality of the planned learning outcomes in the discipline (module) should ensure the formation of all the competencies established by the BRI in the graduate.

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (the result of mastering)	Code and name of the competency achievement indicator
Expert-analytical	PC-8. Able to participate in monitoring the quality, efficacy and safety of medicines and medicinal plant raw materials	PC-8.1 Conducts pharmaceutical analysis of pharmaceutical substances, excipients and medicines for medical use of factory production in accordance with quality standards

Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
PC-8.1 Conducts pharmaceutical analysis of pharmaceutical substances, excipients and medicines for medical use of	Knows the safety rules of work in a chemical laboratory; knows the general methods of assessing the quality of medicines (drugs); knows the main stages of pharmaceutical analysis; knows the equipment and reagents for the analysis

<p>factory production in accordance with quality standards</p>	<p>of drugs; knows the physicochemical, biological and pharmacological properties of the main groups of biologically active substances (alkaloids, flavonoids, polysaccharides, triterpene saponins, terpenoids, etc.); knows the legislative and regulatory requirements in the procedure for quality control of medicines and pharmaceutical products</p>
	<p>Knows how to use various physical and chemical methods of analysis to conduct research to determine the quality of medicines; is able to put into practice the main provisions of the main regulatory documents and standards; is able to implement the analysis of drugs in accordance with their form according to ND; is able to determine the general quality indicators of drugs: solubility, extractives, density, weight loss during drying; is able to establish the authenticity of drugs by instrumental methods of analysis.</p>
	<p>Owens the most important physical and chemical methods of analysis; owns methods of sampling and sample preparation; owns methods of control of medicines in accordance with the international system of requirements and standards; has the skills to control the quality of herbal medicines.</p>

Modern Phytochemistry

The total labor intensity of the discipline is 4 credits / 144 academic hours. It is a discipline of the elective part of the EP, studied in the 3rd year and ends with an test. The curriculum provides for laboratory 18 hours, well as 126 hours for independent work of the student.

The purpose of mastering the discipline " Modern Phytochemistry" is the formation of systemic knowledge, skills, professional competencies for monitoring the quality of medicines, including their development, registration and examination.

Language: English.

Objectives of the discipline " Modern Phytochemistry":

- to reveal the basic concepts of standardization and quality control of medicines of the main pharmacological groups;
- to acquaint with the objects and subjects of this type of activity, to consider the methods used in the standardization of medicines;
- to study the methodological aspects of the examination of medicines, its goals, objectives, types and means.

The totality of the planned learning outcomes in the discipline (module) should ensure the formation of all the competencies established by the BRI in the graduate.

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (the result of mastering)	Code and name of the competency achievement indicator
Expert-analytical	PC-8. Able to participate in monitoring the quality, efficacy and safety of medicines and medicinal plant raw materials	PC-8.1 Conducts pharmaceutical analysis of pharmaceutical substances, excipients and medicines for medical use of factory production in accordance with quality standards

Code and name of the competency achievement indicator	Name of the assessment indicator (the result of training in the discipline)
PC-8.1 Conducts pharmaceutical analysis of pharmaceutical substances, excipients and medicines for medical use of factory production in accordance with quality standards	Knows the safety rules of work in a chemical laboratory; knows the general methods of assessing the quality of medicines (drugs); knows the main stages of pharmaceutical analysis; knows the equipment and reagents for the analysis of drugs; knows the physicochemical, biological and pharmacological properties of the main groups of biologically active substances (alkaloids, flavonoids, polysaccharides, triterpene saponins, terpenoids, etc.); knows the legislative

	and regulatory requirements in the procedure for quality control of medicines and pharmaceutical products
	Knows how to use various physical and chemical methods of analysis to conduct research to determine the quality of medicines; is able to put into practice the main provisions of the main regulatory documents and standards; is able to implement the analysis of drugs in accordance with their form according to ND; is able to determine the general quality indicators of drugs: solubility, extractives, density, weight loss during drying; is able to establish the authenticity of drugs by instrumental methods of analysis.
	Owens the most important physical and chemical methods of analysis; owns methods of sampling and sample preparation; owns methods of control of medicines in accordance with the international system of requirements and standards; has the skills to control the quality of herbal medicines.

Clinical Researches

The purpose of mastering the discipline " Clinical Researches" is the formation of systemic knowledge, skills, and professional competencies in conducting clinical trials of new drugs necessary for the treatment, prevention and diagnosis of diseases.

Implementation language : English

Objectives of the discipline " Clinical Researches":

- reveal the basic concepts of the principles of clinical trials, ethical standards, regulatory framework, main types of research, international quality standards;
- introduce the main aspects of drug production, quality control, project management, and output documentation;
- to study the methodological aspects of clinical trials, their goals and objectives.

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (result of mastering)	Code and name of the competency indicator
Scientific and research	PC-1. Able to take part in research in the field of assessing the efficacy and safety of medicines	PC-1.3. Conducts a study of the bioavailability of substances in various models in vitro and in vivo
		PC-1.5. Conducts development of methods and pharmacokinetics research at the preclinical and clinical level
		PC-1.6 Uses knowledge in medical genetics, immunology, epidemiology and therapeutics to conduct research to assess the efficacy and safety of medicines

Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
PC-1.3. Conducts a study of the bioavailability of substances in various models in vitro and in vivo	Knows the theoretical foundations of studying the bioavailability of substances in various models in <i>vivo</i>
	Able to study the bioavailability of substances in <i>various models in vivo</i>
	Proficient in methods for studying the bioavailability of substances in various models in <i>vivo</i>
PC-1.5. Conducts development of methods and pharmacokinetics research at the preclinical and clinical level	He knows the theoretical foundations of the development of methods and pharmacokinetics research at the clinical level, knows the basics of clinical pharmacokinetics and the principles of drug dosage development.
	Able to conduct method development and pharmacokinetics research at the preclinical and clinical level
	Proficient in methods of methodology development and pharmacokinetic research at the preclinical and clinical level
PC-1.6 Uses knowledge in medical genetics, immunology, epidemiology and therapeutics to conduct research to assess the efficacy and safety of medicines	He knows pharmacology, clinical pharmacology, toxicology, requirements for the organization of testing centers, rules for assessing the safety and efficacy of drugs used in clinical trials of drugs, knows the molecular, biochemical, cellular, organ and systemic mechanisms of action of drugs.
	Knows how to draw up a clinical trial protocol, knows how to record data and draw up a report, knows how to apply the principles of biomedical ethics in practice
	Possesses the skills to assess the pharmacological activity of the active ingredient on the body, microorganisms or parasites in tissues and fluids or the surface of the body, has methods for studying the toxicological properties of the active ingredient

Preclinical Researches

The discipline Preclinical Research is intended for students enrolled in the educational program 33.05.01 Pharmacy, is included in the basic part of the curriculum.

Discipline is realized on 4 course, 7 semester.

In the development of the working program of the discipline used the Federal state educational standard of higher education in the specialty 33.05.01 Pharmacy, the curriculum for training specialists in the specialty 33.05.01 Pharmacy.

The total complexity of the development of the discipline is 2 credits, 72 hours. The curriculum provides 8 hours of lectures, 8 hours of practical training and independent work of the student (56 hours.).

The purpose of mastering the discipline "Preclinical Research" is the formation of systemic knowledge, skills, professional competencies in conducting preclinical studies of new drugs necessary for the treatment, prevention and diagnosis of diseases.

Objectives of the Preclinical Research discipline:

- to teach students to plan preclinical studies of drugs of different groups and select models to evaluate the pharmacological action of a new agent;
- familiarize students with the standard protocols of preclinical studies of the OECD;

- Teach students how to perform simple procedures with small laboratory animals

(weighing, labeling, intraperitoneal, subcutaneous, intravenous injections, intragastric injection of drugs, etc.).

Professional competencies of graduates and indicators of their achievement:

For successful study of the Preclinical Research discipline, students should have the following universal competencies of graduates and indicators of their achievement:

Name of the category (group) of universal competencies	Universal Competency Code and Name (result of mastering)	Code and name of the competency indicator	
Research & Development	PC-1. Able to participate in research to assess the efficacy and safety of medicines	PC-1.1. Conducts a study of pharmacological activity and other types of activity of various compounds in laboratory animals	Knows protocols, plans, programs for research (testing) of various compounds on laboratory animals Knows how to develop and

Name of the category (group) of universal competencies	Universal Competency Code and Name (result of mastering)	Code and name of the competency indicator	
			<p>implement a protocol, plan, program for studying the effect of various compounds on laboratory animals</p> <p>He is proficient in methods for studying various types of activity of the studied compounds on laboratory animals</p>
		<p>PC-1.2. Determines the pharmacokinetic parameters of substances in laboratory animals</p>	<p>Knows the theoretical foundations for determining the pharmacokinetic parameters of substances in laboratory animals</p> <p>Able to determine the pharmacokinetic parameters of substances in laboratory animals</p> <p>He is proficient in methods for determining the pharmacokinetic parameters of substances in laboratory animals</p>
		<p>PC-1.3. Conducts a study of the bioavailability of substances on various models in vitro and in vivo</p>	<p>Knows the theoretical foundations of studying the bioavailability of substances in various models in vitro and in vivo</p> <p>Able to study the bioavailability of substances in various models in vitro and in vivo</p> <p>He is proficient in methods of studying the bioavailability of substances on various models in vitro and in vivo</p>
		<p>PC-1.5. Conducts the development of methods</p>	<p>Knows the theoretical foundations of the</p>

Name of the category (group) of universal competencies	Universal Competency Code and Name (result of mastering)	Code and name of the competency indicator	
		and the study of pharmacokinetics at the preclinical and clinical level	<p>development of methods and the study of pharmacokinetics at the preclinical and clinical level</p> <p>Able to carry out the development of methods and the study of pharmacokinetics at the preclinical and clinical level</p> <p>He is proficient in methods for the development of methods and the study of pharmacokinetics at the preclinical and clinical levels</p>

Educational Practice. Pharmaceutical Propaedeutic Practice

OBJECTIVES OF MASTERING EDUCATIONAL PRACTICE

The purpose of the internship is "Educational practice. Pharmaceutical Propaedeutic Practice" is the formation of 1st year students of the specialty 33.05.01 Pharmacy of general ideas about the basics of pharmacy on a practical example of the work of the main areas of pharmacy institutions, acquaintance with the subjects of circulation of medicines, their tasks and functions, acquaintance with the general issues of organizing the drug supply of the population, types and organization of the work of pharmacies, to get an idea of the product range of the pharmacy.

OBJECTIVES OF EDUCATIONAL PRACTICE

Acquaintance of 1st year students with:

- pharmaceutical terminology;
- the main tasks and functions of pharmacy organizations;
- occupational health and safety of pharmaceutical workers;
- sanitary regime of pharmacies;
- Acquisition by students of practical skills and competencies in the field of professional activities of pharmaceutical workers in:
 - sanitary regime of pharmacies;
 - health and safety of pharmaceutical workers.

THE PLACE OF EDUCATIONAL PRACTICE IN THE STRUCTURE OF THE EP

"Educational practice. Pharmaceutical Propaedeutic Practice" is an integral part of the main professional educational program, is a mandatory part of Block 2 "Practice" and is mandatory.

The knowledge gained by students in practice is necessary for the successful completion of the following types of practical activities in pharmaceutical technology:

Educational practice. Pharmacognosy Practice

Educational practice. General Pharmaceutical Technology Practice

Educational practice. First Aid Practice

Internship. Pharmaceutical Technology Practice

Internship. Drug Quality Control Practice

Internship. Practice in Management and Economics of Pharmaceutical Organizations

Internship. Practice in pharmaceutical consulting and information.

TYPES, METHODS, PLACE AND TIME OF EDUCATIONAL PRACTICE

The type of internship is educational practice.

Practice Type: Pharmaceutical Propaedeutic Practice

Method of carrying out – stationary/offsite, concentrated

In accordance with the schedule of the educational process, the internship is implemented in the second semester.

Educational practice is carried out on the basis of pharmacies, including on the basis of prescription and production pharmacies equipped with modern equipment (weighing and measuring devices, equipment for processing pharmacy dishes and closures (washing machines, autoclaves, drying cabinets) and means of small mechanization.

For persons with disabilities and persons with disabilities, the choice of internship places is consistent with the requirement of their accessibility for these students, and the practice is carried out taking into account the peculiarities of their psychophysical development, individual capabilities and state of health.

COMPETENCIES OF THE STUDENT, FORMED AS A RESULT OF THE TRAINING PRACTICE

The internship process is aimed at the formation of the following competencies:

General Professional Competencies of Graduates and Indicators of Their Achievement

Name of the category (group) of general professional competencies	Code and name of general professional competence (result of mastering)	Code and name of the competency indicator
Adapting to production conditions	OPK-3. Able to carry out professional activities taking into account specific economic, environmental, social factors within the framework of the system of legal regulation of the circulation of medicines	OPK-3.1 Complies with the norms and rules established by the authorized state authorities when solving the tasks of professional activity in the field of circulation of medicines
		OPK -3.2 Takes into account economic and social factors influencing the financial and economic activities of pharmaceutical organizations when making management decisions
		OPK-3.3 Performs labor actions taking into account their impact on the environment, preventing the occurrence of environmental hazards
		OPK-3.4 Determines and interprets the main environmental indicators of the state of the working environment in the

		production of medicines
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Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
OPK-3.1 Complies with the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines	Knows the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines
	Able to solve the problems of professional activity in the field of circulation of medicines
	Proficient in methods of compliance with the norms and rules established by the authorized state authorities, when solving the problems of professional activity in the field of circulation of medicines
OPK-3.2 Takes into account economic and social factors influencing the financial and economic activities of pharmaceutical organizations when making management decisions	Knows the economic and social factors that affect the financial and economic activities of pharmaceutical organizations
	Able to take into account economic and social factors when making managerial decisions
	Proficient in methods of accounting for economic and social factors
OPK-3.3 Performs labor actions taking into account their impact on the environment, preventing the occurrence of environmental hazards	Knows the environmental impact of their work actions
	Knows how to perform work activities taking into account their impact on the environment
	Proficient in methods of counteracting the occurrence of environmental hazards
MIC – 3.4 Determines and interprets the main environmental indicators of the state of the working environment in the production of medicines	Knows the main environmental indicators of the state of the working environment in the production of medicines
	Able to identify and interpret the main environmental indicators of the state of the production environment in the production of medicines
	Proficient in methods for determining and interpreting the main environmental indicators of the state of the production environment in the production of medicines

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (result of mastering)	Code and name of the competency indicator
pharmaceutical	PC-5 Able to manufacture medicinal products and take part in the technology of production of finished medicinal products	PC-5.6 Conducts calculations of the amount of drugs and excipients for the production of all types of modern dosage forms
pharmaceutical	PC-6 Able to solve the problems of professional activity in the dispensing and sale of medicines and other pharmacy products	PC-6.1. Conducts pharmaceutical examination of prescriptions and requirements of waybills, as well as their registration and taxing in accordance with the established procedure

	through pharmaceutical and medical organizations	PC-6.2. Sells and dispenses medicines for medical use and other pharmacy products to individuals, as well as releases them to the subdivisions of medical organizations, monitoring compliance with the procedure for dispensing medicines for medical use and other pharmacy products with pharmaceutical consulting and provision of pharmaceutical information
		PC-6.3. Carries out office work on the maintenance of cash, organizational, administrative, reporting documents in retail sales
		PC-6.4. Carries out office work on the maintenance of organizational, administrative, payment reporting documents in case of wholesale sale
		PC-6.5. Carries out pre-sale preparation, organizes and conducts the display of medicines and pharmacy products in the sales area and (or) showcases of the departments of the pharmacy organization
	PC-7 Able to provide pharmaceutical information and consulting in the dispensing and sale of medicines for medical use and other pharmacy products	PC-7.1. Provides information and consulting assistance to visitors of the pharmacy organization in the selection of medicines and other products of the pharmacy assortment, as well as on the issues of their rational use, taking into account the biopharmaceutical features of dosage forms
		PC-7.2. Informs medical professionals about medicines, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical features of dosage forms

Code and name of the competency indicator	Name of the assessment indicator (the result of practical training)
PC-5.6 Calculates the quantity of medicinal products and excipients for the production of all types of modern dosage forms	He knows the theoretical foundations of calculating the amount of drugs and excipients for the production of all types of modern dosage forms He is able to calculate the amount of drugs and excipients for the production of all types of modern dosage forms.

	He is proficient in methods for calculating the amount of drugs and excipients for the production of all types of modern dosage forms.
PC-6.1. Conducts pharmaceutical examination of prescriptions and requirements of waybills, as well as their registration and taxiing in accordance with the established procedure	Knows the theoretical foundations of pharmaceutical examination of prescriptions and invoice requirements, as well as their registration and taxiing in accordance with the established procedure
	Is able to carry out pharmaceutical examination of prescriptions and requirements of invoices, as well as their registration and taxiing in accordance with the established procedure
	Proficient in the methods of pharmaceutical examination of prescriptions and requirements of invoices, as well as their registration and taxiing in accordance with the established procedure
PC-6.2. Sells and dispenses medicines for medical use and other pharmacy products to individuals, as well as releases them to the subdivisions of medical organizations, monitoring compliance with the procedure for dispensing medicines for medical use and other pharmacy products with pharmaceutical consulting and provision of pharmaceutical information	Knows the theoretical foundations of the sale and distribution of medicines for medical use and other pharmacy products to individuals, as well as their release to the divisions of medical organizations, monitoring compliance with the procedure for dispensing medicines for medical use and other pharmacy products with pharmaceutical consulting and the provision of pharmaceutical information
	It is able to sell and dispense medicines for medical use and other pharmacy products to individuals, as well as dispenses them to the divisions of medical organizations, monitoring compliance with the procedure for dispensing medicines for medical use and other pharmacy products with pharmaceutical consulting and the provision of pharmaceutical information
	Proficient in the methods of sale and dispensing of medicines for medical use and other pharmacy products to individuals, as well as their release to the divisions of medical organizations, controlling compliance with the procedure for dispensing medicines for medical use and other pharmacy products with pharmaceutical consulting and provision of pharmaceutical information
PC-6.3. Carries out office work on the maintenance of cash, organizational, administrative, reporting documents in retail sales	Knows the theoretical foundations of office work on the maintenance of cash, organizational, administrative, reporting documents in retail sales
	Is able to carry out office work on the maintenance of cash, organizational, administrative, reporting documents in retail sales
	Proficient in the methods of office work for the maintenance of cash, organizational, administrative, reporting documents in retail sales
PC-6.4. Carries out office work on the maintenance of organizational, administrative, payment reporting documents in case of wholesale sale	Knows the theoretical foundations of office work on the maintenance of organizational, administrative, payment reporting documents in wholesale sales
	Is able to carry out office work on the maintenance of organizational, administrative, payment reporting documents in wholesale sales

	Proficient in the methods of office work for the maintenance of organizational, administrative, payment reporting documents in the course of wholesale sales
PC-6.5. Carries out pre-sale preparation, organizes and conducts the display of medicines and pharmacy products in the sales area and (or) showcases of the departments of the pharmacy organization	Knows the theoretical foundations of pre-sale preparation, organizes and conducts the display of medicines and pharmacy products in the sales area and (or) showcases of the departments of the pharmacy organization
	Knows how to carry out pre-sale preparation, organizes and conducts the display of medicines and pharmacy products in the sales area and (or) showcases of the departments of the pharmacy organization
	Proficient in the methods of pre-sale preparation, organizes and conducts the display of medicines and pharmacy products in the sales area and (or) showcases of the departments of the pharmacy organization
PC-7.1. Provides information and consulting assistance to visitors of the pharmacy organization in the selection of medicines and other products of the pharmacy assortment, as well as on the issues of their rational use, taking into account the biopharmaceutical features of dosage forms	Knows the theoretical foundations of information and consulting assistance to visitors of a pharmacy organization in the selection of medicines and other products of the pharmacy assortment, as well as on the issues of their rational use, taking into account the biopharmaceutical features of dosage forms
	She is able to provide information and consulting assistance to visitors of a pharmacy organization in the selection of medicines and other products of the pharmacy assortment, as well as on their rational use, taking into account the biopharmaceutical features of dosage forms
	She is proficient in the methods of information and consulting assistance to visitors of the pharmacy organization in the selection of medicines and other products of the pharmacy assortment, as well as on the issues of their rational use, taking into account the biopharmaceutical features of dosage forms
PC-7.2. Informs medical professionals about medicines, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical features of dosage forms	Knows the theoretical foundations of informing medical professionals about medicines, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical features of dosage forms
	Able to inform medical professionals about medicines, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical characteristics of dosage forms
	Proficient in methods of informing medical professionals about medicines, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical features of dosage forms
PC-7.3. Makes a decision on the replacement of the prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure on the basis of information on groups of	Knows the theoretical basis for making a decision on the replacement of a prescribed drug with synonymous or similar drugs in accordance with the established procedure based on information on groups of drugs and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical features of dosage forms

medicinal products and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical features of dosage forms	Is able to make a decision on the replacement of a prescribed drug with synonymous or similar drugs in accordance with the established procedure based on information on groups of drugs and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical features of dosage forms
	Proficient in the methods of making a decision on the replacement of a prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure based on information on groups of medicinal products and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical features of dosage forms

Educational Practice. Pharmacognosy Practice

OBJECTIVES OF MASTERING EDUCATIONAL PRACTICE

The main purpose of the practice is to consolidate and improve the theoretical knowledge and norms of professional ethics obtained by students in the lecture and practical course, the acquisition of skills and practical skills in the procurement of medicinal plant raw materials, taking into account the rational use and reproduction of natural resources, the development of the basic methods of cultivation of medicinal plants.

Such a significant number of hours in the curriculum are devoted to the practice of pharmacognosy due to the increase in the share of medicinal plant raw materials (LRS), phytopreparations and parapharmaceuticals in the drug assortment. The medical industry and pharmacy chain use about 230 species of wild and cultivated plants. Of these, about 130 species are used for the needs of the pharmaceutical industry and more than 100 types after primary processing enter the pharmacy network as raw materials of the pharmacy assortment, from which infusions, decoctions, and preparations are prepared.

OBJECTIVES OF EDUCATIONAL PRACTICE

- study of morphological traits of wild and cultivated medicinal plants of LRS;
- acquisition of practical skills and direct participation in the collection, primary processing, drying of medicinal plant raw materials, taking into account the rational use and reproduction of natural resources;
- familiarization with the rules of packaging of raw materials and their storage conditions, with regulatory and technical documentation and reference literature for medicinal raw materials;
- mastering the basic methods of cultivation of medicinal plants, the main methods of collecting medicinal plant raw materials of various morphological groups (leaves, herbs, bark, fruits, seeds, underground organs);
- acquisition of practical skills in the identification of medicinal plants in various plant communities, habitats of wild medicinal plants and their confinement to certain plant communities, the main methods of determining the stocks of wild medicinal plant raw materials on the example of herbaceous, woody and shrub plants using various methods for determining yield (accounting sites, model specimens, projective covering);
- acquisition of practical skills in primary processing, standardization and drying of medicinal plant raw materials in natural and artificial conditions.

THE PLACE OF EDUCATIONAL PRACTICE IN THE STRUCTURE OF

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"Educational practice. Pharmacognosy Practice" is the main part of the professional educational program and is included in the mandatory part of Block 2 "Practice".

Students must have knowledge of Latin, botany, pharmacognosy, organic chemistry, general and inorganic, physical and colloidal chemistry, pharmaceutical chemistry, toxicological chemistry, pharmaceutical technology and pharmacology.

TYPES, METHODS, PLACE AND TIME OF EDUCATIONAL PRACTICE

"Educational practice. Practice in Pharmacognosy" is held for 3rd year students studying in the direction of training 33.05.01 Pharmacy.

B2.O.02(U) Educational practice. Pharmacognosy practice. The total labor intensity of the internship is 6 credits (216 hours), implemented in the 6th semester.

The type of internship is educational practice.

Practice Type: Pharmacognosy Practice.

Method of practice: stationary, field.

Forms of educational practice – discrete

COMPETENCIES OF THE STUDENT, FORMED AS A RESULT OF THE TRAINING PRACTICE

General Professional Competencies of Graduates and Indicators of Their Achievement

Name of the category (group) of general professional competencies	Code and name of general professional competence (result of mastering)	Code and name of the competency indicator
Professional Methodology	OPK-1 He is able to use basic biological, physicochemical, chemical, mathematical methods for the development, research and examination of medicines, the manufacture of medicines	OPK-1.1 Applies basic biological methods of analysis for the development, research and examination of medicines and medicinal plant raw materials OPK-1.2 Applies basic physicochemical and chemical methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects OPK-1.3 Applies the basic methods of physical and chemical analysis in the manufacture of medicines OPK-1.4 Applies mathematical methods and carries out mathematical processing of data obtained in the course of drug development, as well as research and examination of medicines, medicinal plant raw materials and biological objects

Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
OPK-1.1 Applies basic biological methods of analysis for the development, research and examination of medicines and medicinal plant raw materials	Knows the basic biological methods of analysis Able to apply basic biological methods of analysis for the development, research and examination of medicines and medicinal plant raw materials Proficient in methods of analysis for the development, research and examination of medicines and medicinal plant raw materials
OPK-1.2 Applies basic physicochemical and chemical methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects	Knows the basic physicochemical and chemical methods of analysis Able to carry out development, research and examination of medicines, medicinal plant raw materials and biological objects Proficient in methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects
OPK-1.3 Applies the basic methods of physical and chemical analysis in the manufacture of medicines	Knows the basic methods of physical and chemical analysis Able to analyze manufactured medicines Proficient in methods of physical and chemical analysis in the manufacture of medicines
OPK-1.4 Applies mathematical methods and carries out mathematical processing of data obtained in the course of drug development, as well as research and examination of medicines, medicinal plant raw materials and biological objects	Knows mathematical methods Is able to carry out mathematical processing of data obtained in the course of drug development, as well as research and examination of medicines, medicinal plant raw materials and biological objects Proficient in methods of mathematical data processing

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (result of mastering)	Code and name of the competency indicator
Expert and Analytical	PC-8 Able to participate in monitoring the quality, efficacy and safety of medicines and medicinal plant raw materials	PC-8.4 Conducts pharmacognostic analysis of medicinal plant raw materials and medicinal herbal preparations

Code and name of the competency indicator	Name of the assessment indicator (the result of practical training)
PC-8.4 Conducts pharmacognostic analysis of medicinal plant raw materials and medicinal herbal preparations	Knows: - peculiarities of qualitative and quantitative control; - Work on the control of medicines in the pharmaceutical environment Organizations; - Methods of macroscopic and microscopic analyses of the whole and crushed medicinal raw materials and LRS; - morphological and anatomical diagnostic features of medicinal plant raw materials, approved for use in medical practice, possible impurities; - main groups of biologically active compounds of natural origin and their

the most important physicochemical properties, ways of biosynthesis of the main groups of biologically active substances;

- Methods of extraction and purification, the main biologically active substances from medicinal plant raw materials;
- Basic methods of qualitative and Quantification of Biologically Active Substances in Medicinal Plant raw materials and LRS, biological standardization of medicinal plant raw materials;
- Main ways and forms of use medicinal plant raw materials in pharmaceutical practice and industrial production;
- basic information on the use of herbal and herbal medicines in medical practice.

of animal origin.

Can:

- Carry out high-quality and microchemical reactions to the main biologically active substances, contained in medicinal products plants and raw materials (polysaccharides, fatty and essential oils, vitamins, cardiac glycosides, saponins, anthracene derivatives, phenylpropano-ides, coumarins, flavonoids, tannins substances, alkaloids, etc.);
- analyze using quantitative determination methods,

Provided for by the relevant ND, for medicinal plant raw materials, for the content of fatty and essential oils, cardiac glycosides, saponins, alkaloids, anthracene derivatives, tannins, phenylpropanes, flavonoids, coumarins, vitamins, etc.;

- Identify the main numerical indicators (humidity, ash, extractive substances) by the methods provided for by the ND;
- to carry out the acceptance of medicinal products plant raw materials, select samples required for its analysis, according to the regulatory documents;
- Carry out statistical processing and documenting the results of pharmacognostic analyses;
- To make a conclusion about benign LRS in compliance with the requirements of regulatory documents;
- Able to participate in monitoring quality, efficacy and safety of medicines and medicinal plant raw materials.

Owns:

- pharmacognostic methods analysis of medicinal plant raw materials and medicinal herbal preparations;
- skills and techniques of high-quality and microchemical reactions to the main biologically active substances contained in the

	in medicinal plants and raw materials (polysaccharides, essential oils, vitamins, cardiac glycosides, saponins, anthracene derivatives, coumarins, flavonoids, tannins, alkaloids, etc.)
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Educational Practice. General Pharmaceutical Technology Practice

OBJECTIVES OF MASTERING EDUCATIONAL PRACTICE

The purpose of the internship "Educational practice. Practice in General Pharmaceutical Technology" is the consolidation of theoretical knowledge obtained during the study of pharmaceutical technology at the university, as well as the formation of general professional and professional competencies.

OBJECTIVES OF EDUCATIONAL PRACTICE

The objectives of the practice "Educational practice. Practice in General Pharmaceutical Technology" are:

- acquaintance of students with pharmaceutical enterprises for the manufacture of finished medicines.
- Acquaintance with the main tasks and functions of an industrial enterprise.
- Study of safety and principles of labor protection, ecology and production safety.
- study of GMP principles in the organization of production of pharmaceutical products.

THE PLACE OF EDUCATIONAL PRACTICE IN THE STRUCTURE OF THE BRI

"Educational practice. Internship in General Pharmaceutical Technology" is an integral part of the main professional educational program, is included in Block 2 "Practice" and is mandatory.

The knowledge gained by students in practice in general pharmaceutical technology is necessary for the successful completion of the following practical activities in pharmaceutical technology:

- Internship. Pharmaceutical Technology Practice
- Internship. Drug Quality Control Practice
- Internship. Practice in Management and Economics of Pharmaceutical Organizations
- Internship. Pharmaceutical Consulting & Information Practice

TYPES, METHODS, PLACE AND TIME OF EDUCATIONAL PRACTICE

The type of internship is educational practice.

Type of Internship - Educational Practice. General Pharmaceutical Technology Practice

Method of conducting – stationary/off-site

The form of the practice is concentrated.

In accordance with the schedule of the educational process, the practice is implemented in the 8th semester.

The place of practice is the educational laboratories of the Department of Pharmacy and Pharmacology of the FEFU Institute of Pharmacy and Pharmacology.

For persons with disabilities and persons with disabilities, the choice of internship places is consistent with the requirement of their accessibility for these students, and the practice is carried out taking into account the peculiarities of their psychophysical development, individual capabilities and state of health.

COMPETENCIES OF THE STUDENT, FORMED AS A RESULT OF THE TRAINING PRACTICE

As a result of the internship "Educational Practice. Internship in General Pharmaceutical Technology" the student should demonstrate the following results:

General Professional Competencies of Graduates and Indicators of Their Achievement

Name of the category (group) of general professional competencies	Code and name of general professional competence (result of mastering)	Code and name of the competency indicator
Adapting to production conditions	OPK-3. Able to carry out professional activities taking into account specific economic, environmental, social factors within the framework of the system of legal regulation of the circulation of medicines	OPK-3.1 Complies with the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines
		OPK-3.2 Takes into account economic and social factors influencing the financial and economic activities of pharmaceutical organizations when making management decisions
		OPK-3.3 Performs labor actions taking into account their impact on the environment, preventing the occurrence of environmental hazards
		MIC – 3.4 Determines and interprets the main environmental indicators of the state of the working environment in the production of medicines

Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
OPK-3.1 Complies with the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines	Knows the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines
	Able to solve the problems of professional activity in the field of circulation of medicines
	Proficient in methods of compliance with the norms and rules established by the authorized state authorities, when solving the problems of professional activity in the field of circulation of

	medicines
OPK-3.2 Takes into account economic and social factors influencing the financial and economic activities of pharmaceutical organizations when making management decisions	Knows the economic and social factors that affect the financial and economic activities of pharmaceutical organizations
	Able to take into account economic and social factors when making managerial decisions
	Proficient in methods of accounting for economic and social factors
OPK-3.3 Performs labor actions taking into account their impact on the environment, preventing the occurrence of environmental hazards	Knows the environmental impact of their work actions
	Knows how to perform work activities taking into account their impact on the environment
	Proficient in methods of counteracting the occurrence of environmental hazards
MIC – 3.4 Determines and interprets the main environmental indicators of the state of the working environment in the production of medicines	Knows the main environmental indicators of the state of the working environment in the production of medicines
	Able to identify and interpret the main environmental indicators of the state of the production environment in the production of medicines
	Proficient in methods for determining and interpreting the main environmental indicators of the state of the production environment in the production of medicines

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (result of mastering)	Code and name of the competency indicator
pharmaceutical	PC-5 Able to manufacture medicinal products and take part in the technology of production of finished medicinal products	PC-5.1 Carries out activities to prepare the workplace, technological equipment, medicinal and excipients for the manufacture of medicines in accordance with prescriptions and (or) requirements
		PC-5.2. Manufactures medicinal products, including intra-pharmacy procurement and serial production, in accordance with the established rules and taking into account the compatibility of medicinal and excipients, quality control at all stages of the technological process
		PC-5.3. Packs, labels and (or) prepares manufactured medicinal products for release
		PC-5.4. Registers data on the manufacture of medicinal products in accordance with the established procedure, including keeping a quantitative record of groups of medicinal products and other substances subject to such accounting

		PC-5.5. Selects excipients and dosage forms taking into account the influence of biopharmaceutical factors
		PC-5.6. Conducts calculations of the amount of medicinal products and excipients for the production of all types of modern dosage forms
Code and name of the competency indicator		Name of the assessment indicator (the result of practical training)
PC-5.1 Carries out activities to prepare the workplace, technological equipment, medicinal and excipients for the manufacture of medicines in accordance with prescriptions and (or) requirements		Knows the theoretical foundations of preparing the workplace, technological equipment, medicinal and excipients for the manufacture of medicines in accordance with recipes and (or) requirements
		Is able to carry out activities to prepare the workplace, technological equipment, medicinal and excipients for the manufacture of medicines in accordance with recipes and (or) requirements
		Proficient in methods of preparing the workplace, technological equipment, medicinal and excipients for the manufacture of medicines in accordance with recipes and (or) requirements
PC-5.2. Manufactures medicinal products, including intra-pharmacy procurement and serial production, in accordance with the established rules and taking into account the compatibility of medicinal and excipients, quality control at all stages of the technological process		He knows the theoretical foundations of the manufacture of medicines, including the implementation of intra-pharmacy procurement and serial production, in accordance with the established rules and taking into account the compatibility of drugs and excipients, controlling quality at all stages of the technological process
		It is able to manufacture medicines, including intra-pharmacy procurement and serial production, in accordance with the established rules and taking into account the compatibility of drugs and excipients, controlling quality at all stages of the technological process
		He is proficient in the methods of manufacturing medicines, including intra-pharmacy procurement and serial production, in accordance with the established rules and taking into account the compatibility of drugs and excipients, controlling quality at all stages of the technological process
PC-5.3. Packs, labels and (or) prepares manufactured medicinal products for release		Knows the theoretical foundations of packaging, labeling and (or) design of manufactured medicines for release
		Is able to package, label and/or prepare manufactured medicines for release
		Proficient in methods of packaging, labeling and (or) registration of manufactured medicines for release
PC-5.4. Registers data on the manufacture of medicinal products in accordance with the established procedure, including keeping a quantitative record of groups of medicinal products and other substances subject to such accounting		Knows the theoretical foundations of registration of data on the manufacture of medicines in accordance with the established procedure, including keeping a quantitative record of groups of medicines and other substances subject to such accounting
		Is able to register data on the manufacture of medicines in accordance with the established procedure, including keeping a quantitative record of groups of medicines and other substances subject to such accounting
		Possesses methods of registration of data on the manufacture of medicines in accordance with the established procedure, including keeping a quantitative record of groups of medicines

	and other substances subject to such accounting
PC-5.5. Manufactures medicines, including serial production, in the field when providing assistance to the population in emergency situations	He knows the theoretical foundations of the manufacture of medicines, including serial production, in the field when providing assistance to the population in emergency situations
	He is able to manufacture medicines, including serial production, in the field when providing assistance to the population in emergency situations
	Proficient in the production of medicines, including serial production, in the field when providing assistance to the population in emergency situations
PC-5.6. Conducts selection of excipients of dosage forms taking into account the influence of biopharmaceutical factors	Knows the theoretical foundations of the selection of excipients of dosage forms, taking into account the influence of biopharmaceutical factors
	Able to select excipients of dosage forms, taking into account the influence of biopharmaceutical factors
	Proficient in methods of selection of excipients of dosage forms, taking into account the influence of biopharmaceutical factors
PC-5.7. Conducts calculations of the amount of medicinal products and excipients for the production of all types of modern dosage forms.	He knows the theoretical foundations of calculating the amount of drugs and excipients for the production of all types of modern dosage forms
	He is able to calculate the amount of drugs and excipients for the production of all types of modern dosage forms.
	He is proficient in methods for calculating the amount of drugs and excipients for the production of all types of modern dosage forms.

Educational Practice. First Aid Practice

OBJECTIVES OF MASTERING EDUCATIONAL PRACTICE

The purpose of the training practice is to consolidate the skills of providing first aid

OBJECTIVES OF EDUCATIONAL PRACTICE

Acquisition of skills in providing pre-hospital emergency care for specialized diseases in accordance with the standards of medical care.

THE PLACE OF EDUCATIONAL PRACTICE IN THE STRUCTURE OF THE EDUCATIONAL PROGRAM OF HIGHER PROFESSIONAL EDUCATION

First aid practice is an integral part of the main professional educational program, is included in block B2 "Practices" and is mandatory.

FORMS, PLACE AND TIME OF EDUCATIONAL PRACTICE

Type of internship – Educational practice.

Type of Practice – First Aid Practice

Method of conducting – stationary/off-site

The forms of educational practice are concentrated.

In accordance with the schedule of the educational process, the internship is implemented in semester 9.

First aid practice is carried out on the basis of the Medical Center of the Federal State Autonomous Educational Institution of Higher Professional Education "Far Eastern Federal University".

For persons with disabilities and persons with disabilities, the choice of internship places is consistent with the requirement of their accessibility for these students, and the practice is carried out taking into account the peculiarities of their psychophysical development, individual capabilities and state of health.

COMPETENCIES OF THE STUDENT, FORMED AS A RESULT OF THE TRAINING PRACTICE

Task type	Code and name of professional competence (result of mastering)	Code and name of the competency indicator
First Aid	OPK-5. Able to provide first aid on the territory of a pharmaceutical organization in case of emergency conditions of visitors until the arrival	OPK-5.1 Establishes the fact of the occurrence of an emergency condition in a visitor to a pharmacy organization, in which first aid is required, including when exposed

	of the ambulance team	to chemical terrorism agents and emergency chemicals
		OPK-5.2 Conducts first aid measures for visitors in case of emergency conditions until the arrival of the ambulance team
		OPK-5.3 Uses medical means of protection, prevention, medical care and treatment of lesions with toxic substances of various nature, radioactive substances and biological agents

Code and Competency Formulation	Stages of Competence Formation
OPK-5.1 Establishes the fact of occurrence of an emergency in a visitor to a pharmacy organization that requires the provision of first aid, including when exposed to agents Chemical Terrorism and Accidents Chemicals	Knows the emergency conditions of a visitor to a pharmacy organization, in which first aid is necessary
	Is able to establish the facts of the occurrence of an emergency condition in a visitor to a pharmacy organization, in which first aid is required, including under the influence of chemical terrorism agents and emergency chemicals
	Proficient in first aid techniques, including when exposed to chemical terrorism agents and hazardous chemicals
OPK-5.2 Carries out activities to provide First aid for visitors in case of emergency conditions before the arrival of the ambulance crew	Knows emergency conditions that need help before the ambulance arrives
	Knows how to provide first aid to visitors in case of emergencies before the arrival of the ambulance team
	Proficient in first aid techniques for visitors
OPK-5.3 Uses medical products protection, prevention, medical care and treatment of lesions with toxic substances of various natures, radioactive substances and by biological means	He knows medical means of protection, prevention, provision of medical care and treatment of lesions with toxic substances of various nature, radioactive substances and biological agents
	Is able to use medical means of protection, prevention, medical care and treatment of lesions with toxic substances of various nature, radioactive substances and biological agents
	He is proficient in methods of protection, prevention, medical care and treatment of lesions with toxic substances of various nature, radioactive substances and biological agents

Internship. Pharmaceutical Technology Practice

OBJECTIVES OF MASTERING PRACTICAL TRAINING

The purpose of the internship is to consolidate and strengthen the theoretical training of students, the acquisition of practical skills and the formation of competencies in the field of professional activity.

OBJECTIVES OF THE INTERNSHIP

The objectives of the practice are:

- consolidation and expansion of theoretical knowledge obtained during the course of technology of extemporaneous dosage forms;
- consolidation of skills in pharmaceutical examination of prescriptions and requirements of medical institutions;
- • Consolidation of skills in the manufacture of extemporaneous dosage forms, their quality control and registration for release.

THE PLACE OF INTERNSHIP IN THE STRUCTURE OF THE BRI

"Practical training. Internship in Pharmaceutical Technology" is an integral part of the main professional educational program, is included in block B2 "Practice" of the curriculum and is mandatory.

TYPES, METHODS, PLACE AND TIME OF PRACTICAL TRAINING

The type of internship is production.

Type of Internship – "Pharmaceutical Technology Practice"

The method of carrying out is stationary/on-site.

The form of the practice is concentrated.

In accordance with the schedule of the educational process, the practice is implemented in the 10th semester.

The place of practice is the educational laboratories of the Department of Pharmacy and Pharmacology of the FEFU Institute of Pharmacy and Pharmacology.

COMPETENCIES OF THE STUDENT, FORMED AS A RESULT OF PRACTICAL TRAINING

As a result of the internship "Production Practice. Practice in Pharmaceutical Technology" the student should demonstrate the following results:

General Professional Competencies of Graduates and Indicators of Their Achievement

Name of the category (group) of general professional competencies	Code and name of general professional competence (result of mastering)	Code and name of the competency indicator
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Adapting to production conditions	OPK-3. Able to carry out professional activities taking into account specific economic, environmental, social factors within the framework of the system of legal regulation of the circulation of medicines	OPK-3.1 Complies with the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines
		OPK-3.2 Takes into account economic and social factors influencing the financial and economic activities of pharmaceutical organizations when making management decisions
		OPK-3.3 Performs labor actions taking into account their impact on the environment, preventing the occurrence of environmental hazards
		OPK-3.4 Determines and Interprets the Main Environmental Indicators of the State of the Production Environment in the Production of Medicines

Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
OPK-3.1 Complies with the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines	Knows the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines
	Able to solve the problems of professional activity in the field of circulation of medicines
	Proficient in methods of compliance with the norms and rules established by the authorized state authorities, when solving the problems of professional activity in the field of circulation of medicines
OPK-3.2 Takes into account economic and social factors influencing the financial and economic activities of pharmaceutical organizations when making management decisions	Knows the economic and social factors that affect the financial and economic activities of pharmaceutical organizations
	Able to take into account economic and social factors when making managerial decisions
	Proficient in methods of accounting for economic and social factors
OPK-3.3 Performs labor actions taking into account their impact on the environment, preventing the occurrence of environmental hazards	Knows the environmental impact of their work actions
	Knows how to perform work activities taking into account their impact on the environment
	Proficient in methods of counteracting the occurrence of environmental hazards
MIC – 3.4 Determines and interprets the main environmental indicators of the state of the working environment in the production of medicines	Knows the main environmental indicators of the state of the working environment in the production of medicines
	Able to identify and interpret the main environmental indicators of the state of the production environment in the production of medicines
	Proficient in methods for determining and interpreting the main environmental indicators of the state of the production environment in the production of medicines

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of	Code and name of the competency indicator
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	professional competence (result of mastering)	
manufacturing	PC-2. Able to take part in the selection, justification of the optimal technological process and its implementation in the production of medicines for medical use	PC-2.1. Develops technological documentation for industrial production of medicinal products PC-2.2. Conducts the technological process in the industrial production of medicines PC-2.3. Carries out control of the technological process in the industrial production of medicines
pharmaceutical	PC-5 Able to manufacture medicinal products and take part in the technology of production of finished medicinal products	PC-5.5 Selects excipients and dosage forms taking into account the influence of biopharmaceutical factors PC-5.6 Calculates the quantity of medicinal products and excipients for the production of all types of modern dosage forms

Code and name of the competency indicator	Name of the assessment indicator (the result of practical training)
PC-2.1. Develops technological documentation for industrial production of medicinal products	Knows the theoretical foundations of the development of technological documentation in the industrial production of medicines
	Able to develop technological documentation for the industrial production of medicines
	Proficient in the development of technological documentation in the industrial production of medicines
PC-2.2. Conducts the technological process in the industrial production of medicines	Knows the theoretical foundations of the technological process in the industrial production of medicines
	Able to carry out the technological process in the industrial production of medicines
	Proficient in methods of conducting the technological process in the industrial production of medicines
PC-2.3. Carries out control of the technological process in the industrial production of medicines	Knows the theoretical foundations of process control in the industrial production of medicines
	Able to control the technological process in the industrial production of medicines
	Proficient in methods of process control in the industrial production of medicines
PC-5.5 Selects excipients and dosage forms taking into account the influence of biopharmaceutical factors	Knows the theoretical foundations of the selection of excipients of dosage forms, taking into account the influence of biopharmaceutical factors Able to select excipients of dosage forms, taking into account the influence of biopharmaceutical factors Proficient in methods of selection of excipients of dosage forms, taking into account the influence of biopharmaceutical factors
PC-5.6 Calculates the quantity of medicinal products and excipients for the production of all types of modern dosage forms	He knows the theoretical foundations of calculating the amount of drugs and excipients for the production of all types of modern dosage forms He is able to calculate the amount of drugs and excipients for the production of all types of modern dosage forms. He is proficient in methods for calculating the amount of drugs and excipients for the production of all types of modern dosage

forms.

Internship. Pharmaceutical Quality Control Practice

OBJECTIVES OF MASTERING PRACTICAL TRAINING

The purpose of the practice of 5th year students of the specialty 33.05.01 Pharmacy is to consolidate and deepen the theoretical knowledge, practical skills and abilities obtained in the educational process to solve specific problems of the practical activities of a pharmacist-analyst in the conditions of pharmacies, control and analytical laboratories (Centers for certification of medicines), pharmacy warehouses and laboratories of pharmaceutical enterprises.

OBJECTIVES OF THE INTERNSHIP

- acquisition of practical skills and abilities in the field of basic principles of pharmaceutical analysis (pharmacopoeial or express analysis) of medicines;
- • consolidation of students' skills in determining modern physical and physicochemical parameters of medicinal substances and their solutions in pharmaceutical analysis in accordance with regulatory documentation;
- • consolidation of skills in carrying out the necessary calculations and conclusions on the compliance of medicines with the requirements of regulatory documentation based on the results of quality control of medicines;
- formation of professional thinking and teamwork skills in the student.

THE PLACE OF INTERNSHIP IN THE STRUCTURE OF THE PROGRAMME

"Practical training. Practice in Quality Control of Medicines" is an integral part of the main professional educational program, is included in the mandatory part of block B2 "Practice" (index B2.O.06(P)) and is mandatory.

TYPES, METHODS, PLACE AND TIME OF PRACTICAL TRAINING

The type of internship is on-the-job training.

Type of Practice - Drug Quality Control Practice

The method of carrying out is stationary/on-site.

The method of carrying out is concentrated.

COMPETENCIES OF THE STUDENT, FORMED AS A RESULT OF PRACTICAL TRAINING

The internship process is aimed at the formation of the following competencies:

General Professional Competencies of Graduates and Indicators of Their Achievement

Name of the category (group) of general professional competencies	Code and name of general professional competence (result of mastering)	Code and name of the competency indicator
Professional Methodology	OPK-1. He is able to use basic biological, physicochemical, chemical, mathematical methods for the development, research and examination of medicines, the manufacture of medicines	OPK-1.1 Applies basic biological methods of analysis for the development, research and examination of medicines and medicinal plant raw materials
		OPK-1.2 Applies basic physicochemical and chemical methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects
		OPK-1.3 Applies the main methods of physicochemical analysis in the manufacture of medicines
		OPK – 1.4 Applies mathematical methods and carries out mathematical processing of data obtained in the course of drug development, as well as research and examination of medicines, medicinal plant raw materials and biological objects

Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
OPK-1.1 Applies basic biological methods of analysis for the development, research and examination of medicines and medicinal plant raw materials	Knows the basic biological methods of analysis
	Able to apply basic biological methods of analysis for the development, research and examination of medicines and medicinal plant raw materials
	Proficient in methods of analysis for the development, research and examination of medicines and medicinal plant raw materials
OPK-1.2 Applies basic physicochemical and chemical methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects	Knows the basic physicochemical and chemical methods of analysis
	Able to carry out development, research and examination of medicines, medicinal plant raw materials and biological objects
	Proficient in methods of analysis for the development, research and examination of medicines, medicinal plant raw materials and biological objects
OPK-1.3 Applies the main methods of physicochemical analysis in the manufacture of medicines	Knows the basic methods of physical and chemical analysis
	Able to analyze manufactured medicines
	Proficient in methods of physical and chemical analysis in the manufacture of medicines
OPK – 1.4 Applies mathematical methods and carries out mathematical processing of data obtained in the course of drug development, as well as research and examination of medicines, medicinal plant raw materials and biological objects	Knows mathematical methods
	Is able to carry out mathematical processing of data obtained in the course of drug development, as well as research and examination of medicines, medicinal plant raw materials and biological objects
	Proficient in methods of mathematical data processing

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (result of mastering)	Code and name of the competency indicator
Control and permitting	PC-4. Able to take part in measures to ensure the	PC-4.1. Conducts sampling at various stages of the technological cycle

	quality of medicines in industrial production	PC-4.2. Develops regulatory documents to ensure the quality of medicines in industrial production
		SC-4.3. Prepares reports on measures to ensure the quality of medicines in industrial production
Expert and Analytical	PC-8 Able to participate in monitoring the quality, efficacy and safety of medicines and medicinal plant raw materials	PC-8.1. Conducts pharmaceutical analysis of pharmaceutical substances, excipients and medicinal products for medical use of factory production in accordance with quality standards
		PC-8.2. Controls the preparation of reagents and titrated solutions
		PC-8.3. Standardizes prepared titrated solutions
		PC-8.5 Informs, in accordance with the procedure established by law, about the non-compliance of the medicinal product for medical use with the established requirements or about the non-compliance of the data on the efficacy and safety of the medicinal product with the data on the medicinal product contained in the instructions for its use

Code and name of the competency indicator	Name of the assessment indicator (the result of practical training)
PC-4.1. Conducts sampling at various stages of the technological cycle	Knows the theoretical foundations of sampling at various stages of the technological cycle
	Able to conduct sampling at various stages of the technological cycle
	Proficient in sampling methods at various stages of the technological cycle
PC-4.2. Develops regulatory documents to ensure the quality of medicines in industrial production	Knows the theoretical foundations of the development of regulatory documents to ensure the quality of medicines in industrial production
	Able to develop regulatory documents to ensure the quality of medicines in industrial production
	Proficient in the development of regulatory documents to ensure the quality of medicines in industrial production
SC-4.3. Prepares reports on measures to ensure the quality of medicines in industrial production	Knows the theoretical foundations of compiling reports on measures to ensure the quality of medicines in industrial production
	Able to prepare reports on measures to ensure the quality of medicines in industrial production
	Proficient in methods of compiling reports on measures to ensure the quality of medicines in industrial production
PC-8.1. Conducts pharmaceutical analysis of pharmaceutical substances, excipients and medicinal products for medical use of factory production in accordance with quality standards	Knows the theoretical foundations of pharmaceutical analysis
	Able to carry out pharmaceutical analysis of pharmaceutical substances, excipients and medicinal products for medical use of factory production in accordance with quality standards
	Proficient in pharmaceutical analysis methods
PC-8.2. Controls the preparation of reagents and titrated solutions	Knows the theoretical foundations of the preparation of reagents and titrated solutions

	Able to control the preparation of reagents and titrated solutions
	Proficient in methods of control over the preparation of reagents and titrated solutions
PC-8.3. Standardizes prepared titrated solutions	Knows the theoretical foundations of standardization
	Able to standardize prepared titrated solutions
	Proficient in methods of standardization of titrated solutions
PC-8.5 Informs, in accordance with the procedure established by law, about the non-compliance of the medicinal product for medical use with the established requirements or about the non-compliance of the data on the efficacy and safety of the medicinal product with the data on the medicinal product contained in the instructions for its use	Knows the procedure established by law for informing about non-compliance of a medicinal product
	Is able to inform about the non-compliance of the medicinal product for medical use with the established requirements or about the discrepancy between the data on the efficacy and safety of the medicinal product with the data on the medicinal product contained in the instructions for its use
	Proficient in methods of informing about non-compliance of a medicinal product for medical use with the established requirements or about non-compliance of data on the efficacy and safety of a medicinal product with the data on the medicinal product contained in the instructions for its use

Internship. Practice in Management and Economics of Pharmaceutical Organizations

OBJECTIVES OF MASTERING PRACTICAL TRAINING

The purpose of the internship "Internship. Practice in Management and Economics of Pharmaceutical Organizations" is: consolidation of competencies in the field of organizational and managerial activities and sale of medicines and other pharmaceutical products.

OBJECTIVES OF THE INTERNSHIP

The objectives of the practice "Practical Training. Practice in Management and Economics of Pharmaceutical Organizations" are:

- consolidation, expansion and improvement of theoretical knowledge obtained during the study of the discipline "Management and Economics of Pharmacy";
- formation and consolidation of the student's professional and practical skills and abilities in the conditions of a modern pharmaceutical organization;
- development of organizational and business qualities of a future specialist in the pharmaceutical industry;
- practical consolidation and deepening of knowledge, skills and abilities in prescription and over-the-counter dispensing of medicines in pharmacies;
- consolidation of skills in working with the main regulatory legal acts regulating pharmaceutical activities, with accounting documentation;
- checking the student's professional readiness for independent activity;
- acquisition of practical skills and abilities to organize the provision of pharmaceutical care to the population and ensure the performance of the main functions of the pharmacy: sales, marketing, trade, production, information, education of labor discipline, professional ethics and deontology, development of organizational skills;
- formation and improvement of the student's competencies necessary for further independent work and solving typical professional tasks.

THE PLACE OF INTERNSHIP IN THE STRUCTURE OF THE PROGRAMME

"Practical training. Practice in Management and Economics of Pharmaceutical Organizations" is an integral part of the main professional educational program, is included in block B2 "Practices" of the curriculum and is mandatory.

TYPES, METHODS, PLACE AND TIME OF PRACTICAL TRAINING

Internship Type – Internship

Type of Practice – Practice in Management and Economics of Pharmaceutical Organizations

The method of holding is off-site.

The form of the practice is concentrated.

In accordance with the schedule of the educational process, the internship is implemented in semester A.

The place of practice is pharmacies (Monastyrev.rf, NefRos LLC, City United Social Pharmacy LLC, Latona Limited Liability Company).

COMPETENCIES OF THE STUDENT, FORMED AS A RESULT OF PRACTICAL TRAINING

General professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (result of mastering)	Code and name of the competency indicator
Adapting to production conditions	OPK-3 is able to carry out professional activities taking into account specific economic, environmental, and social factors within the framework of the system of legal regulation of the circulation of medicines	OPK-3.1 Complies with the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines
		OPK-3.2 Takes into account economic and social factors influencing the financial and economic activities of pharmaceutical organizations when making management decisions
		OPK-3.3 Performs labor actions taking into account their impact on the environment, preventing the occurrence of environmental hazards
		OPK-3.4 Determines and Interprets the Main Environmental Indicators of the State of the Production Environment in the Production of Medicines

Code and name of the competency indicator	Name of the assessment indicator (the result of practical training)
OPK-3.1 Complies with the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines	Knows the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines
	Able to solve the problems of professional activity in the field of circulation of medicines
	Proficient in methods of compliance with the norms and rules established by the authorized state authorities, when solving the problems of professional activity in the field of circulation of medicines

OPK-3.2 Takes into account economic and social factors influencing the financial and economic activities of pharmaceutical organizations when making management decisions	Knows the economic and social factors that affect the financial and economic activities of pharmaceutical organizations
	Able to take into account economic and social factors when making managerial decisions
	Proficient in methods of accounting for economic and social factors
OPK-3.3 Performs labor actions taking into account their impact on the environment, preventing the occurrence of environmental hazards	Knows the environmental impact of their work actions
	Knows how to perform work activities taking into account their impact on the environment
	Proficient in methods of counteracting the occurrence of environmental hazards
OPK-3.4 Determines and Interprets the Main Environmental Indicators of the State of the Production Environment in the Production of Medicines	Knows the main environmental indicators of the state of the working environment in the production of medicines
	Able to identify and interpret the main environmental indicators of the state of the production environment in the production of medicines
	Proficient in methods for determining and interpreting the main environmental indicators of the state of the production environment in the production of medicines

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (result of mastering)	Code and name of the competency indicator
Organizational and managerial	PC-9 Able to take part in the planning and organization of resource support for a pharmaceutical organization	PC-9.1 Determines the economic indicators of commodity stocks of medicines and other pharmacy products
		PP-9.2 Selects the best suppliers and organizes procurement processes based on the results of the market research of suppliers of medicines for medical use and other pharmacy products
		PC-9.3 Controls the execution of contracts for the supply of medicines for medical use and other pharmacy products
		PC-9.4 Conducts acceptance control of incoming medicines and other goods of the pharmacy assortment, checking and drawing up accompanying documents in accordance with the established procedure
		PC-9.5 Carries out withdrawal from circulation of medicines and pharmacy products that have become unusable, with an expired shelf life, falsified, counterfeit and substandard products
		PC-9.6 Carries out subject-quantitative accounting of medicines in accordance with the established procedure

		PC-9.7 Organizes control over the availability and storage conditions of medicines for medical use and other pharmacy products
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PC-9.1 Determines the economic indicators of commodity stocks of medicines and other pharmacy products	Knows the economic indicators of stocks of medicines and other pharmacy products
	Is able to determine the economic indicators of stocks of medicines and other pharmacy products
	Proficient in methods for determining economic indicators of inventories of medicines and other pharmacy products
PP-9.2 Selects the best suppliers and organizes procurement processes based on the results of the market research of suppliers of medicines for medical use and other pharmacy products	Knows the theoretical foundations of the selection of optimal suppliers and the organization of procurement processes based on the results of a market study of suppliers of medicines for medical use and other pharmacy products
	Able to select the best suppliers and organize procurement processes based on the results of market research of suppliers of medicines for medical use and other pharmacy products
	He is proficient in the methods of selecting the best suppliers and organizing procurement processes based on the results of market research of suppliers of medicines for medical use and other pharmacy products
PC-9.3 Controls the execution of contracts for the supply of medicines for medical use and other pharmacy products	Knows the theoretical foundations of monitoring the execution of contracts for the supply of medicines for medical use and other pharmacy products
	Able to control the execution of contracts for the supply of medicines for medical use and other pharmacy products
	Proficient in methods of monitoring the execution of contracts for the supply of medicines for medical use and other pharmacy products
PC-9.4 Conducts acceptance control of incoming medicines and other goods of the pharmacy assortment, checking and drawing up accompanying documents in accordance with the established procedure	Knows the theoretical foundations of acceptance control of incoming medicines and other pharmacy products
	Is able to carry out acceptance control of incoming medicines and other pharmacy products, checking and drawing up accompanying documents in accordance with the established procedure
	Proficient in methods of acceptance control of incoming medicines and other pharmacy products, checking and drawing up accompanying documents in accordance with the established procedure
PC-9.5 Carries out withdrawal from circulation of medicines and pharmacy products that have become unusable, with an expired shelf life, falsified, counterfeit and substandard products	He knows the theoretical foundations of the withdrawal from circulation of medicines and pharmacy products that have become unusable, with an expired shelf life, falsified, counterfeit and low-quality products
	Is able to withdraw from circulation medicines and pharmacy products that have become unusable, with an expired shelf life, falsified, counterfeit and low-quality products
	Proficient in methods of withdrawal from circulation of medicines and pharmacy products that have become unusable, with an expired shelf life, falsified, counterfeit and low-quality products
PC-9.6 Carries out subject-quantitative accounting of medicines in accordance with the established procedure	Knows the theoretical foundations of the subject-quantitative accounting of medicines in accordance with the established procedure
	Able to carry out subject-quantitative accounting of medicines in accordance with the established procedure

	Proficient in the methods of subject-quantitative accounting of medicines in accordance with the established procedure
PC-9.7 Organizes control over the availability and storage conditions of medicines for medical use and other pharmacy products	Knows the theoretical foundations of control over the availability and storage conditions of medicines for medical use and other pharmacy products
	Knows how to organize control over the availability and storage conditions of medicines for medical use and other pharmacy products
	Proficient in methods of monitoring the availability and storage conditions of medicines for medical use and other pharmacy products

Internship. Pharmaceutical Consulting and Information Practice

OBJECTIVES OF MASTERING PRACTICAL TRAINING

Objectives of the internship:

- consolidation, expansion and improvement of theoretical knowledge in the field of pharmaceutical information and consulting;
- use of methods for obtaining and transmitting pharmaceutical information;
- education of students in objectivity and professionalism in the perception and evaluation of information, as well as its provision to various categories of consumers;
- development of skills in the provision of effective pharmaceutical care in the aspect of information and consultation;
- development of personal sales skills;
- formation of a model of information service for visitors;
- preparation of students as highly qualified specialists to perform the functions of a coordinator, consultant, partner in the provision of pharmaceutical care to the population.

OBJECTIVES OF THE INTERNSHIP

The objectives of the practice "Practical Training. Practice in Pharmaceutical Consulting and Information" are:

- mastering the elements of providing pharmaceutical information and consulting services;
- acquisition of personal sales skills;
- formation of an individual model of information service for visitors of various categories;
- Future pharmacists gain deep practical skills and abilities in the provision of pharmaceutical care in the aspect of information and consulting.

THE PLACE OF INTERNSHIP IN THE STRUCTURE OF THE PROGRAMME

"Practical training. Practice in Pharmaceutical Consulting and Information" is an integral part of the main professional educational program, is included in block B2 "Practices" of the curriculum and is mandatory.

TYPES, METHODS, PLACE AND TIME OF PRACTICAL TRAINING

Type of internship – on-the-job training.

Type of Practice - Pharmaceutical Consulting and Information Practice

The method of holding is off-site.

The form of the practice is concentrated.

In accordance with the schedule of the educational process, the practice is implemented in semester 9 and semester A.

The place of practice is pharmacies (Monastyrev.rf, NefRos LLC, City United Social Pharmacy LLC, Latona Limited Liability Company).

COMPETENCIES OF THE STUDENT, FORMED AS A RESULT OF PRACTICAL TRAINING

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (result of mastering)	Code and name of the competency indicator
Adapting to production conditions	OPK-3 Able to carry out professional activities taking into account specific economic, environmental, social factors within the framework of the system of legal regulation of the circulation of medicines	OPK-3.1 Complies with the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines
		OPK-3.2 Takes into account economic and social factors influencing the financial and economic activities of pharmaceutical organizations when making management decisions
		OPK-3.3 Performs labor actions taking into account their impact on the environment, preventing the occurrence of environmental hazards
		OPK-3.4 Determines and Interprets the Main Environmental Indicators of the State of the Production Environment in the Production of Medicines
Organizational and managerial	PC-7 Able to provide pharmaceutical information and advice on the dispensing and sale of medicines for medical use and other pharmacy products	SC-7.1 Provides information and consulting assistance to visitors of the pharmacy organization in the selection of medicines and other products of the pharmacy assortment, as well as on the issues of their rational use, taking into account the biopharmaceutical features of dosage forms
		PC-7.2 Informs healthcare professionals about medicinal products, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical characteristics of dosage forms

		<p>PC-7.3</p> <p>Makes a decision on the replacement of the prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure on the basis of information on groups of medicinal products and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical characteristics of dosage forms</p>
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Code and name of the competency indicator	Name of the assessment indicator (the result of practical training)
OPK-3.1 Complies with the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines	Knows the norms and rules established by the authorized state authorities when solving the problems of professional activity in the field of circulation of medicines
	Able to solve the problems of professional activity in the field of circulation of medicines
	Proficient in methods of compliance with the norms and rules established by the authorized state authorities, when solving the problems of professional activity in the field of circulation of medicines
OPK-3.2 Takes into account economic and social factors influencing the financial and economic activities of pharmaceutical organizations when making management decisions	Knows the economic and social factors that affect the financial and economic activities of pharmaceutical organizations
	Able to take into account economic and social factors when making managerial decisions
	Proficient in methods of accounting for economic and social factors
OPK-3.3 Performs labor actions taking into account their impact on the environment, preventing the occurrence of environmental hazards	Knows the environmental impact of their work actions
	Knows how to perform work activities taking into account their impact on the environment
	Proficient in methods of counteracting the occurrence of environmental hazards
OPK-3.4 Determines and Interprets the Main Environmental Indicators of the State of the Production Environment in the Production of Medicines	Knows the main environmental indicators of the state of the working environment in the production of medicines
	Able to identify and interpret the main environmental indicators of the state of the production environment in the production of medicines
	Proficient in methods for determining and interpreting the main environmental indicators of the state of the production environment in the production of medicines
PC-7.1 Provides information and consulting assistance to visitors of	Knows the basics of information and consulting assistance to visitors of a pharmacy organization in the selection of medicines and other products of the pharmacy assortment,

<p>the pharmacy organization in the selection of medicines and other pharmacy products, as well as on their rational use, taking into account the biopharmaceutical features of dosage forms</p>	<p>as well as on the issues of their rational use, taking into account the biopharmaceutical features of dosage forms</p>
	<p>She is able to provide information and consulting assistance to visitors of the pharmacy organization in the selection of medicines and other products of the pharmacy assortment, as well as on the issues of their rational use, taking into account the biopharmaceutical features of drugs</p>
	<p>Proficient in the methods of providing information and consulting assistance to visitors of the pharmacy organization in the selection of medicines and other products of the pharmacy assortment, as well as on the issues of their rational use, taking into account the biopharmaceutical features of dosage forms</p>
<p>PC-7.2 Informs medical professionals about medicines, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical features of dosage forms</p>	<p>Is aware of the need to inform healthcare professionals about medicines, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical characteristics of dosage forms</p>
	<p>Is able to convey information to medical professionals about medicines, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical features of dosage forms</p>
	<p>Proficient in methods of presenting information to medical professionals about medicines, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical features of dosage forms</p>
<p>PC-7.3 Makes a decision on the replacement of the prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure on the basis of information on groups of medicinal products and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical characteristics of dosage forms</p>	<p>Knows about the possibility of replacing the prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure on the basis of information on groups of medicinal products and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical characteristics of dosage forms</p>
	<p>Is able to make decisions on the replacement of a prescribed drug with synonymous or similar drugs in accordance with the established procedure based on information on groups of drugs and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical features of dosage forms</p>
	<p>Possesses the necessary knowledge on the replacement of a prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure based on information on groups of medicinal products and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical features of dosage forms</p>

Internship. Research Work

OBJECTIVES OF MASTERING PRACTICAL TRAINING

The main goal of "Practical training. Scientific research work" is the development of the ability to independently carry out research work related to the solution of complex professional problems in innovative conditions.

Research work is carried out by the student under the supervision of a supervisor.

The objectives of the "Research Work" internship are:

- familiarization with the methods of conducting research work in accordance with the topic determined by the subject area and objects of research;
- acquisition by the student of practical skills and competencies in the types of professional activity;
- development of skills for independent solution of production problems and tasks;
- selection or clarification of the topic of research work, collection of materials for research, practical work together with professional developers;
- increasing the competitive potential of trainees on the basis of the formation of their professional skills;
- adaptation of the student to future places of professional activity.

OBJECTIVES OF THE INTERNSHIP

The objectives of the practice are:

- study of theoretical and experimental methods of obtaining, processing and storing scientific information with the involvement of modern information technologies;
- study of the experience of conducting specific scientific research in the laboratories of the university departments, study of the forms and procedure for the preparation of reporting scientific and technical documentation and the implementation of the results of scientific research;
- formation of skills in conducting scientific research as a holistic process, including the skills of analyzing a specific problem situation, formulating a problem and putting forward a hypothesis, developing an experiment plan, conducting an experiment, processing the results, formulating conclusions and presenting the results of the work done in the form of scientific reports, abstracts or articles;
- conducting scientific research in accordance with an individual assignment on the chosen topic;
- selection of material for the preparation of scientific reports, as well as further informed choice of the topic of research work.

THE PLACE OF INTERNSHIP IN THE STRUCTURE OF THE PROGRAMME

Research work is an integral part of the main professional educational program, is included in block B2 "Practices" of the curriculum - a part formed by the participants of educational relations.

TYPES, METHODS, PLACE AND TIME OF RESEARCH WORK

Type of internship – Internship.

Type of Internship - Research Work.

The method of carrying out is stationary/on-site.

The form of the practice is concentrated.

In accordance with the schedule of the educational process, the internship is implemented in semester A.

The place of practice is the structural divisions of FEFU (Department of Pharmacy and Pharmacology, laboratories of the Department).

The Graduating Department, in which the Specialist's program is implemented, determines the special requirements for the student's training in the research part of the program.

Special requirements include:

- knowledge of modern problems of this field of knowledge;
- knowledge of the history of the development of a particular scientific problem, its role and place in the scientific direction under study;
- availability of specific knowledge on a scientific problem;
- the ability to practically carry out scientific research, experimental work in a particular scientific field;
- Ability to work with specific software products and specific Internet resources, etc.

During the research work, the student must study:

- patent and literary sources on the topic under development in order to use them in the performance of research work;
- methods of research and experimental work;
- rules for the operation of research equipment;
- methods of analysis and processing of experimental data;
- physical and mathematical models of processes and phenomena related to the object under study;
- information technologies in scientific research, software products related to the professional sphere;
- Requirements for the preparation of scientific and technical documentation.

The student must complete:

- analysis, systematization and generalization of scientific and technical information on the topic of research;
- theoretical or experimental research within the framework of the assigned tasks, including a mathematical (simulation) experiment;
- analysis of the reliability of the results obtained;
- comparison of the results of the study of the development object with domestic and foreign analogues;
- analysis of the scientific and practical significance of the research, as well as the technical and economic efficiency of the development.

COMPETENCIES OF THE STUDENT, FORMED AS A RESULT OF PRACTICAL TRAINING

Professional competencies of graduates and indicators of their achievement:

Task type	Code and name of professional competence (result of mastering)	Code and name of the competency indicator
Research & Development	PC-1 Able to take part in research in the field of assessment of the efficacy and safety of medicines	SC-1.1 Conducts studies of pharmacological activity and other activities of various compounds in laboratory animals
		SC-1.2 Determines pharmacokinetic parameters of substances in laboratory animals
		SC-1.3 Investigates the bioavailability of substances in various in vitro and in vivo models
		SC-1.5 Conducts methodology development and pharmacokinetics research at the preclinical and clinical level

Code and name of the competency indicator	Name of the assessment indicator (the result of practical training)
SC-1.1 Conducts studies of pharmacological activity and other activities of various compounds in laboratory animals	He knows the theoretical basis for the study of pharmacological activity and other types of activity of various compounds in laboratory animals
	Able to study pharmacological activity and other activities of various compounds in laboratory animals
	Proficient in methods of studying pharmacological activity and other types of activity of various compounds on laboratory animals
SC-1.2 Determines pharmacokinetic parameters of substances in laboratory animals	He knows the theoretical basis for determining the pharmacokinetic parameters of substances in laboratory animals
	Able to determine the pharmacokinetic parameters of substances in laboratory animals

	Proficient in methods for determining the pharmacokinetic parameters of substances in laboratory animals
SC-1.3 Investigates the bioavailability of substances in various in vitro and in vivo models	Knows the theoretical basis for studying the bioavailability of substances in various in vitro and in vivo models
	Able to study the bioavailability of substances in various in vitro and in vivo models
	Proficient in methods for studying the bioavailability of substances in various in vitro and in vivo models
SC-1.5 Conducts methodology development and pharmacokinetics research at the preclinical and clinical level	Knows the theoretical foundations of the development of methods and the study of pharmacokinetics at the preclinical and clinical level
	Able to conduct method development and pharmacokinetics research at the preclinical and clinical level
	Proficient in methods of methodology development and pharmacokinetic research at the preclinical and clinical level

Internship. Undergraduate Practice

OBJECTIVES OF MASTERING PRACTICAL TRAINING

The goals of the pre-diploma practice are: the formation of students' skills of independent research work and the creation of a theoretical and experimental base for the implementation of the final qualification work and its defense.

OBJECTIVES OF THE INTERNSHIP:

The objectives of the pre-diploma practice are:

1. Acquisition of skills, abilities, knowledge of planning, preparation, organization and implementation of research work.
2. Training in modern methods of biochemical research, which are necessary for the performance of scientific work.
3. Acquisition of skills in working with scientific literature.
4. Selection of methods of statistical processing and presentation of the results obtained.
5. Analysis of the results.
6. Formation of the skill of discussing, interpreting and presenting the results obtained.

THE PLACE OF PRE-DIPLOMA PRACTICE IN THE STRUCTURE OF THE EP

Pre-diploma practice is carried out at the end of the 10th semester, belongs to the cycle of professional disciplines in the specialty of medical biochemistry of higher professional medical education.

TYPES, METHODS, PLACE AND TIME OF PRE-DIPLOMA PRACTICE

Internship Type – Apprenticeship

Type of Internship – Pre-Diploma Practice

The method of practice is stationary/on-site. Concentrated.

Internship time – A semester

The place of practice is the Research Institute of the Far Eastern Branch of the Russian Academy of Sciences, research laboratories of scientific institutes, the Federal State Autonomous Educational Institution of Higher Education "Far Eastern Federal University", pharmacies (Monastyrev.rf, NefRos LLC, City United Social Pharmacy LLC, Latona Limited Liability Company).

COMPETENCIES OF THE STUDENT, FORMED AS A RESULT OF PRACTICAL TRAINING

Professional competencies of graduates and indicators of their achievement:

Type of professional activity tasks:	Code and name of professional competence	Code and name of the indicator for achieving universal competence	Learning outcomes by disciplines (modules), practices
Research & Development	PC-1 Able to take part in research in the field of assessing the efficacy and safety of medicines	PC-1.1 Conducts studies of pharmacological activity and other activities of various compounds in laboratory animals	He knows the theoretical basis for the study of pharmacological activity and other types of activity of various compounds in laboratory animals Able to study pharmacological activity and other activities of various compounds in laboratory animals Proficient in methods of studying pharmacological activity and other types of activity of various compounds on laboratory animals
		PC-1.2 Determination of pharmacokinetic parameters of substances in laboratory animals	He knows the theoretical basis for determining the pharmacokinetic parameters of substances in laboratory animals Able to determine the pharmacokinetic parameters of substances in laboratory animals Proficient in methods for determining the pharmacokinetic parameters of substances in laboratory animals
		PP-1.3 Investigate the bioavailability of substances in various in vitro and in vivo models	Knows the theoretical basis for studying the bioavailability of substances in various in vitro and in vivo models Able to study the bioavailability of substances in various in vitro and in vivo models Proficient in methods for studying the bioavailability of substances in various in vitro and in vivo models

		PC-1.5 Conducts development of methods and pharmacokinetics research at the preclinical and clinical level	Knows the theoretical foundations of the development of methods and the study of pharmacokinetics at the preclinical and clinical level Able to conduct method development and pharmacokinetics research at the preclinical and clinical level Proficient in methods of methodology development and pharmacokinetic research at the preclinical and clinical level
manufacturing	PC-2 Able to take part in the selection, justification of the optimal technological process and its implementation in the production of medicines for medical use	PC-2.1 Develops technological documentation for industrial production of medicines, including biotechnological drugs	Knows the theoretical foundations of the development of technological documentation in the industrial production of medicines Able to develop technological documentation for the industrial production of medicines Proficient in the development of technological documentation in the industrial production of medicines
		PC-2.2 Conducts the technological process in the industrial production of medicines, including biotechnological preparations	Knows the theoretical foundations of the technological process in the industrial production of medicines Able to carry out the technological process in the industrial production of medicines Proficient in methods of conducting the technological process in the industrial production of medicines
		PC-2.3 Carries out control of the technological process in the industrial production of medicines, including biotechnological drugs	Knows the theoretical foundations of process control in the industrial production of medicines Able to control the technological process in the industrial production of medicines

			Proficient in methods of process control in the industrial production of medicines
Control and permitting	PC-3 Able to carry out measures to control (supervise) the activities of legal entities and individuals licensed for pharmaceutical activities, to comply with mandatory requirements	PC-3.1 Conducts examination of license documents for compliance with mandatory requirements and conditions for pharmaceutical activities	Knows the theoretical foundations of the examination of license documents for compliance with the mandatory requirements and conditions for the implementation of pharmaceutical activities Is able to conduct an examination of license documents for compliance with mandatory requirements and conditions for the implementation of pharmaceutical activities Proficient in the methods of examination of license documents for compliance with mandatory requirements and conditions for the implementation of pharmaceutical activities
		PC-3.2 Participates in the examination of compliance of facilities and employees with licensing requirements and conditions for pharmaceutical activities	Knows the theoretical foundations of the examination of compliance of facilities and employees with licensing requirements and conditions for the implementation of pharmaceutical activities He is able to conduct an examination of the compliance of facilities and employees with licensing requirements and conditions for the implementation of pharmaceutical activities Proficient in methods of examination of compliance of facilities and employees with licensing requirements and conditions for carrying out pharmaceutical activities
	PC-4 Able to take part in measures to ensure the quality of medicines in industrial production	PC-4.1 Conducts sampling at various stages of the technological cycle	Knows the theoretical foundations of sampling at various stages of the technological cycle Able to conduct sampling at various stages of the technological cycle Proficient in sampling methods at various stages of the technological cycle
		PC-4.2 Develops regulatory documents to ensure the quality of medicines in industrial production	Knows the theoretical foundations of the development of regulatory documents to ensure the quality of medicines in industrial production

			<p>Able to develop regulatory documents to ensure the quality of medicines in industrial production</p> <p>Proficient in the development of regulatory documents to ensure the quality of medicines in industrial production</p>
		<p>PC-4.3 Prepares reports on measures to ensure the quality of medicines in industrial production</p>	<p>Knows the theoretical foundations of compiling reports on measures to ensure the quality of medicines in industrial production</p> <p>Able to prepare reports on measures to ensure the quality of medicines in industrial production</p> <p>Proficient in methods of compiling reports on measures to ensure the quality of medicines in industrial production</p>
pharmaceutical	<p>PC-5 Able to manufacture medicines and take part in the technology of production of finished medicines</p>	<p>PC-5.1 Carries out activities to prepare the workplace, technological equipment, medicinal and excipients for the manufacture of medicines in accordance with prescriptions and (or) requirements</p>	<p>Knows the theoretical foundations of preparing the workplace, technological equipment, medicinal and excipients for the manufacture of medicines in accordance with recipes and (or) requirements</p> <p>Is able to carry out activities to prepare the workplace, technological equipment, medicinal and excipients for the manufacture of medicines in accordance with recipes and (or) requirements</p> <p>Proficient in methods of preparing the workplace, technological equipment, medicinal and excipients for the manufacture of medicines in accordance with recipes and (or) requirements</p>
		<p>PC-5.2 Manufactures medicines, including intra-pharmacy procurement and serial production, in accordance with the established rules and taking into account the compatibility of drugs and excipients, controlling quality at all stages of the technological process</p>	<p>He knows the theoretical foundations of the manufacture of medicines, including the implementation of intra-pharmacy procurement and serial production, in accordance with the established rules and taking into account the compatibility of drugs and excipients, controlling quality at all stages of the technological process</p>

			<p>It is able to manufacture medicines, including intra-pharmacy procurement and serial production, in accordance with the established rules and taking into account the compatibility of drugs and excipients, controlling quality at all stages of the technological process</p> <p>He is proficient in the methods of manufacturing medicines, including intra-pharmacy procurement and serial production, in accordance with the established rules and taking into account the compatibility of drugs and excipients, controlling quality at all stages of the technological process</p>
		<p>PC-5.3 Packs, labels and (or) prepares manufactured medicinal products for release</p>	<p>Knows the theoretical foundations of packaging, labeling and (or) design of manufactured medicines for release</p> <p>Is able to package, label and/or prepare manufactured medicines for release</p> <p>Proficient in methods of packaging, labeling and (or) registration of manufactured medicines for release</p>
		<p>PC-5.4 Registers data on the manufacture of medicinal products in accordance with the established procedure, including keeping a quantitative record of groups of medicinal products and other substances subject to such accounting</p>	<p>Knows the theoretical foundations of registration of data on the manufacture of medicines in accordance with the established procedure, including keeping a quantitative record of groups of medicines and other substances subject to such accounting</p> <p>Is able to register data on the manufacture of medicines in accordance with the established procedure, including keeping a quantitative record of groups of medicines and other substances subject to such accounting</p> <p>Possesses methods of registration of data on the manufacture of medicines in accordance with the established procedure, including keeping a quantitative record of groups of medicines and other</p>

			<p>substances subject to such accounting</p>
	<p>PC-6 He is able to solve the problems of professional activity in the dispensing and sale of medicines and other pharmacy products through pharmaceutical and medical organizations</p>	<p>PC-6.1 Conducts pharmaceutical examination of prescriptions and requirements of waybills, as well as their registration and taxiing in accordance with the established procedure</p>	<p>Knows the theoretical foundations of pharmaceutical examination of prescriptions and invoice requirements, as well as their registration and taxiing in accordance with the established procedure Is able to carry out pharmaceutical examination of prescriptions and requirements of invoices, as well as their registration and taxiing in accordance with the established procedure Proficient in the methods of pharmaceutical examination of prescriptions and requirements of invoices, as well as their registration and taxiing in accordance with the established procedure</p>
		<p>PC-6.2 Sells and dispenses medicines for medical use and other pharmacy products to individuals, as well as dispenses them to the subdivisions of medical organizations, monitoring compliance with the procedure for dispensing medicines for medical use and other pharmacy products with pharmaceutical consulting and provision of pharmaceutical information</p>	<p>Knows the theoretical foundations of the sale and distribution of medicines for medical use and other pharmacy products to individuals, as well as their release to the divisions of medical organizations, monitoring compliance with the procedure for dispensing medicines for medical use and other pharmacy products with pharmaceutical consulting and the provision of pharmaceutical information It is able to sell and dispense medicines for medical use and other pharmacy products to individuals, as well as dispenses them to the divisions of medical organizations, monitoring compliance with the procedure for dispensing medicines for medical use and other pharmacy products with pharmaceutical consulting and the provision of pharmaceutical information Proficient in the methods of sale and dispensing of medicines for medical use and other pharmacy products to individuals, as well as their release to the divisions of medical organizations, controlling compliance with</p>

			the procedure for dispensing medicines for medical use and other pharmacy products with pharmaceutical consulting and provision of pharmaceutical information
		PC-6.3 Carries out office work on the maintenance of cash, organizational, administrative, reporting documents in retail sales	Knows the theoretical foundations of office work on the maintenance of cash, organizational, administrative, reporting documents in retail sales Is able to carry out office work on the maintenance of cash, organizational, administrative, reporting documents in retail sales Proficient in the methods of office work for the maintenance of cash, organizational, administrative, reporting documents in retail sales
		PC-6.4 Carries out office work on the maintenance of organizational, administrative, payment reporting documents in the course of wholesale sales	Knows the theoretical foundations of office work on the maintenance of organizational, administrative, payment reporting documents in wholesale sales Is able to carry out office work on the maintenance of organizational, administrative, payment reporting documents in wholesale sales Proficient in the methods of office work for the maintenance of organizational, administrative, payment reporting documents in the course of wholesale sales
		PC-6.5 Carries out pre-sale preparation, organizes and conducts the display of medicines and pharmacy products in the sales area and (or) showcases of the departments of the pharmacy organization	Knows the theoretical foundations of pre-sale preparation, organizes and conducts the display of medicines and pharmacy products in the sales area and (or) showcases of the departments of the pharmacy organization Knows how to carry out pre-sale preparation, organizes and conducts the display of medicines and pharmacy products in the sales area and (or) showcases of the departments of the pharmacy organization Proficient in the methods of pre-sale preparation, organizes and conducts the

			display of medicines and pharmacy products in the sales area and (or) showcases of the departments of the pharmacy organization
PC-7 Able to provide pharmaceutical information and advice on the dispensing and sale of medicines for medical use and other pharmacy products	PC-7.1 Provides information and consulting assistance to visitors of the pharmacy organization in the selection of medicines and other products of the pharmacy assortment, as well as on the issues of their rational use, taking into account the biopharmaceutical features of dosage forms		Knows the theoretical foundations of information and consulting assistance to visitors of a pharmacy organization in the selection of medicines and other products of the pharmacy assortment, as well as on the issues of their rational use, taking into account the biopharmaceutical features of dosage forms She is able to provide information and consulting assistance to visitors of a pharmacy organization in the selection of medicines and other products of the pharmacy assortment, as well as on their rational use, taking into account the biopharmaceutical features of dosage forms She is proficient in the methods of information and consulting assistance to visitors of the pharmacy organization in the selection of medicines and other products of the pharmacy assortment, as well as on the issues of their rational use, taking into account the biopharmaceutical features of dosage forms
			PC-7.2 Informs healthcare professionals about medicinal products, their synonyms and analogues, possible side effects and interactions, taking into account the biopharmaceutical characteristics of dosage forms

			and analogues, possible side effects and interactions, taking into account the biopharmaceutical features of dosage forms
		PP-7.3 Makes a decision on the replacement of a prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure on the basis of information on groups of medicinal products and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical characteristics of dosage forms	Knows the theoretical basis for making a decision on the replacement of a prescribed drug with synonymous or similar drugs in accordance with the established procedure based on information on groups of drugs and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical features of dosage forms Is able to make a decision on the replacement of a prescribed drug with synonymous or similar drugs in accordance with the established procedure based on information on groups of drugs and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical features of dosage forms Proficient in the methods of making a decision on the replacement of a prescribed medicinal product with synonymous or similar drugs in accordance with the established procedure based on information on groups of medicinal products and synonyms within one international nonproprietary name and their prices, taking into account the biopharmaceutical features of dosage forms
Expert and Analytical	PC-8 Able to participate in monitoring the quality, efficacy and safety of medicines and medicinal plant raw materials	PC-8.1 Conducts pharmaceutical analysis of pharmaceutical substances, excipients and medicinal products for medical use of factory production in accordance with quality standards	Knows the theoretical foundations of pharmaceutical analysis Able to carry out pharmaceutical analysis of pharmaceutical substances, excipients and medicinal products for medical use of factory production in accordance with quality standards Proficient in pharmaceutical analysis methods

		<p>PC-8.2 Controls the preparation of reagents and titrated solutions</p>	<p>Knows the theoretical foundations of the preparation of reagents and titrated solutions Able to control the preparation of reagents and titrated solutions Proficient in methods of control over the preparation of reagents and titrated solutions</p>
		<p>PC-8.3 Standardizes prepared titrated solutions</p>	<p>Knows the theoretical foundations of standardization Able to standardize prepared titrated solutions Proficient in methods of standardization of titrated solutions</p>
		<p>PC-8.4 Conducts pharmacognostic analysis of medicinal plant raw materials and medicinal herbal preparations</p>	<p>Knows the theoretical foundations of pharmacognostic analysis of medicinal plant raw materials and medicinal herbal preparations Able to perform pharmacognostic analysis of medicinal plant raw materials and medicinal herbal preparations Proficient in the method of pharmacognostic analysis of medicinal plant raw materials and medicinal herbal preparations</p>
		<p>PC-8.5 Informs, in accordance with the procedure established by law, about the non-compliance of the medicinal product for medical use with the established requirements or about the non-compliance of the data on the efficacy and safety of the medicinal product with the data on the medicinal product contained in the instructions for its use</p>	<p>Knows the procedure established by law for informing about non-compliance of a medicinal product Is able to inform about the non-compliance of the medicinal product for medical use with the established requirements or about the discrepancy between the data on the efficacy and safety of the medicinal product with the data on the medicinal product contained in the instructions for its use Proficient in methods of informing about non-compliance of a medicinal product for medical use with the established requirements or about non-compliance of data on the efficacy and safety of a medicinal product with the data on the medicinal product contained in the instructions for its use</p>

Organizational and managerial	PC-9 Able to take part in the planning and organization of resource support for a pharmaceutical organization	PC-9.1 Determines the economic indicators of commodity stocks of medicines and other pharmacy products	Knows the economic indicators of stocks of medicines and other pharmacy products Is able to determine the economic indicators of stocks of medicines and other pharmacy products Proficient in methods for determining economic indicators of inventories of medicines and other pharmacy products
		PP-9.2 Selects the best suppliers and organizes procurement processes based on the results of the market research of suppliers of medicines for medical use and other pharmacy products	Knows the theoretical foundations of the selection of optimal suppliers and the organization of procurement processes based on the results of a market study of suppliers of medicines for medical use and other pharmacy products Able to select the best suppliers and organize procurement processes based on the results of market research of suppliers of medicines for medical use and other pharmacy products He is proficient in the methods of selecting the best suppliers and organizing procurement processes based on the results of market research of suppliers of medicines for medical use and other pharmacy products
		PC-9.3 Controls the execution of contracts for the supply of medicines for medical use and other pharmacy products	Knows the theoretical foundations of monitoring the execution of contracts for the supply of medicines for medical use and other pharmacy products Able to control the execution of contracts for the supply of medicines for medical use and other pharmacy products Proficient in methods of monitoring the execution of contracts for the supply of medicines for medical use and other pharmacy products
		PC-9.4 Conducts acceptance control of incoming medicines and other goods of the pharmacy assortment, checking and drawing up accompanying documents in accordance with the established procedure	Knows the theoretical foundations of acceptance control of incoming medicines and other pharmacy products Is able to carry out acceptance control of incoming medicines and other pharmacy products, checking and drawing up

			<p>accompanying documents in accordance with the established procedure</p> <p>Proficient in methods of acceptance control of incoming medicines and other pharmacy products, checking and drawing up accompanying documents in accordance with the established procedure</p>
		<p>PC-9.5 Carries out withdrawal from circulation of medicines and pharmacy products that have become unusable, with an expired shelf life, falsified, counterfeit and substandard products</p>	<p>He knows the theoretical foundations of the withdrawal from circulation of medicines and pharmacy products that have become unusable, with an expired shelf life, falsified, counterfeit and low-quality products</p> <p>Is able to withdraw from circulation medicines and pharmacy products that have become unusable, with an expired shelf life, falsified, counterfeit and low-quality products</p> <p>Proficient in methods of withdrawal from circulation of medicines and pharmacy products that have become unusable, with an expired shelf life, falsified, counterfeit and low-quality products</p>
		<p>PC-9.6 Carries out subject-quantitative accounting of medicines in accordance with the established procedure</p>	<p>Knows the theoretical foundations of the subject-quantitative accounting of medicines in accordance with the established procedure</p> <p>Able to carry out subject-quantitative accounting of medicines in accordance with the established procedure</p> <p>Proficient in the methods of subject-quantitative accounting of medicines in accordance with the established procedure</p>
		<p>PC-9.7 Organizes control over the availability and storage conditions of medicines for medical use and other pharmacy products</p>	<p>Knows the theoretical foundations of control over the availability and storage conditions of medicines for medical use and other pharmacy products</p> <p>Knows how to organize control over the availability and storage conditions of medicines for medical use and other pharmacy products</p>

			Proficient in methods of monitoring the availability and storage conditions of medicines for medical use and other pharmacy products
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Communication Skills

The total work of the discipline is 2 credits / 72 academic hours. It is an optional discipline, studied in the 1st year and completed in the first year. The curriculum provides for practical classes in the amount of 8 hours, as well as allocated hours for self-work of the student - 64 hours.

Implementation language: English

Purpose: to develop students' skills of effective speech activity, namely:

1) preparation and presentation of oral presentations on socially significant and professionally oriented topics;

2) creation and language design of academic and official business texts of various genres.

Tasks:

- develop the skills of composing academic texts of various genres (abstract, abstract, essay, scientific article);

- develop skills in compiling official business texts of various genres (personal business papers, accounting documents, business letters);

- improve the skills of language design of the text in accordance with accepted norms, rules, standards;

- to form the skills of editing/self-editing of the composed text;

- teach the techniques of effective oral presentation of a written text;

- to acquaint with the principles and techniques of conducting a constructive discussion;

- teach techniques for creating an effective presentation.

Preliminary competencies are not required, knowledge in the scope of the school curriculum is sufficient.

As a result of studying this discipline, students form the following universal competencies: UK-4, UK-5.

Name of the category (group) of universal competencies	Code and name of universal competence (the result of mastering)	Code and name of the competency achievement indicator
Communication	UK-4 Capable of carrying out business communication in oral and written forms in the state language of the	UK-4.2 Understands the peculiarities of the behavior of the selected groups of people with whom he works/interacts, takes them into account in their professional activities

Name of the category (group) of universal competencies	Code and name of universal competence (the result of mastering)	Code and name of the competency achievement indicator
	Russian Federation and foreign language(s)	UK-4.3 Competently and effectively builds business, oral and written communication with representatives of other nationalities and cultures in both foreign languages and the state language of the Russian Federation
Intercultural interaction	UK-5. Able to perceive the intercultural diversity of society in socio-historical, ethical and philosophical contexts	UK-5.3 Takes into account the peculiarities of cultural diversity of society, key aspects Development of the Asia-Pacific Region

For the formation of the above competencies within the framework of the discipline "Russian Language: the Effectiveness of Speech Communication", the following educational technologies and methods of active / interactive learning are used: a round table, a debate, a discussion, a business game, work in small groups.

Computer-aided Drug Design, Drug Discovery and Development

The total labor intensity of the discipline is 72 credits / 2 academic hours. It is a discipline of the elective part of the EP, studied in the course and ends with a test. The curriculum provides for lectures in the amount of 18 hours, practical 36 hours, and also allocated hours for independent work of the student - 18 hours.

Language: English

Objective: to familiarize students with the main modern methods of computer modeling of complex (multi-particle and complex) biological systems. The simulation of such systems within the framework of classical Newtonian mechanics, using empirical energy functions, is considered.

Tasks:

1. Familiarize yourself with the concepts underlying the modeling of molecular dynamics.
2. Explore the possibilities of computer implementation; the functional type and nature of molecular interaction potentials; A type of equations of motion that take into account the influence of the external environment and the presence of various boundary conditions.
3. To study the basic algorithms for finding intermolecular interactions and numerical integration of the equations of motion of a molecular system.

For successful study of the discipline, students must have the following preliminary competencies: UK-1.1; UK-1.2; UK-4.1; UK-6.1, OPK-6.1, OPK-6.2, OPK-6.3, PK-1.4, obtained as a result of studying the disciplines "Fundamentals of Digital Literacy", "Biostatistics", "Methods of Statistical Analysis in Pharmacy", "Bioinformatics", "Pharmaceutical Informatics".

Competencies of students, indicators of their achievement and learning outcomes in the discipline:

Name of the category (group) Competencies	Code and name Competencies (result of mastering)	Code and name of the competency indicator	Name of the assessment indicator (the result of learning in the discipline)
Systems and Critical Thinking	UK-1. Able to carry out a critical analysis of problem situations based on a systematic approach, develop a strategy of action	UK-1.1 Searches and collects information using computer technologies	He knows the theoretical foundations of search, collection and processing of information with the help of modern computer technologies, a system approach, modern software tools for solving problems. He is able to search, collect and process information with the help of modern computer technologies, a systematic

			<p>approach, modern software tools to solve problems.</p> <p>He has mastered the methods of searching, collecting and processing information with the help of modern computer technologies, a systematic approach, modern software tools for solving problems.</p>
		<p>UK-1.2 Uses information products to process and analyze information, following the principles of critical evaluation and verification of sources</p>	<p>He knows modern methods of information technologies and software tools for searching, collecting, processing, and transmitting scientific information to solve standard problems, following the principles of critical assessment and verification of sources.</p> <p>He is able to choose modern methods of information technology and software tools for searching, collecting, processing, and transmitting scientific information to solve standard problems, following the principles of critical assessment and verification of sources.</p> <p>Proficient in information technology methods and software tools for searching, collecting, processing, and transmitting scientific information to solve standard problems, following the principles of critical assessment and verification of sources.</p>
Scientific and research	PC-1. Able to take part in research in the field of assessing the efficacy and safety of medicines	<p>PP-1.2 Determines the pharmacokinetic parameters of substances in laboratory animals</p>	<p>He knows the theoretical basis for determining the pharmacokinetic parameters of substances in laboratory animals.</p> <p>It is able to determine the pharmacokinetic parameters of substances in laboratory animals.</p> <p>He is proficient in methods for determining the pharmacokinetic parameters of substances in laboratory animals.</p>
		<p>PC-1.3 Conducts studies of the bioavailability of substances in various in</p>	<p>Knows the theoretical basis for studying the bioavailability of substances in various in vitro</p>

		vitro and in vivo models	and in vivo models Able to study the bioavailability of substances in various in vitro and in vivo models Proficient in studying the bioavailability of substances in various in vitro and in vivo models
		PC-1.4 • Draws up the results of research, conducts statistical processing of the results	Knows the basic methods of statistical data processing Able to document research results and carry out statistical processing of the results obtained Proficient in statistical processing of results
Pharmaceutical	PC-5. Able to manufacture medicines and take part in the technology of production of finished medicines	PC-5.5 Selects excipients and dosage forms taking into account the influence of biopharmaceutical factors	He knows the theoretical foundations of the manufacture of medicines, including serial production, in the field when providing assistance to the population in emergency situations. He is able to manufacture medicines, including serial production, in the field when providing assistance to the population in emergency situations. Proficient in the manufacture of medicines, including serial production, in the field when providing assistance to the population in emergency situations

To form the above competencies within the discipline "Computer Modeling of Medicines", the following educational technologies and methods of active/interactive learning are used: work in small groups, round tables, brainstorming.