Appendix No. 3

ANNOTATIONS OF THE WORKING PROGRAMS OF EDUCATIONAL DISCIPLINES (MODULES) C.1

HUMANITARIAN, SOCIAL AND ECONOMIC CYCLE
BASIC PART

B.1.1. "Russian language"
Total labor intensity 7 credits
Practical lessons 105 hours
Independent work 105 hours
Types of control credit
The purpose of the discipline: Humanization of education in medical universities, improving the speech culture of future pharmacists, familiarizing students with the theoretical foundations of culture and speech technology, the formation of speech culture as one of the aspects of the formation of the language competence of the future doctor and pharmacist.
Discipline objectives: the

- formation of general cultural and linguocultural competencies in students;
- mastering by students of the basic concepts of speech culture: correctness and communicative qualities of speech, competent speech;
- mastering the competent design of statements, points of view that are part of the original texts or their fragments, taking into account their stylistically highlighted use;
- mastering the skills to abstract and annotate professionally oriented texts, taking into account different degrees of semantic compression.
- the formation of skills to understand and adequately interpret the original texts of any subject, including vocational guidance, which have subtext and conceptual meanings.

The content of the discipline. Language norms. Orthoepic norms. Accentological norms. Spelling norms. Lexical norms. Morphological norms. Gender of substantive nouns. Vibrations in case forms of nouns. The use of adjective forms. Pronoun spelling. Norms of using complex and compound numerals. Norms of verbs. The use of participles and participles in speech. Syntactic norms. Collocation. Variants of the agreement of the predicate with the subject. Syntactic and stylistic meaning of word order. The norms for constructing complex sentences. Formal and business style. Scientific style.
As a result of mastering the discipline "Russian language" the student must
know:
- logically correct and reasoned construction of the statement; correct written speech.
- the role of the Russian language in the development of speech activity for mastering professional skills.
- compliance with official regulations.
- norms of official business style and literary norms of speech activity.
- in accordance with various types of speech activity, make an analysis of tests characteristic of the scientific style.

be able to:
-use medical terms in speech materials and the creation of scientific tests;

- to master the methods of oral and written speech activity, communication in the professional and social spheres;
-analyze and solve important social and personal problems;
- to bear social and ethical responsibility for the decisions made;
- deliberately and tolerantly resolve social and ethical issues;
-analyze the results of personal oral and written activities to exclude professional mistakes;
-decoding medical, biological and pharmaceutical terms;
-accurately and faithfully reproduce in Russian medical and other business papers based on the results of professional activities;
- to be able to use linguistic practical techniques for active and creative participation in various spheres of scientific life.

possess the following practical skills: -

technologies of oral and written speech communication in the official language;
-presentation of development results; skills of public speaking at conferences, symposia;
- basic terminology and foreign language vocabulary related to their professional activities

B.1.2. "Lesson of the Kyrgyz language and literature" (for beginners)

Scope of work 7 credits

Practical hours 105 hours

Student independent work 105 hours

Type of test

Course purpose: Innovations in teaching the Kyrgyz language not only provide substantive information, but also interesting two-way communication. be able to speak clearly and effectively in the Kyrgyz language; develop the skills necessary for correct and persuasive speech, for cultural communication in various situations of real life.

Lesson objectives: -

Determine the means of constructing language materials that will be taught;
-determine the topic of text materials used as a language teaching tool, which is the basis for the study of language materials;
- create opportunities for the preparation of business papers using communicative language services, as well as direct and request correction of various texts and sentences.

Program Content

Kyrgyz Language and Literature is a live communication lesson aimed at improving students' speaking skills. Today, the contribution of the Kyrgyz people to world culture through language is preserved, and the political and social situation continues to grow. In the educational process, the Kyrgyz language is taught as a state language in kindergartens and universities. Until now, the issue of teaching the Kyrgyz language to Russian-speaking or foreign-speaking ethnic groups in Kyrgyzstan was relevant, but today the issue of teaching the Kyrgyz language to Kyrgyz citizens who do not speak Kyrgyz is one of the most urgent. ... Therefore, the materials presented in this program were greatly simplified and expanded, and a lot of space was devoted to practical work aimed at improving the students' ability to think independently on some topics, the effectiveness of language tools and images. Grammar materials are used as a means of understanding the meaning of teaching materials. In addition, to improve the ability of students to apply theoretical knowledge in practice, i.e. In order to strengthen the practical orientation of the training, great attention was paid to the corresponding speech.

As a result of mastering the subject "Kyrgyz language and literature" the student should

know:

- to study the norms of the official business literary language;
- be able to speak logically, convincingly, argue and write clearly;
- be able to speak in a journalistic and scientific style;
- edit texts of professional importance;
- be able to analyze the logic of ideas expressed in discussions;
- be able to prepare text documents in their activities;
- accept the choice of language materials in accordance with different types of verbal communication and study typical methods;
- learn to work with a dictionary;
- know changes in sounds, members, types of sentences, their pronunciation and spelling features;

master:

- knowledge of the law on the state language;
- be able to read the Hippocratic Oath;
- be able to read, translate and retell the text;
- be able to write reports, abstracts, abstracts in the Kyrgyz language;
- memorize songs, proverbs and nicknames;
- be able to tell in detail about the types of the disease and its course;
- be able to write documents;
- be able to compose scientific texts and voice them;
- be able to express their opinion on the information collected;
- the ability to create and accept new ideas, creative thinking;
- be able to apply the basic principles and methods of social, humanitarian, medical sciences in solving social and professional problems;
- accurately and fully reflect professional results in medical and other documents in the state language;
- use Kyrgyz names for medical terms in speech materials;
- have the skills of oral and written communication in the professional and social spheres;
- know basic terminology and foreign languages in the field of their professional activities;
- possess the skills of oral and written communication, methods of communication with a foreign partner when translating general professional texts;
- be able to take stock of developments, participate in symposia, conferences and speak publicly;
- have the skills of oral and written communication in the state language;
- own the methods of processing medical documents in the state language.

use:

master professional vocabulary; The point of view is formed on the basis of the analysis of works.

B.1.2. "Lessons of the Kyrgyz language and literature" (for advanced groups)
Volume of work 7 credits, credit
Practical hours 120 hours
Independent work of students 120 hours
Type of test:

Course goal: to expand the level of knowledge of students by teaching the basics of linguistics. and philological sciences and deepen the culture of speech assimilation achievement; to further deepen the knowledge gained at school, to keep abreast of the latest developments in Kyrgyz linguistics and to increase interest in the art of speech; Respect for the art of speech of our people, the noble qualities of our people in literary texts, the transmission of personalities, the introduction of such valuable values as the biographies of famous people, national customs and traditions, the development of national identity. ; Ability to use oral and written activities in real life situations through continuous reading of the Kyrgyz language.

Lesson objectives: -

Determine the means of constructing language materials that will be taught; determination of the topic of text materials used as a means of teaching a language, which is the basis for the study of language materials;

- create opportunities for the preparation of business papers using communicative language services, as well as direct and request correction of various texts and sentences.

The content of the program

The developed curriculum determines the relevance of teaching the Kyrgyz language to university students in order to form a culture of speech, logical speech, enrichment of vocabulary, grammatical writing, correct writing, and deepening their knowledge in their specialty. The training of specialists who speak the state language is becoming one of the main requirements of our time.

Knowledge of the Kyrgyz language is a civic duty of every citizen. Etiquette of conversation, conversation, communication, oral, written speech, speech activity, speech culture, the ability to communicate adequately, correctly, clearly, convincingly in accordance with the situation through which they participate in social life (socialization) in development. society and the state We can give a positive result only when the issue of making a certain amount is resolved. Acquisition of moral, aesthetic, intellectual, entrepreneurial qualities, skills, training future owners of the country in a creative lesson

As a result of mastering the subject "Kyrgyz language and literature" ...

know ::

- norms of the state literary language to learn;
- be able to speak logically, convincingly, argue and write clearly;
- be able to speak in a journalistic and scientific style;
- edit texts of professional importance;
- be able to analyze the logic of ideas expressed in discussions;
- be able to prepare text documents in their activities;
- accept the choice of language materials in accordance with different types of verbal communication and study typical methods;
- learn to work with a dictionary;
- know changes in sounds, members, types of sentences, their pronunciation and spelling features;

master:

- know the law on the state language;
- be able to read the Hippocratic Oath;
- be able to read, translate and retell the text;
- be able to write reports, abstracts, abstracts in the Kyrgyz language;
- memorize songs, proverbs and nicknames;

- be able to tell in detail about the types of the disease and its course;
- be able to write documents;
- be able to compose scientific texts and voice them;
- be able to express their opinion on the information collected;
- the ability to create and accept new ideas, creative thinking;
- be able to apply the basic principles and methods of social, humanitarian, medical sciences in solving social and professional problems;
- accurately and fully reflect professional results in medical and other documents in the state language;
- use Kyrgyz names for medical terms in speech materials;
- have the skills of oral and written communication in the professional and social spheres;
- know basic terminology and foreign languages in the field of their professional activities;
- possess the skills of oral and written communication, translation techniques with a foreign partner when translating general professional texts;
- be able to take stock of developments, participate in symposia, conferences and speak publicly;
- possess the skills of oral and written communication in the state language;
- own the methods of processing medical documents in the state language.

use: master professional vocabulary; The point of view is formed on the basis of the analysis of works.

B.1.3. "Foreign language"
Total labor intensity 4 credits
Practical lessons 60h.
Independent work 60h.
Types of control: Test
The purpose of the discipline: the acquisition of communicative competence necessary for intercultural communication and professional communication, mastering oral and written forms of communication in a foreign language as a means of information activity and further self-education.
Discipline objectives: the formation of language and speech skills allowing the use of a foreign language to obtain professionally significant information, using different types of reading; the formation of language and speech skills, allowing you to participate in written and oral professional communication in a foreign language;
Discipline content: Introductory-corrective course. The specificity of the articulation of sounds, intonation and rhythm of neutral speech in the target language, the main features of the full pronunciation style, typical for the sphere of professional communication, reading transcription. The lexical minimum in the amount of 4000 educational lexical units of a general and terminological nature. The basic rules of morphology, the main components of the sentence (the core of the sentence, the minor members of the sentence).
The concept of differentiation of vocabulary by areas of application. The concept of free and stable phrases. The concept of the main ways of word formation. Grammar skills that ensure communication without distorting the meaning in written and oral communication and in a professional manner. The main lexical and grammatical features of the scientific and

professional styles of speech. Speaking. Dialogue and monologue speech in the main communicative situations of scientific and professional communication. Fundamentals of public monologue. Listening. Fundamentals of Medicine: Teaching the reading and translation of medical texts. The main types of reading. The basic principles and goals of various types of reading: viewing, introductory, search, studying; principles of working with text in a specialty in accordance with the purpose of information retrieval. Basics of annotating and summarizing. Culture, traditions, medical education, the health care system in the countries of the target language, the rules of speech etiquette, taking into account the socio-cultural and intercultural characteristics of language and speech. Medical education in Kyrgyzstan. Lexical and grammatical support of the topic. Basic grammatical constructions characteristic of the oral style of communication in a foreign language. Medical education abroad. Lexical and grammatical support of the topic. Basic grammatical constructions characteristic of the oral style of communication in a foreign language.

As a result of mastering the "Foreign language" discipline, the student must

know: a

- minimum of lexical and grammatical material for the correct formulation of his thoughts and conduct;
- history, culture, traditions, political system of the country of the target language.
- the system of medical education and service of the country of the target language.

be able to:

- clearly and expressively, in terms of intonation, read aloud a text containing mainly learned lexical material;
- understand the speech of native speakers;
- conduct a conversation in the target language within the passed speech material;
- understand and convey the content of a read unfamiliar text;
- understand and convey the content of the listened text;
- express a value judgment about the information retrieved;
- express your own opinion on the text read or listened to in oral or written form.

possess the following practical skills:

- a written presentation of the content of the read material in the form of annotations, summaries, abstracts;
- situationally conditioned conversation;
-preparation and presentation of messages, reports.

B.1.3. "Latin language"

Total labor intensity 4 credits

Practical lessons 60 hours

Independent work 60 hours

Types of control: Test

Objective of the discipline: professionally-oriented training of future doctors in the Latin language and the basics of medical terminology, the formation of the foundations of terminological competence necessary for professional communication.

The objective of the discipline:

- teaching students the elements of Latin grammar necessary for understanding and correct use of terms in Latin.
- teaching students the basics of medical terminology in its three subsystems: anatomical, pharmaceutical and clinical.
- developing students 'skills to quickly and competently write recipes in Latin;
- developing students' ability to quickly and competently translate recipes from Russian into Latin and vice versa.
- developing students' skills in working with scientific literature and preparing abstracts.
- increasing the level of literacy of students in oral and written speech.

Discipline content: Introduction. Latin is the language of medicine. Alphabet. Pronunciation rules for some letters and letter combinations. Noun. Inconsistent definition. Adjective. Comparative degree of adjectives. Agreed definition. The structure of a three-term and polynomial anatomical term. Nouns of the 3rd declension. Masculine nouns. Agreed terms. Feminine nouns. Agreed terms. Neuter nouns. Agreed terms. The plural of nouns and adjectives in the nominative case. Agreed versus inconsistent terms. The plural of nouns and adjectives and the genitive case. Pharmaceutical term structure. Frequency segments in trivial drug names. Verb. Prescription formulations with verbs and prepositions. The recipe and its structure. Khimpharm nomenclature. The names of chemical compounds: acids, oxides, oxides. Salt names (medium, acidic, basic). Word formation. The most common Latin prefixes. Greek prefixes and suffixes. Clinical terminology. Greek words and terms for parts 1-10**.**

As a result of mastering the "Latin language" discipline, the student must

know:

-the basic rules for reading letters and letter combinations, as well as the peculiarities of pronunciation of sounds in the Latin language;

-Elements of Latin grammar; ways of word formation;

-frequency segments, most often used in the names of drugs and drugs;

- the structure of the recipe and the requirements for its design;

-Greek term elements and Greek words for the correct explanation of the meanings of clinical terms;

-900 lexical units as active vocabulary;

-the most used Latin expressions and aphorisms.

be able to: -

correctly read and write medical (anatomical, clinical and pharmaceutical) terms in Latin;

-translate two-term and multi-term medical terms from Russian into Latin and from Latin into Russian**;**

-read and translate recipes, arrange them according to the normative sample; to form in Latin the names of chemical compounds (oxides, salts, acids);

- tooperate with Greek roots and term elements, to compose clinical terms denoting the names of diseases, pathological conditions and methods of examination and treatment;

-determine the frequency segments in the trivial names of medicinal products to obtain information on the chemical composition, pharmacological characteristics, therapeutic efficacy of the medicinal product.

possess the following practical skills:

- registration of the Latin part of the doctor's prescription;
use of special Latin terminology

B. 1.4. "History of Kyrgyzstan"

Total labor intensity 2 credits

Lectures 30 hours

Practical lessons 16 hours

Independent work 44 hours

Types of control: test, SAC

The purpose of the training: getting students a holistic understanding of the history of the Kyrgyz and other peoples of Kyrgyzstan, instilling in the younger generation a sense of patriotism and active citizenship, respect for the historical past of the people of Kyrgyzstan. The course is designed to give the student knowledge about the main stages of the historical development of Kyrgyzstan from antiquity to the present, ethnogenesis and the formation of the Kyrgyz people, to show the inextricability of the connection between the history of the development of Kyrgyzstan and the history of world civilizations. Studying the history of Kyrgyzstan is one of the important means of strengthening interethnic harmony and mutual understanding of the people of Kyrgyzstan, patriotic education of youth.

Learning objectives: - to

form an idea of the main historical stages in the formation and development of the Kyrgyz statehood;

- to show by examples of different eras the organic relationship of Kyrgyz history with world history;

-analyze the general and specific in the development of the state and society;

-form historical concepts and categories;

-to acquaint with the basics of the civilizational approach in the analysis of historical events and phenomena;

-to instill in students a sense of citizenship and patriotism;

- to develop students' skills of independent work, interest in it.

The content of the discipline. An ancient period in the history of the Kyrgyz and Kyrgyzstan. Turkic era: the main stages of the formation of statehood. Kyrgyzstan during the conquests of Genghis Khan. Kyrgyz people in the 16th-19th centuries Relations with neighboring peoples and states. Kyrgyz and Kokand Khanate. Kyrgyzstan is a colony of the Russian Empire (1855-1917). Stages of the formation of the Kyrgyz Soviet statehood. The Great Patriotic War. Socio-political

and socio-economic development of Kyrgyzstan in the 50s - early 90s. XX century. Sovereign Kyrgyzstan. Problems of socio-political and socio-economic development.

As a result of mastering the discipline "History of Kyrgyzstan", the student should

know: - the

main historical events, the stages of evolution of statehood and its institutions,

- the features of socio-economic development, - the

specifics of the modernization process, - the

trends in foreign policy and changes in the geopolitical situation, - the

content of cultural traditions and historical heritage.

be able to: -

independently analyze the socio-political and scientific literature, -

plan and evaluate their activities taking into account this analysis.

possess the following practical skills:skills of a

-thereasoned presentation of their own point of view;

- skills of public speech, argumentation, introduction of discussion and polemics, critical perception of information.

B.1.4. "History of medicine and pharmacy"

Total labor intensity 1 credit

Lectures 6 hours

Practical lessons 8 hours

Independent work 16 hours

Types of control: test

Objective of study: studying the history, patterns and logic of the development of medicine, medicine, medical activity and its drug provision in different periods in conjunction with the present.

Learning objectives: - to

show the general laws of the world-historical process of the formation and development of medicine and medicine in various countries of the world from ancient times to the present day;

-to train students to objectively analyze historical phenomena, successes and prospects for the development of medicine and health care;

- to reveal the achievements of outstanding civilizations and each era in the field of medicine in the context of the progressive development of mankind;

- to show the interaction of national and international factors in the formation of medical science and practice in different regions of the world;

- to acquaint students with the life of outstanding scientists and doctors of the world, who determined the fate of medical science and medical practice;

- to instill deontological principles of medical practice; to show the features of the development of medical ethics in various civilizations and countries of the world, the philosophical foundations and historical conditions of their formation;

- to educate students with high moral qualities: love for their profession, loyalty to duty, feelings of humanism and patriotism;

expand the general scientific and cultural horizons of students.

Discipline content: Introduction. Medicine in primitive society and in the countries of the Ancient World. Medicine of the ancient world and the Middle Ages. Medicine of modern times and modern history. The history of the development of medicine and pharmacy in Kyrgyzstan.

As a result of mastering the discipline "History of Medicine and Pharmacy" the student should

know:

-the main stages and general patterns of the formation and development of medicine and medicine in various countries of the world from ancient times to our time;

-distinguishing features of the development of healing and medicine in different historical periods (primitive society, the ancient world, the Middle Ages, modern times and recent history);

-Achievements of the largest civilizations in the field of healing and medicine in the process of progressive development of their spiritual culture;

- the contribution of outstanding doctors of the world, who determined the fate of medical science and activities in the history of mankind;

be able to:

-analyze historical material and navigate the historical process of the progressive development of healing and medicine from the beginnings to the present;

-understand the logic and patterns of development of medical thought and activity at various stages of human history and apply this knowledge in their practice;

-constantly improve and deepen your knowledge of the history of the chosen specialty;

- strive to improve their cultural level;

- it is worthy to follow the ideas of humanism and universal values in your medical practice.

possess the following practical skills:skills of

-theconducting a scientific discussion on the most important issues of general history and medicine;

- the skills of using in their medical practice and communicating with patients knowledge of the history of medicine, culture and medical ethics, acquired in the course of training.

B. 1.5. "Philosophy"

Total labor intensity 4 credits

Lectures 36 hours

Practical lessons 24 hours

Independent work 60 hours

Types of control: credit

Learning goal: mastering philosophical knowledge is a necessary condition for the formation of a systematized worldview and the development of conceptual-categorical thinking and one of the methods of modern socialization of the individual. The philosophy course is designed to develop students' ability for critical thinking, mastering dialectical thinking, which is the objective basis for the formation of medical, and subsequently clinical thinking. To give the student a minimum of knowledge about spiritual realities and philosophical and methodological values necessary for every educated person. Mastering the proposed program on the basis of comprehending the historical-philosophical and systemic-problematic material will allow future doctors to form their own philosophical and civic position on the most important issues of modern medicine, as well as the ability to independently comprehend urgent problems in modern social life.

Learning objectives: - to

acquaint students with the main stages in the development of the theoretical thought of mankind, expressed in philosophy. to reveal the relationship of philosophical concepts that influenced the formation of medicine as a science, using the examples of the life of great, outstanding physicians-thinkers throughout its historical development.

- to highlight the moral and medical problems of a general practitioner.

- to acquaint students with the Kyrgyz philosophical tradition.

- education of patriotism, through familiarization with the nomadic culture of our ancestors.

- to help understand the unique role of philosophy in the development of civilization and human culture, - to

comprehend the interaction with other areas of human activity and cultures, especially with medical practice.

- to reveal the interaction and interconnection of philosophy, bioethics, deontology, principles, norms that define, throughout the history of all mankind, the development of medicine as a special area of human practice.

- to reveal the enduring relevance of philosophy, its main ideas, problematic reflections, research in the formation and development of a mature human personality, in the creation of a civilized socio-cultural environment, in understanding the contradictions and difficulties of modern man's development, disclosing the content of the category "society" and determining the characteristics of society as a system.

- to reveal the specifics of consciousness as 1) the highest form of reflection of the surrounding reality; 2) the properties or functions of highly organized matter (brain) reflect the world in ideal images, define cognition as: 1) a form of activity; 2) active, purposeful reflection of the surrounding world in the mind of a person.

-moral and ethical orientation of students in the context of the scientific and technological revolution, global progress and civilization crisis.

- to help students master the categorical apparatus of philosophy, mastering which develops humanitarian and philosophical culture and worldview position of the future pharmacist, to develop a holistic vision of the world on a rational basis of knowledge.

- to develop students' skills in studying philosophical literature, to teach them to work on essays on philosophy, taking into account the relevant formal and substantive requirements.

Discipline content:

Section 1. "History of Philosophy", reflection of the formation of the theoretical thought of mankind. Philosophy as a way of forming and developing a worldview. The relationship between philosophy and medicine. Moral orientation of medical art and philosophy in the cultures of the Ancient East. Anthropocentrism of Ancient Greek Philosophy. Philosophical understanding of medicine in the ancient era. Formation and development of medical education in theological schools. Theosophical foundations of human health in the Middle Ages. Philosophy of the Renaissance, New Age, Enlightenment. German classical philosophy. Philosophy and medicine in this period. Development of protomedical knowledge and skills of the ancient Kyrgyz from the standpoint of spontaneous materialism.

Section 2. "Ontology and the theory of knowledge"Philosophy of being. Information as a state of matter, information-wave medicine and biology. Philosophical and medical aspects of consciousness, physiological foundations of spiritual and mental phenomena. The problem of the criterion of truth in philosophy and medicine. Dialectics as a science. Synergetics as a method of complex consideration of the concepts of illness and health.

Section 3 "Social Philosophy" Philosophical analysis of society and man.

Medicine as a sphere of universal human culture. Global problems of humanity.

As a result of mastering the discipline "Philosophy" the student must:

Know:

- philosophical aspects: worldview, socially and personally significant problems and processes;
- general concept of a person and his multidimensionality;
- general idea of consciousness and self-awareness;
- the essence and meaning of knowledge; foundations of social philosophy;
- philosophical foundations of epistemology, methods and techniques of research;
- methods and techniques of philosophical analysis of problems;
- forms and methods of scientific knowledge, their evolution;
- the main categories and concepts of the academic discipline;
- the basic principles of building oral and written speech, the rules of argumentation;
- types of information sources.

be able to:

- choose and apply methods and various techniques for solving social and professional problems;
- to assess the adequacy, fruitfulness and effectiveness of the methods of the humanities (philosophical) sciences in solving social and professional problems;

- be aware of the basic nature of the social sciences in solving social and professional problems;
- differentiate the possibilities of different views on the solution of ideological, socially personally significant philosophical problems;
- independently perform actions to solve non-standard problems requiring a choice based on a combination of known methods, in an unpredictable changing situation;
- determine the place, role and significance of worldview, socially and personally significant philosophical problems;
- independently perceive information from various sources: extract and analyze information;
- pick up notes from various sources;
- compare the presentation of the same issues in different sources, identify the common and find differences; use reference and additional literature;
- think critically: find errors in a particular text;
- supplement incomplete text material;
- quote and make different kinds of comments;
- transform text material: highlight the main thing, shorten the text to several lines without distorting the meaning;
- draw up a plan, theses; outline;
- make a conclusion about the text read;
- make generalizations, formulate, argue conclusions, understand, evaluate and process the text;
- independently perform actions to solve non-standard tasks requiring a choice based on a combination of known methods in an unpredictable changing situation.

own: the

- skill of solving social and professional problems, using the basic provisions of the humanities (philosophical) sciences;
- skills of analysis, setting tasks and choosing the optimal way to solve them, different forms of text presentation (inform, state (description);
- tell, (narration);
- compare, summarize, generalize (definition, explanation);
- substantiate, prove, refute (argumentation, reasoning);
- Skills of presenting an independent point of view, analysis and logical thinking, public speaking, conducting discussions and round tables;
- skills of analysis and logical thinking.

B.1.6. "Manasology"

Total labor intensity 2 credits

Lectures 16 hours

Practical lessons 14 hours

Independent work 30 hours

Types of control: credit

Learning purpose: creation of accurate and correct ideas about the subject "Manasology", and its essence, the foundations of the worldview and traditional medicine of the Kyrgyz, reflected in the epic ...

Learning objectives:

-determine the place and role of the folk epic "Manas" in world culture;

- disclosure of the essence of the spiritual culture of the Kyrgyz people according to the epic "Manas", religion, folk traditions and games, especially the ethics of the Kyrgyz call.

-determination of the place and role of traditional medicine of the Kyrgyz according to the epic "Manas";

-study of the historical periodization of traditional medicine of the Kyrgyz people according to the epic "Manas";

- acquaintance with the psychotherapeutic influences of prisoners in the "power of the word" used in traditional medicine

; - acquaintance with representatives of traditional medicine and the range of their functional duties.

-Study of empirical and rational methods of treatment by the ancient Kyrgyz according to the epic "Manas";

- study of medicines of animal and mineral origin according to the epic "Manas".

The content of the discipline.

Study of the epic "Manas" in the pre-Soviet, Soviet and modern periods. Genre features of oral folk art of the Kyrgyz. Traditional medicine according to the epic "Manas". Historical periodization of Kyrgyz folk medicine. Representatives of traditional medicine and the range of their functional duties according to the epic "Manas". Rational and empirical aspects of the treatment of Kyrgyz people according to the epic "Manas". Mystical and religious aspects of Kyrgyz folk medicine according to the epic "Manas". Kyrgyz views on the magical causes of diseases. Ritual actions associated with the treatment of various diseases according to the Manas epic. Empirical methods of treatment according to the epic "Manas". Medicines of animal and mineral origin. Folk surgery, climatotherapy. Herbal medicine, organotherapy. Psychotherapy or the power of words in traditional medicine. Sacred symbolism of diseases, animistic and fetishistic aspects of traditional medicine. World outlook of the Kyrgyz and its characteristic features. Pre-Islamic beliefs and Islam according to the epic "Manas". Folk customs and traditions, folk games and entertainment of the Kyrgyz according to the epic "Manas".

As a result of mastering the discipline "Manas Studies" the student must:

know: - the

establishment of "Manas Studies as a science;

-the methodology of studying "Manasology";

-principles of action of traditional medicine of the Kyrgyz people according to the epic "Manas";

- chronology of the development of traditional medicine of the Kyrgyz people according to the epic "Manas";

-the methods of psychotherapeutic influences used in traditional medicine;

- representatives of traditional medicine and the range of their functional duties;

- empirical and rational methods of treatment by the ancient Kyrgyz according to the epic Manas ";

- study of medicines of animal and mineral origin according to the epic "Manas";

- the main historical stages of the emergence and formation of the epic "Manas";

-basic versions of the epic "Manas";

-the names of the storytellers-manaschi; the role and place of manaschi in the spiritual life of the Kyrgyz;

-cultural-historical and cognitive values of the epic "Manas".

be able to:

-characterize the historical era reflected in the epic "Manas";

-Know the names of the main characters of the epic "Manas" and their role in the life and fate of the Kyrgyz;

- to name the names of the great Manaschi and their role and place in the life of the Kyrgyz;

-Name the names of the researchers of the epic "Manas";

- to quote from the poetics of the epic "Manas";

- to distinguish the plot of the trilogy of the epic "Manas";

-distinguish between religious-mystical, empirical and rational methods of treatment of traditional medicine of the Kyrgyz according to the epic "Manas".

possess the following practical skills: - the

skill of solving social and professional problems, using the basic provisions of the humanities (philosophical) sciences;

-skills of analysis, setting tasks and choosing the best way to solve them;

- different forms of text presentation (inform, state (description);

- tell, (narration); compare, summarize, generalize (definition, explanation); -

substantiate, prove, refute (argumentation, reasoning); -

skills of presenting an independent point of view, analysis and logical thinking, public speech, conducting discussions and round tables;

-skills of analysis and logical thinking.

PART

OPTIONALB.1.1. "Psychology"

Total labor intensity 3 credits

Lectures 10 hours

Practical lessons 20 hours

Independent work 30 hours

Types of control: test

Goal

-ovladenie basics of general psychological literacy

discipline:..-Understanding of mental processes, as well as their behavior and the behavior of others

-theoretical and practical mastery of knowledge and methods of construction of communication and interaction with people in various conditions of their lifepresentation.

learning objectives:

-formation overall about psychology as a science;

-forming students' ability to analyze psychological eskie properties and states, characteristics of mental processes, various types of activities of individuals and groups;

-forming the ability to apply psychological principles to personal, social and organizational problems;

-reflection of ideas about the basic principles, categories and methods of general psychology;

-forming an understanding of the key features of the main phenomena of psychology.

Contents: **Dr.**istsiplina "Psychology" is aimed at presentation of the current state of the nature of the psyche, its specificity, the structure and dynamics, as well as the fact that the present system of categories and concepts with which science expresses the diversity of manifestations of human reality. The subject of study is the inner, subjective world of a person; his system of relationships and relationships with other people.

"Psychology" is the first serious acquaintance with psychological science and practice. Its main goal is to introduce the student to the world of the human psyche, to familiarize with its scientific understanding, which differs from everyday, simplified and irrational descriptions. The main thing is in the student's assimilation of the basic concepts of modern psychology, in instilling a scientific approach to the study of the ubiquitous psychological phenomenology.

As a result of mastering the discipline "Psychology", the student must

know: - the

characteristics of psychology as a science;

-basic categories and concepts of scientific psychology;

-the main directions, approaches, theories in psychology and modern trends in the development of psychological concepts;

-individual characteristics of a person, emotional-volitional regulation of his behavior, motivational sphere, cognitive processes and the concept of personal growth;

- about the peculiarities of consciousness as the highest form of mental activity;

- about the basic laws of the functioning of the psyche.

be able to:

-analyze different approaches to the categories of psychology and formulate their own definitions;

- to scientifically substantiate their own position when analyzing psychological facts;

- give a reflexive assessment of their own behavior;

-use the conceptual apparatus of psychology;

- apply psychological knowledge, skills in the professional field;

possess the following practical skills: -

possess a system of theoretical knowledge in the main sections of psychology;

psychological terminology

-the basic-knowledge about the emotional-volitional, motivational sphere, cognitive processes.

-the skills of building communication in life and in the medical environment.

C.2. MATHEMATICAL AND NATURAL SCIENCE CYCLE

BASIC PART

B.2.1. "Mathematics"

Total labor intensity 1 credit

Lectures 6 hours

Practical lessons 10 hours

Independent work 14 hours

Types of control: test

The purpose of the discipline: preparation of a highly professional specialist with mathematical knowledge, skills and abilities to apply mathematics as a tool of logical analysis, numerical calculations and estimates, construction of mathematical models of physical, chemical, biological and medical content.

Discipline objectives: to teach students to produce differential and integral calculus of functions describing biological objects and to solve differential equations describing biomedical processes.

Course content: Derivative and differential functions. Integral theory. Theory of differential equations. Compilation and solution of differential equations based on examples of biomedical and biophysical problems.

As a result of mastering the discipline "Mathematics", the student must

know: -

mathematical methods for solving intellectual problems and their application in medicine;

-basic mathematical structures,

-probability and statistics,

-mathematical models, algorithms and programming languages,

-standard software for professional activities,

-basic concepts and methods of information protection;

be able to: - make

calculations based on the results of the experiment; -

carry out elementary statistical processing of experimental data;

-use information computer systems in medicine and health care;

possess the following practical skills:

-methods for determining various physical characteristics of biological objects;

-practical skills in the use of individual samples of medical and diagnostic equipment.

B.2.2. "Informatics"

Total labor intensity 4 credits

Lectures 14 hours

Practical lessons 46 hours

Independent work 60 hours

Types of control: Test

Objective of the discipline: the formation of students' general ideas about the possibilities of using information and communication technologies that provide ample opportunities for processing medical information, mastering the techniques of working with modern standard packages of application programs.

Discipline objectives: -

teaching students the basics of working with a computer, modern software for system and applied purposes, with Microsoft Office tools for processing various types of information on a computer, -

mastering the methods of statistical processing of biomedical information.

Discipline content: Basic concepts of computer science. Software and hardware of a personal computer (PC). Working with the MS WINDOWS operating system and its applications. MS WORD text editor. PowerPoint presentation software. MS EXCEL spreadsheets. Calculation of biomedical models in MS Excel. Statistical processing of biomedical information in MS Excel. Descriptive statistics. Database and DBMS MS ACCESS. Working with tables and forms. Data input. Work on the Internet. Medical resources and search engines.

As a result of mastering the discipline "Informatics" the student must

know:

-theoretical foundations of informatics, -the

content of basic concepts and terms; the procedure for collecting, grouping and processing data in computer programs;

- methods of storing, searching, processing, transforming, disseminating information in healthcare;

-principles of using information computer systems in clinical and medical-prophylactic activities; the main approaches to the formalization and structuring of various types of medical data used to form decisions in the course of the treatment and diagnostic process;

-types, structure, characteristics of medical information systems;

- principles of automation of management of healthcare institutions using modern computer technologies.

be able to: -

perform text and graphic processing of documents using standard software;

- to carry out statistical processing of experimental data;

-use modern means of the Internet to search for professional information in self-study and advanced training in certain areas of medical knowledge;

-use computer medical technology systems in the process of professional activity.

possess the following practical skills: -

terminology related to modern computer technologies as applied to solving problems of medicine and health care;

-Basic information transformation technologies: text, tabular, graphic editors; searching for information on the Internet;

- the basic principles of statistical data processing;

-General methods of creation and techniques for working with databases;

- the main methods of work in medical information systems used in the treatment and diagnostic process;

- primary skills in the use of medical information systems to implement the basic functions of a pharmacist.

B.2.2. "Physics"

Total labor intensity 4 credits

Lectures 28 hours

Practical lessons 32 hours

Independent work 60 hours

Types of control: Test

Objective of the discipline: To form students' knowledge, abilities and skills necessary for the successful mastering of general cultural and professional competencies in the field of physics. To form students' systemic knowledge about the physical properties and physical processes occurring in biological objects, including in the human body, necessary for the development of other academic disciplines and the formation of professional qualities, the disclosure of its integrative ties with other disciplines that provide the complex training of a specialist of this profile , with the formation of a dialectical worldview among students on the basis of physical laws and teach them to recognize the physiological states of the human body through physical phenomena; providing in-depth knowledge of the features of the manifestation of physical laws in a biosystem; understanding of the design and operation of medical equipment.

Objectives of the discipline:

-Study of biophysical and physical and chemical foundations of the life processes of the human body;

- study of the biophysical foundations of the damaging and therapeutic effect; physical and chemical environmental factors on the body;

-application of physical laws to explain the processes occurring in the human body;

- getting ideas about modern physical methods of prevention, diagnosis and treatment of diseases.

The content of the discipline:

Today's realities require strengthening the preventive focus of healthcare, improving the quality of medical care, improving the provision of healthcare institutions with modern diagnostic and therapeutic equipment, producing and distributing drugs with an optimal positive effect on the body. To solve these problems, it is necessary to train specialists with deep special knowledge, practical skills, fundamental theoretical training in the field of medical and biological physics. Physical research methods (electromagnetic fields, ultrasound, elementary particles, etc.) of biological objects and drugs acting on these objects and physical methods of their analysis (electron microscopy, registration of biopotentials, EPR and NMR spectroscopy, etc.) began to be widely implemented in all areas of medical science, especially in pharmacy.

Within the framework of this program, students of the Faculty of Pharmacy study medical and biological physics - new areas of physics, the subject of which is the biosystem.

As a result of mastering the discipline "Physics" the student must

know:

-the basic laws of physics, physical phenomena and regularities;

-theoretical foundations of physical methods of analysis of matter;

-characteristics of physical factors affecting a living organism;

-metrological requirements when working with physical equipment;

- safety rules for work in a chemical laboratory and with physical equipment;

-modern atom model, periodic law, periodic system of D.I. Mendeleev; chemical bond;

be able to:

-determine the physical properties of medicinal substances;

-select the optimal method for the qualitative and quantitative analysis of a substance using appropriate physical instruments and apparatus;

-Calculate the thermodynamic functions of the state of the system, the thermal effects of chemical processes.

possess the following practical skills:

-methods for measuring the values of physical quantities;

- skills in the practical use of instruments and equipment in the physical analysis of substances;

-methodology for evaluating measurement errors;

- methods of colorimetry, polarimetry, spectrophotometry and refractometry.

B.2.3. "Chemistry"

Total labor intensity: 4 credits

Lectures 30 hours

Practical lessons 30 hours

Independent work 60 hours

Types of control: exam

Learning purpose:

development of chemical thinking in future pharmacists, the formation of skills and abilities of a chemical experiment, students mastering the basic laws of the relationship between structure and

chemical properties substances, as well as the composition and structure of chemical compounds and their biological activity.

Learning objectives:

-study of modern ideas about the structure of matter, about the dependence of the structure and properties of substances on the position of their constituent elements in the periodic system and the nature of the chemical bond;

- study of the nature of chemical reactions used in the production and control of medicinal substances;

- study of the most important properties of inorganic compounds and the patterns of their change depending on the position of their constituent elements in the periodic system.

The content of the discipline. Subject, tasks, methods and basic laws of chemistry. Nomenclature of inorganic compounds. Ways of expressing the composition (concentration) of solutions. The main regularities of the course of chemical processes. Chemical thermodynamics. Thermodynamics of chemical equilibrium. The doctrine of solutions. The structure of matter. Redox reactions. Complex compounds. Chemistry of the elements.

As a result of mastering the discipline "Chemistry" the student must

know: rules of work and safety measures in chemical laboratories; the modern model of the atom, the periodic law and the system of D.I. Mendeleev; chemical bond, nomenclature of inorganic compounds, structure of complex compounds and their properties, structure and biochemical properties of the main classes of biologically important compounds; basic principles of thermodynamics, thermochemistry, chemical equilibrium, basic provisions of the theory of ionic equilibria.

be able to: calculate thermodynamic functions, thermal effects, equilibrium concentrations; draw up electronic configurations and electron diffraction formulas, determine the type of chemical bond; predict the reactivity of chemical compounds; theoretically substantiate the chemical basis of the pharmacological effect and toxicity.

possess the following practical skills: the skills of calculating thermodynamic functions, the technique of chemical experiments, conducting test-tube reactions, the skills of working with chemical glassware; basic technologies for transforming information.

B.2.4. "Biology with the basics of ecology"

Total labor intensity: 2 credits

Lectures 14 hours

Practical lessons 16 hours

Independent work 30 hours

Types of control credit

Learning purpose: Formation of students' biological thinking, a holistic natural science worldview, understanding of the essence of life, individual development, the relationship of organisms and the environment , the relationship between health and the environment.

Learning objectives:

-to study the flow of information, substances and energy in the cell;

- to study the forms of reproduction and the individual development of organisms;

-basic laws of heredity and variability;

-to study the issues of evolution and the origin of man;

- to study the effect of environmental factors and their influence on human health;

-to study the problems of pollution and environmental protection;

- to study the basics of medical parasitology;

- to form basic knowledge and general concepts of modern biology;

-to teach a competent perception of practical problems of biology and the education of ecological culture.

The content of the discipline. The emergence of life on Earth. The flow of information, energy and substances in the cell. Reproduction forms and their cytological bases. Ontogenesis. The evolution of the organic world. Anthropogenesis. Environmental factors of the environment and their impact on human health. Ecological systems. Features of human ecology.

As a result of mastering the discipline "Biology with the basics of ecology", the student should

know:

-the subject, tasks and methods of studying biology.

-theories about the origin of life on earth.

-evolutionary factors.

-evolution of the eukaryotic cell.

- reproduction and its forms.

-gametogenesis: ovogenesis and spermatogenesis.

-types, forms, periods of ontogenesis.

-proembryonic period.

- gametes and types of oocytes.

- crushing and its types.

-gastrulation and its forms.

- teratogenic factors.

-factors of growth and development.

-subject and tasks of the science of ecology.

-ecological types of people.

-physical factors of environmental pollution.

- chemical factors of environmental pollution.

-biological factors of environmental pollution.

-anthropogenesis and its stages.

- driving forces of anthropogenesis.

be able to:

-determine the components of cells and tissues.

-determine the types of oocytes.

-distinguish the stages of gametogenesis.

- to distinguish the types and forms of ontogeny.

-determine the dominant factor among the complex of factors.

-recognize the ecological types of people.

possess the following practical skills:

-Microscopy technique;

-the method of making temporary micropreparations.

-the ability and willingness to identify the natural scientific essence of problems;

-the method of writing reports, essays, abstracts;

OPTIONAL PART

B.2.1. "Parasitology"

Total labor intensity 2 credits

Lectures 6 hours

Practical lessons 24 hours

Independent work 30 hours

Types of test control

Objective of the discipline: Toform students' knowledge of the biology of parasites, morphology, the characteristics of development cycles, the spread of parasites, their pathogenic action, and measures to protect human health from parasites.

Objectives of the discipline: -

study of parasitic protozoa;

- study of parasitic representatives of flukes;

- study of parasitic tapeworms;

- study of parasitic roundworms;

- study of parasites of mites and insects;

-development of methods for diagnosing parasites;

-development of measures to combat parasites.

-to teach to conduct sanitary and educational work among the population.

Discipline content:

Parasitology includes the study of morphology, characteristics of development cycles, the spread of parasites, their pathogenic action and measures aimed at protecting human health from parasites.

Many parasitic diseases are widespread everywhere, the infection rate of the population can be 70-90%, some of them are becoming a serious social factor. The incidence of parasites among the population in some regions of our republic is very high.

Parasitism as a form of relationships between living organisms is one of the biotic factors of the environment.

In nature, the parasite is closely related to the habitat in which plants grow and animals live. Alpine pastures can be contaminated with eggs of parasites (echinococcus, alveococcus), some parasites (geohelminths) spend part of their life cycle in the soil, accumulating in it, creating a source of infection both in the soil and in the water.

Knowledge of parasitology helps students to form a holistic understanding of the biology of parasites, the mechanisms of action of the parasite on the human body, the danger of parasites and measures of protection against pathogens and vectors of diseases.

As a result of mastering the discipline "Parasitology" the student should know: - the

subject and tasks of parasitology.

- parasitism as a biological phenomenon -

parasites

classification of- habitat of parasites.

-morphological adaptation of parasites.

- the principle of interaction between the parasite and the host.

- life cycles of parasites.

- structural features of protozoa parasites.

-localization, cycles of development of parasites.

- the spread of parasitic forms in the animal kingdom.

- structural features of parasites of helminths.

- ways of penetration of parasites into the human body.

- structural features of arthropod parasites.

- stages of development of ticks.

- stages of insect development.

- structural features of blood-sucking insects.

be able to:

-recognize parasitic flagellates;

-differentiate flagellar parasites;

-determine parasitic sporozoans;

-determine parasitic sarcodes and ciliates;

-determine the structural features of flukes;

-to identify the features of tapeworms;

-recognize roundworm parasites;

-distinguish the stages of development of ticks;

-recognize and distinguish parasitic insects;

-to provide assistance in tick bites

possess the following practical skills:

-the technique of microscopic examination of parasites and their stages.

-the method of making temporary micropreparations.

-the ability and willingness to identify the essence of problems in parasitology;

-the method of writing reports, essays, abstracts.

B.2.2. "Bioethics"

Total labor intensity 2 credits

Lectures 14 hours16 hourshours

Practical lessons

Independent work 30

Types of control: credit

Learning purpose: Preparation of graduates competent in applying the principles of ethical thinking and professional responsibility of a pharmaceutical worker.

Learning objectives: -

Acquaintance of students with the theoretical premises and foundations of the emergence and development of bioethics;

- Formation of students' understanding of professionalism, ethical values, ethical and legal norms of the profession of a pharmacist.

- Formation of methodology of argumentation and solution of ethical problems in the field of application of biomedical technologies among students.

- Formation of skills for ethical analysis of research activities of a pharmaceutical worker.

Discipline content: The concept of the program is to cover the unique ethical aspects of the pharmacist profession, which is based on ethics, which is an integral component of pharmaceutical practice. Ethical behavior and ethical decision-making by pharmaceutical workers are not scientific or technical questions about pharmacy practice, but questions about values, rights and responsibilities.

In this regard, the program includes pharmaceutical ethics, a branch of ethics that deals with moral issues in pharmaceutical practice. Pharmaceutical ethics are closely related, but not identical to bioethics. While pharmaceutical ethics focuses primarily on issues that arise in the practice of pharmacy, bioethics is a very broad subject that deals with moral problems arising from the development of the biological sciences more generally.

In addition, pharmaceutical ethics is a field distinct from its much better known counterpart, medical ethics, and is a relatively new and necessary approach in bioethics. While certain topics such as informed consent and patient rights may be considered equally important in both areas, a number of ethical issues are only remotely related to pharmaceutical practice.

It should be borne in mind that pharmaceutical workers, like any doctor, must clearly understand bioethics and its components in interdisciplinary and interprofessional discussions about law and good. Ethical reflection and analysis of the application of biomedical technologies have become essential components of clinical decision-making for all healthcare professionals. Modern bioethics and biomedical ethics provide approaches to these issues.

Research is another important area of work for the pharmaceutical worker that requires ethical regulation. In this regard, the concept of the program is to consider the unique aspects of pharmaceutical practice from the perspective of various areas of bioethics, including theoretical bioethics, biomedical ethics, bioethics of drug creation and clinical trials, and pharmaceutical ethics to meet the needs of students in preparation for the worthy fulfillment of the mission by pharmaceutical workers, the result of which the provision of high-quality medical care to the population and the formation of a socially oriented pharmaceutical market.

The program draws on materials from the UNESCO Core Curriculum, which aims to familiarize students with the principles of bioethics as enshrined in the General Declaration on Bioethics and Human Rights. The content of the program based on the principles adopted by UNESCO and expresses the ethical principles agreed upon by scientists, politicians and health professionals from different countries on the basis of religious, historical and cultural diversity of countries and peoples, as well as materials of EuropěSkog textbook on Research Ethics (European Text bookon Ethicsin Research Luxembourg: Publications Office of the European Union, 2010).

As a result of mastering the discipline, the student must

know:

- basic ethical terms and concepts, basic ethical theories, models of bioethics;

-basic ethical documents and guidelines of international and domestic professional medical and pharmaceutical organizations and associations;

- basic ethical principles and rules of biomedical ethics.

- basic ethical principles and requirements of pharmaceutical ethics.

- basic ethical principles and requirements of research ethics and violations of good scientific practice (plagiarism, falsification, forgery)

be able to: - use

methods and techniques of ethical analysis of problems in the professional activities of a doctor and pharmacist;

- to be guided by the principles of humanism and universal values in the implementation of their professional activities;

-recognize and analyze bioethical problems from opposite worldview positions;

- to conduct discussions in conditions of pluralism of opinions, using various ethical methods of conflict resolution;

- to analyze problems in the relationship of a pharmacist in a team of medical workers using ethical and deontological principles;

- to carry out self-analysis of the results of their own practical and scientific activities to prevent professional mistakes.

- not to allow violations of good scientific practice (plagiarism, falsification, forgery)

possess the following practical skills: -

moral culture, presentation of an independent point of view, analysis and logical thinking;

-recognition of ethical problems in the practical and scientific activities of a doctor and pharmacist.

-Application of the principles and rules of biomedical ethics in the practice of a doctor and pharmacist;

-argumentation and solution of problematic ethical and legal issues of protecting the interests of the patient in the practice of a doctor and pharmacist.

-application of the principles of research ethics and good scientific practice, as well as the prevention of its violations (plagiarism, falsification, forgery)

B.2.3. "Geography of Kyrgyzstan"

Total labor intensity 2 credits10

Lectures 20 hourshours30 hours

Practical lessons

Independent work

Types of control: test

Objective of training: creating accurate and correct ideas about the subject "Geography of Kyrgyzstan", and its essence, forming the foundations of the geographical outlook of students.

Learning objectives: -

Review of literature on the geography of the republic.

-Geographic location and borders of the Kyrgyz Republic.

-connection of nature features with mountainous relief and inland location of the region.

- history of geographic research of Kyrgyzstan.

-complex physical and geographical research and their national economic significance.

The content of the discipline. Climatic conditions. The main types of landscapes in Kyrgyzstan. Water resources and soil and vegetation cover. Non-ferrous metallurgy, mechanical engineering and metalworking, construction in the industry of Kyrgyzstan. The main branches of agriculture and their location. Livestock raising. Agriculture. Transport complex and tourism development in the Kyrgyz Republic.

As a result of mastering the discipline "Geography of Kyrgyzstan", the student must

know:

-the laws of the formation of the natural conditions of the republic, the history of the

formation of the territory, the structure of the relief, about the peculiarities of the formation of the climate

-the laws of the formation, distribution of rivers, lakes, groundwater, glaciers;

-water reserves, the structure of their modern use; features of the formation of soil and vegetation cover;

-distribution of land resources, their modern use and ecological state;

-animal world, its current ecological state, protection;

-regularities in the distribution of landscapes;

-protected territories of Kyrgyzstan;

-natural and socio-economic prerequisites for the socio-economic development of the Kyrgyz Republic;

-population and labor resources, social policy aimed at improving the standard of living of the population, migration processes;

-the history of the formation of the economy of the Kyrgyz Republic;

- major changes in the location of industry in the regions, the geography of the fuel and energy industry, nonferrous metallurgy, mechanical engineering, food, light industry, production of building materials;

-economic and geographical problems of the development of agriculture in the republic;

- main branches of agriculture, peculiarities of their location, problems and prospects for the development of branches of agriculture in the republic;

- the importance of transport in the national economy, changes in geography, state and prospects of their development;

-recreational resources, placement of tourism industries, problems of development of the resort economy and tourism in Kyrgyzstan;

-basic foreign economic relations, prospects for the development of external economic relations;

-economic-geographical regions of the Kyrgyz Republic, internal differences, specialization of regions.

be able to:

-work with the map and analyze it; analyze and evaluate the socio-economic consequences of new phenomena in science, technology and technology, professional sphere;

-analyze private and general problems of the rational use of natural conditions and resources, manage the use of natural resources under the guidance of specialists and qualified scientific workers;

-collect and analyze information from various sources to solve professional and social problems;

-analyze the patterns of formation of natural resources, economy and population of the Kyrgyz Republic;

-analyze and predict the development of territorial socio-economic systems of different levels, the territorial organization of society, the location of productive forces under the guidance of specialists and qualified scientific workers.

possess the following practical skills: -

methods of working with geographical maps;

- a holistic system of scientific knowledge about the world around, to be able to navigate the values of life;

-skills and techniques, the necessary tools for complex geographic analysis; modern research methods in the collection and primary processing of material;

- an integral system of scientific knowledge about nature, natural conditions, population and economy of the Kyrgyz Republic;

-information about the modern geoecological state of nature, natural components of the territory of the republic;

-information about the current state of development and placement of industries, agriculture, transport and tourism;

-information about foreign economic relations of the republic and its priority directions;

-information about natural conditions, resources, population, about the economic condition of the regions of the republic.

PROFESSIONAL CYCLE

BASIC PART

B.3.1. "Normal anatomy"

Total labor intensity 4 credits

Lectures 26 hourshourshours

Practical lessons 58

Independent work 36

Types of control: Test, exam

Objective of the discipline:

Studying the features of the morphology of human organs and systems, taking into account the age, gender and individual design of anatomical structures. Revealing the shape and structure of organs, taking into account the influence of external factors of existence.

Anatomical, functional and evolutionary consideration of evidence contributes to understanding the laws of the nature of a healthy and diseased organism.

To instill in students a general understanding of the structure of the human body, the disclosure of the interconnections and interdependence of individual parts of the body into a single whole.

Learning objectives:

- in the process of teaching human anatomy, consider the individual, sex and age characteristics of the organism, options for organ variability.
- study of the structure of organs in general, focus on the interconnection of body systems.
- to emphasize the merits of scientific morphologists in the study of the applied aspects of the theoretical discipline in terms of the continuity of clinical subjects.
- in the process of teaching human anatomy, students are brought up ethical norms of behavior in the anatomical theater, a respectful and careful attitude towards the organs of the human body and the corpse, which students study in the name of a living person.

Discipline content: Anatomy is a science that studies the forms and structure, origin and development of the human body. In the course of anatomy, the systems of the form, structure, position of the topographic relationship of body parts and organs are considered, taking into account their gender, individual and age characteristics. All this is of great importance for the study of theoretical and applied medicine.

Anatomy is a fundamental discipline on the basis of which the study of other biomedical disciplines continues: physiology, biochemistry, etc.

The task of anatomy is to train specialists in the field of pharmacy who have knowledge of the structure of the human body at the macro and micro levels.

As a result of mastering the discipline "Normal Anatomy" the student should

know:

- anatomical terminology.
- patterns of the structure of organs and organ systems, their location and relationship in different parts of the body.

- anatomical formations are available to be determined on preparations, on a model. concepts that characterize the individual, age, sex and typological features of the structure of organs.

Be able to:

- Correctly identify skeletal formations:
- on the head and neck: parietal tubercle, frontal tubercle, brow ridges, external occipital tuberosity, mastoid processes of the temporal bone, "canine fossa" of the upper jaw, spinous process of the VII cervical vertebra.
- on the trunk: clavicle, sternum, its jugular notch, angle, xiphoid process, costal arch, sub-sternal angle, scapula, scapula axis, coracoid process, acromion, lower angle of the scapula, ribs (ribs count).
- on the upper limb: the head of the humerus, epicondyle, ulna, olecranon, head of the radius, styloid process, capitate bone, pisiform bone, metacarpal bones of the hand, phalanges of the fingers.
- on the lower extremity: iliac crest of the pelvic bone, anterosuperior iliac axis, ischial tubercle, greater trochanter, epicondyle of the femur, patella, tuberosity of the tibia, medial surface of the tibia, medial and lateral ankle, calcaneus, metatarsus, metatarsus bones.
- Connections of the bones of the skeleton:
- shoulder, elbow, wrist joints, between the phalanges of the fingers, sternoclavicular joint, hip, knee and ankle joints.
- Muscles of the human body:
- on the head and neck: chewing, temporal, sternocleidomastoid, trapezius muscles, the contours of the glossopharyngeal triangle, the outlines of the scapular-hyoid triangle, the supraclavicular fossa.
- on the trunk: intercostal spaces, teeth of the external oblique muscle and serratus anterior muscle, rectus abdominis muscles, white line of the abdomen, latissimus dorsi, outlines of the lumbar triangle.
- on the upper limb: the boundaries of the axillary fossa, deltoid, biceps of the shoulder, ulnar fossa, eminence of the thumb, eminence of the little finger.
- on the lower limb: quadriceps muscle, popliteal fossa, gastrocnemius muscle, Achilles tendon.
- Internal organs: the
- contours of the thyroid gland, the posterior, anterior and lower edges of the right and left lungs, skeletotopy and syntopy of the heart, liver, gallbladder, projection of the cecum, projection of the appendix, projection of the kidneys.
- Vascular system:
- arterial vessels: probing the sites of pulsation of the superficial temporal and facial arteries, radial, brachial, femoral artery and dorsal artery of the foot, projection of the right and left subclavian arteries, projection of the axillary artery, projection of the common carotid and external carotid arteries, projection of the posterior intercostal arteries (III-IX), projection of the femoral artery, projection of the popliteal artery.
- -venous vessels: anterior and posterior facial veins, external and internal jugular veins, head vein, main vein, great saphenous vein, small saphenous vein.

- -lymph nodes: occipital, posterior ear, submandibular, superficial cervical, axillary, elbow, inguinal, popliteal.
- Peripheral nervous system: supraorbital nerve, infraorbital nerve, chin nerve, projection of the trunk and branches of the facial nerve, greater auricular nerve, small occipital nerve, subclavian nerves, landmarks for the location of intercostal nerves, intercostal nerves within the anterior abdominal wall, ulnar nerve, projection of the sciatic nerve ...

possess the following practical skills: the

- skills of sketching schematic images of generally accepted anatomical concepts in the course of normal anatomy: (circles of blood circulation, reflex arc (simple and complex), main projection paths of the central nervous system (sensory and motor), nephron, liver lobules, scheme of the gastrointestinal tract, scheme of the vas deferens, acinus, bronchial and alveolar tree, cava-caval and porto-caval anastomoses).
- the skills of demonstrating anatomical formations on preparations, dummies.
- skills of macroscopic description of organs, etc.

B.3.2. "Normal physiology"

Total labor intensity 6 credits

Lectures 36 hours

Practical lessons 90 hours

Independent work 54 hours

Types of control: Test, exam

Objective of the discipline: To form students' systemic knowledge about the vital activity of the whole organism, its organs and systems, about the basic mechanisms of regulation of physiological functions of the body when interacting with the external environment.

Objectives of the discipline: the

- formation of ideas about the morpho-functional unity of the human body and the mechanisms of regulation of its various systems.
- the formation of ideas about the body as a single functional system that maintains homeostasis in changing environmental conditions.
- mastering by students of methods and ways of studying various systems of the body.
- application of the acquired knowledge and skills in the study of general professional disciplines.

The content of the discipline:

Physiology is a fundamental experimental and theoretical science about the vital activity of the whole organism, systems, organs, cells and individual cellular structures, the mechanisms of regulation of homeostasis during the interaction of the organism with the environment. Much attention is paid to the study of membrane, cellular processes, biophysical mechanisms of physiological processes, the study of the influence of external factors on the vital activity of the human body. Physiology is the most important part of biomedical disciplines, thanks to which the medical student learns the general laws of the vital activity of a healthy organism, the physiological mechanisms and processes underlying the functioning of organs and systems, as

well as the regulation of vital functions of the organism. The object of physiology study is a living organism and the functions of its parts: cells, tissues, organs and systems. Studying the body of healthy people will allow future specialists to quickly master the methods of functional diagnostics, assess the state of health and adaptation of the body, the level of functioning of physiological functions in normal conditions. Revealing the patterns of functioning of organs and systems of the body is a necessary condition for further increasing life expectancy, rational organization of health improvement and facilitating working conditions, and discovering new methods for preventing and treating diseases. The discipline physiology is the methodological foundation of clinical disciplines and knowledge of the normal functions of the human body will facilitate the study of the mechanisms of action of medicinal substances and the ways of their excretion from the body.

As a result of mastering the discipline "Normal physiology", the student should

know:

- basic physiological processes occurring both at the molecular-cellular level and at other levels of organization of a living organism; physiological foundations of mental activity; mechanisms of formation of human behavior as interaction with the environment.

be able to:

- analyze the mechanisms of physiological processes at various levels of organization of living things from molecular-cellular to the whole organism; to give an overall assessment of the results of studies of the physiological state of a person.

possess the following practical skills: the

- skill of scientific analysis of the mechanisms of action of endogenous biologically active substances of the human body; the skills of measuring the basic functional characteristics of the human body (pulse, blood pressure, body temperature).

B.3.3. "Pathology"

Total labor intensity: 6 credits

Lectures 64 hours

Practical lessons 62 hours

Independent work 54 hours

Types of control: test, exam

The purpose of the discipline: mastering knowledge of the causes, mechanisms of development, manifestation of pathological processes, dialectics of the relationship of damage and protective components in the development of various diseases, which can be used to prevent disease.

Objectives of the discipline: - to

form students' systemic knowledge about the causes and conditions of occurrence, mechanisms of development and outcomes of pathological processes and diseases necessary for the performance of the professional duties of a pharmacist concerning the medical aspects of his activities;

- using this knowledge to teach the ability to analyze situational clinical tasks and model situations, to substantiate the expediency of using groups of drugs, based on knowledge of the etiology and pathogenesis of diseases;

- to form the methodological and methodological foundations of the professional thinking of a pharmacist;

-creation of basic knowledge for mastering pharmacology and pharmacotherapy;

- the ability to operate with the basic concepts of pathology and the most common medical terms when working with pharmaceutical and medical (reference, scientific) literature;

-consultations of doctors on rational pharmacotherapy;

-participation in the creation of new drugs.

Discipline content:

Pathology is an experimental and theoretical science about the vital activity of a sick organism. The goal of the course is to study the basic patterns and mechanisms of disease development and human recovery and prepare students for a deep understanding of the etiology, pathogenesis, clinical manifestations, principles of therapy and disease prevention. The main object of the study of this science is a typical pathological process that forms the basis of the disease. The main method of pathology is an experiment, the essence of which is to model a pathological process and study it in dynamics using a variety of modern research methods. The ultimate goal of the study of pathology is to reveal the laws by which the disease develops.

As a result of mastering the discipline, the student must

know: -

basic physiological concepts and terms used in medicine.

-morphofunctional organization of a person, especially vital activity in different periods of individual development and during pregnancy.

-basic mechanisms of regulation of the function of physiological systems (molecular, cellular, tissue, organ, system-organ, organismic).

- the main mechanisms of adaptation and protection of a healthy organism under the influence of environmental factors.

-principles of the relationship of the human body with the external environment (sensory systems).

-physiological foundations of mental activity.

-principles of modeling physiological functions.

be able to: Measure the most important vital signs of a person at rest and during exercise. Analyze the results of an experimental study of normal physiological functions.

possess the following practical skills: a culture of thinking, the ability to generalize, analyze, perceive information, set a goal and choose ways to achieve it, the skills to measure the basic functional characteristics of an organism (pulse, blood pressure), etc.

B.3.4. "Microbiology"

Total labor intensity: 6 credits

Lectures 72 hours

Practical lessons 108 hours

Independent work 90 hours

Types of control: test, exam

Objective of the discipline:

Formation of students' modern knowledge about the role of microorganisms in infectious and non-infectious human pathology, about the possibilities of microbiological methods in confirming a clinical diagnosis, principles of antimicrobial therapy and specific prevention of infectious processes.

Objectives of the discipline: - to

give an idea of the classification and biological properties of pathogenic and opportunistic microorganisms;

- to give an idea of the methods for isolating pure cultures of microorganisms from the test material, the principles of identification, determination of the sensitivity / resistance of microorganisms to antimicrobial drugs;

- to form an idea of the molecular mechanisms of interaction between macro- and microorganisms;

- to characterize the main mechanisms of protection of a macroorganism from infectious agents and types of immunological reactions;

- to give the concept of pathogenesis, the foundations of the formation of infectious immunity, the principles of specific prevention and therapy of diseases caused by microbes;

- to acquaint with modern methods of microbiological diagnostics of common infectious and non-infectious diseases of microbial etiology.

Discipline content:

Microbiology as a science contributes to the solution of important problems of clinical and theoretical medicine. The subject of medical microbiology is taxonomy, morphology, physiology, genetics, ecology of microorganisms, pathogenic and opportunistic microorganisms for humans, pathogenic factors, mechanisms of their implementation at the cellular and molecular genetic level in causative agents of diseases, methods of their isolation and identification, specific therapy and prevention.

Knowledge of microbiology is necessary for solving such important problems of medicine as reducing the infectious morbidity of people and eliminating infectious diseases, reducing and eradicating nosocomial diseases caused by opportunistic microorganisms and their specific prevention.

The proposed program in microbiology includes issues of general andmicrobiology,specificsubject, goals, objectives, research methods in microbiology; classification of microorganisms. Morphology, genetics and physiology, transmission routes, body defense mechanisms, classical laboratory identification techniques: bacteria, fungi and yeast, viruses. Biological properties, pathogenicity factors, features of laboratory diagnostics, specific treatment and prevention of pathogens that cause diseases in various organs and systems. Normal microflora of the body. Microbiological bases of disinfection, asepsis, antiseptics. Ecology of microorganisms. Fundamentals of general immunology, assessment of the immune status.

As a result of mastering the discipline "Microbiology" the student must

know: - the

structure and shape of a bacterial cell with the function of various formations, their chemical composition, physiology, biochemistry of bacteria, nutritional characteristics, respiration, growth, reproduction.

- features of the morphology, physiology of actinomycetes, spirochetes, rickettsia, chlamydia, mycoplasma, fungi, protozoa.

-distribution and role of microbes in the environment. the influence of environmental factors on microorganisms.

-morphology, ultrastructure, classification and nature of viruses. features of replication of DNA and RNA genomic viruses, their cultivation: antigens, production and use of phages.

-features of the genetics of bacteria and viruses, the role of plasmid mutations, recombinations in the evolution of bacteria. have an understanding of genetic engineering, practical application.

- sources and methods of obtaining antibiotics, their classification by structure, spectrum and mechanism of action. on the reasons for the formation of drug resistance. complications during antibiotic therapy, methods for determining the sensitivity of microbes to antibiotics.

- the concept of the infectious process, its classification. pathogenicity, virulence, toxicity of microbes. the role of opportunistic microflora in human pathology, in nosocomial infections.

- what is immunity, its types, mechanisms and factors; immune cells. their interaction in cellular and humoral immunity. antigens, their properties, types. antibodies, characteristics of different classes of immunoglobulins, mechanisms of interaction between antigens and antibodies.

- allergies of immediate and delayed types. forms of manifestation, mechanisms of occurrence and preventive measures.

-vaccines, their types; diagnostic, medical preparations. principles of their receipt and application.

- microflora of medicinal raw materials. bacteriological research of raw materials and finished dosage forms.

-morphology, the main physiological properties of causative agents of coccal, bacterial, drip, intestinal, zoonotic, rickettsial, viral, fungal infections. have an idea of the pathogenesis, the main clinical manifestations, the methods of laboratory diagnostics, preventive measures and the principles of treatment.

- methods of sterility control are used to test all medicinal products, regardless of their nature and dosage form, sterilization of pharmaceutical utensils, corks and other auxiliary materials, -

vaccines, their types; diagnostic, medical preparations.

- medicinal forms in which the content of a certain amount of non-pathogenic microbes is allowed. Signs of deterioration of non-sterile medicinal products: color change, unpleasant odor, turbidity, sediment, film, change in consistency, determination of the microbiological purity of pharmaceuticals

to be able to:

- have the skills to comply with the rules of sanitary and hygienic and anti-epidemic regime and safety measures in bacteriological laboratories.

-be able to take material for bacteriological and virological studies (sputum, pus, nasal and pharyngeal contents, feces, urine, blood).

-have the skills of sampling from various environmental objects (water from open and underground sources of water supply and a distribution network of a water supply system, soil, indoor and atmospheric air, food products) for sanitary and microbiological research.

-be able to conduct sanitary-bacteriological research of medicinal raw materials and finished medicinal products.

-be able to carry out sanitary and bacteriological control in the work of pharmacies.

- have the skills to take washes from hands, surfaces, dishes and conduct sanitary and bacteriological research.

- have the skills to fill out referral forms for bacteriological research.

- have the skills to read the results of microbiological, virological, serological laboratory tests.

- have the skills to decontaminate infected material, antiseptic treatment of hands of laboratory workers in contact with the test material, cultures of pathogenic microorganisms.

- have the skills to prepare microscopic preparations from pure cultures of microbes, from pathological material (pus, sputum, blood), be able to stain preparations with simple and complex methods (by gram, tsil-nielsen, gins, neiser, Romanovsky-gimz).

-to have the skills of differentiating microorganisms by morphological characteristics during microscopy.

- have the skills of microscopy with the immersion system of a light microscope and be able to set up a dark field of view (for observing microorganisms in a living state), be able to work with a phase contrast installation and a luminescent microscope.

-be able to sterilize culture media, dishes, contaminated material.

- have the skills of bacteriological work: to isolate pure cultures of aerobes and anaerobes, to be able to identify the isolated cultures by morphological, tinctorial, cultural, biochemical, antigenic properties; be able to determine phage sensitivity, phage typing and determine the sensitivity of bacterial cultures to antibiotics.

- to be able to deliver, take into account and evaluate the results of serological reactions: agglutination, precipitation, complement binding, hemagglutination.

-be able to carry out sanitary and educational work on the need and effectiveness of vaccination

-be able to determine the total microbial number (microbial contamination), determine the bacteria of the E. coli group, yeast and mold fungi; conditionally pathogenic and pathogenic microorganisms.

-be able to comply with the rules of sanitary and hygienic and anti-epidemic regime and safety measures in pharmaceutical organizations. - normative documents governing the sanitary regime of pharmacies and microbiological quality control of medicines

possess the following practical skills: -

work with magnifying equipment (microscopes, optical and simple magnifiers) -

skills for preparing microscopic preparations from pure cultures of microbes, from pathological material (pus, sputum , blood). to paint preparations by simple and complex methods (by gram, tsil-nielsen, gins, neiser, romanovsky-gimse).

- the skills of differentiation of microorganisms by morphological characteristics during microscopy.

- the skills of microscopy with an immersion system of a light microscope and be able to set up a dark field of view (for observing microorganisms in a living state), be able to work with a phase contrast installation and a luminescent microscope.

- the skill to sterilize culture media, dishes, contaminated material.

- the skills of bacteriological work: to isolate pure cultures of aerobes and anaerobes, to be able to identify the isolated cultures by morphological, tinctorial, cultural, biochemical, antigenic properties;

-determine phage sensitivity, phage typing and determine the sensitivity of bacterial cultures to antibiotics.

-the skill to put, take into account and evaluate the results of serological reactions: agglutination, precipitation, complement binding, hemagglutination

-the basic skills of working with material containing pathogenic and opportunistic microorganisms; diagnostics of opportunistic and infectious diseases - a

method of interpreting the results of microbiological and immunological studies, determining the antimicrobial activity of antibiotic drugs and microbiologically grounded rules for their use for treating patients.

-to have a culture of thinking, the ability to critically perceive information, logical analysis and synthesis

-determine the direction and nature of diagnostic and laboratory research with vivid specific symptoms of an infectious disease and

epidemiological anamnesis -use biological equipment, observe safety precautions, work with magnifying equipment (microscopes, stereo - and simple magnifiers), interpret microscopic data -

methods used in determining the effectiveness of antimicrobial preservatives and monitoring production facilities of pharmaceutical enterprises and laboratories of control services - the

principles of obtaining and using vaccines.

-the method of interpreting the results of microbiological research, the activity of antibiotic drugs

B.3.5. "Clinical medicine"

Total labor intensity 10 credits

Lectures 72h

Practical lessons 110h

Independent work 120h

Types of control credit, exam

The purpose of the discipline: familiarizing students with the main methods of clinical examination of the patient (mainly the method of questioning and examination) and identifying the main clinical and laboratory-instrumental signs of syndromes , the most common in the practice of a pharmacist.

Objectives of the discipline: - to

teach students the basic clinical methods of examining a therapeutic patient;

- to acquaint with the basic laboratory and instrumental methods of examining the patient;

- to identify the main clinical and laboratory-instrumental symptoms in patients;

- based on the identified clinical and laboratory-instrumental signs, build the main clinical syndromes.

Discipline content:

A modern pharmacist should be able to independently assess the symptoms and syndromes of the most common diseases, i.e. to own pharmaceutical care, the main meaning of which is information and advisory activities, and in some situations - to be able to provide emergency first aid.

As in the rest of the world, in Kyrgyzstan people often turn to a pharmacist to receive recommendations for eliminating pain syndrome, diarrhea, headache, etc. conditions that require enhancing their clinical function.

The most important conditions for improving the theoretical and practical training of a pharmacist are knowledge of the main syndromes, the most common diseases that a pharmacist will have to meet in the course of his work in order to provide pharmaceutical care.

As a result of studying this subject, pharmaceutical students must master the basic skills of examining patients, be able to identify the most common syndromes of diseases of internal organs and their laboratory instrumental signs. In addition, students must master the basics of medical ethics and deontology, first aid for some emergency conditions.

As a result of mastering the discipline "Clinical Medicine", the student must

know:

-the scheme and methods of clinical examination of the patient;

-basic clinical and laboratory-instrumental symptoms and syndromes of the most common diseases;

- the basic principles of providing first first aid in certain emergency conditions: hypertensive crisis, coma in diabetes mellitus, allergic reactions, hemoptysis, gastrointestinal bleeding, renal colic, acute abdomen, acute coronary syndrome.

be able to: -

conduct a questioning of the patient and / or relatives, establishing the possible causes of its occurrence;

- to carry out the main most frequently used and available clinical methods of patient examination (examination, palpation, measurement of blood pressure, determination of the properties of the arterial pulse, etc.);

-to draw up a plan of the basic methods of laboratory and instrumental examination of the patient;

- to independently identify the main clinical symptoms and syndromes in diseases of internal organs;

- if necessary, conduct peak flowmetry and evaluate its performance in healthy individuals and in the main clinical syndromes of the bronchopulmonary system;

- to evaluate the results of a general analysis of blood, urine, sputum, feces, analyzes of gastric and duodenal contents, pleural effusion, ascitic fluid, as well as a biochemical blood test;

-to provide assistance for certain emergency conditions.

possess the following practical skills:

-collection of the main additional complaints, assessment of the patient's perception of his / her problems;

- targeted collection of anamnesis of the disease (questioning about the history of the given): the onset of the disease, the time of onset and dynamics of symptoms; the ability to maintain a history of the disease in chronological order from the first symptoms to the moment of going to the doctor; the reason for going to the doctor;

-collection of life history, allergological history; identification of harmful risk factors associated with the patient's behavior, drug history;

-assessment of the general condition of the patient;

-documentation of anthropometric data (height, weight, BMI, waist circumference, hips);

-examination of the skin and mucous membranes, lymph nodes; nails; definition of dermographism;

-examination, palpation, percussion, auscultation of the respiratory system in adults in normal conditions and with diseases of the respiratory system;

-examination, palpation, percussion, auscultation of the organs of the cardiovascular system in adults in normal conditions and with diseases of the cardiovascular system;

-examination, palpation, percussion, auscultation of the organs of the gastrointestinal system in adults in normal conditions and in diseases of the organs of the gastrointestinal system;

- urinary system examination, palpation, percussion, auscultation in adults in normal conditions and in diseases of the urinary system;
- hematopoietic system organs examination, palpation, percussion, auscultation in adults in normal conditions and in diseases;
- endocrine system examination, palpation, percussion, auscultation adults in normal conditions and in diseases of the endocrine system;
- musculoskeletal system examination, palpation, percussion, auscultation in adults in normal conditions and in diseases.

3.6. "Organic Chemistry"

Totally 10 credits

Lecture 72 hours

Practical classes 138 hours

Self-study 90 hours

Control type: credit test, exam

The purpose of the discipline: the formation of systematic knowledge about the relationship of organic compounds structure with their properties to provide a theoretical basis for the subsequent study of disciplines in the specialty "Pharmacy" and the ability to solve chemical problems in the pharmacist practical activities.

Goals of the discipline:

- development of students' systematic knowledge of the classification, nomenclature, structure, methods of organic compounds production and reactivity, including biologically active substances, necessary for further study and future practical activities;
- train students to predict possible ways and conditions for the transformation of functional groups in the most important classes of organic compounds;
- teach students to independently raise questions and find ways to solve them theoretically;
- train students to master the theory of physical and chemical methods for the study of organic compounds;
- train students to independently set a simple educational and research experiment, perform calculations, make reports and essays on the work;
- train students to master modern scientific research methods for the synthesis, isolation, purification and identification of organic substances using special equipment.

Content of the discipline:

Organic chemistry as an academic discipline is one of the pharmaceutical specialty fundamental disciplines.

The study of organic chemistry consistently connects the pre-university and university stages of chemical education (general and inorganic chemistry, physical and colloidal chemistry, analytical chemistry and biochemistry) and specialized disciplines (pharmaceutical chemistry, toxicological chemistry, pharmacognosy), is the foundation for the study of theoretical disciplines and the special pharmaceutical subjects successful development.

The program is aimed at studying the structure and chemical properties of organic compounds important classes, as well as biopolymers and their structural components, which serves as a platform for the perception of biomedical and pharmaceutical knowledge at the molecular level.

The scientific and theoretical concepts and experimental skills laid down in the course of organic chemistry equip the student with the knowledge to understand the problems of new drugs synthesis, analysis and identification of the drugs and their metabolites structure.
The course of organic chemistry is built on a unified theoretical basis, based on the concepts of the organic compounds and the mechanisms electronic and spatial structure and their chemical transformations, which allows the student to lay the foundations of chemical thinking and contributes the development the "structure – properties" problem orientation.
The course material serves as a natural science basis for the formation of knowledge and skills for biomedical and specialized disciplines, as well as for the pharmacist practical activities.
As a result of mastering the discipline "Organic Chemistry", the student should know:
Safety rules for working in a chemical laboratory; modern atomic model, periodic law, D. I. Mendeleev periodic system; chemical bonding; theory of the organic compounds structure; classification scientific foundations, organic compounds nomenclature and isomerism; stereochemistry fundamentals; organic compounds reactivity features; characteristics of the main organic compounds hydrocarbons classes (including alkanes, alkenes, alkadienes, alkynes, cycloalkanes, arenes, their structure and properties; halogen-derived, hydroxy-derived alcohols and phenols), oxo-compounds (aldehydes and ketones), carboxylic acids and their functional derivatives, amines,azo-and diazo-compounds, heterofunctional compounds (hydroxy -, oxo - and amino acids), carbohydrates, isoprenoids, heterocyclic compounds, alkaloids; organic compounds qualitative analysis fundamentals.
Be able to: medicinal substances physical properties; collect the simplest installations for laboratory research; use physical, chemical equipment, computerized devices; classify chemical compounds based on structural features; justify and offer a qualitative analysis of specific organic compounds; conduct laboratory experiments to explain the essence of specific reactions and their analytical effects, draw up reporting documentation on experimental data; identify the proposed compounds based on the results of qualitative reactions, as well as UV and IR spectroscopy data.
Master the following practical skills: the technique of chemical experiments for conducting test tube reactions, the skills of working with chemical utensils and simple devices; the most important skills for setting up and conducting qualitative reactions with organic compounds; methods for preparing laboratory equipment for the analysis and synthesis of organic compounds; skills for conducting systematic analysis of an unknown compound.

3.7. “Analytical Chemistry”
Totally 10 credits
Lecture 72 hours
Practical classes 138 hours
Self-study 90 hours
Control type: credit test, exam
The purpose of the discipline: the students' knowledge formation of the chemical analysis and practical skills theoretical foundations of its implementation.
Goals of the discipline:
- teaching students the theoretical foundations of analysis and methodology chemical and instrumental methods;

- students ' acquisition of professional skills in conducting qualitative and quantitative analysis of medicinal substances;
- development of students' ability to independently work with educational and reference literature on analytical chemistry.

Content of the discipline:

Analytical chemistry, as the principles science, methods and means of determining the chemical composition and substances structure, is one of the main chemical disciplines in the process of training a pharmacist.

The program of analytical chemistry study includes modern chemical and physical-chemical methods of analysis, the use of which is necessary for students in their further studies and practical activities.

The discipline allows students to get acquainted with modern trends in the analytical chemistry development, helps to understand the innovative approaches features to the medicines analysis, raw materials for their production and methods of product quality control.

As a result of mastering the discipline "Analytical Chemistry", the student must

know:

- the principles of qualitative and quantitative analysis, the current level of their development;
-safety regulations and procedures for working in chemical laboratories with reagents and devices;
- safety rules and procedures for working in chemical laboratories with reagents and devices basic rules for library search and Internet search;
- properties of chemical compounds, mixing rules;
- methods of chemical processes qualitative control;
- methods of quantitative chemical analysis;
- research physical methods;
- analysis physical and chemical methods;
- separation methods, chemicals and principles concentration and purification of their application;
- basic rules of library search and Internet search.

Be able to:

- conduct qualitative and quantitative analysis of a substance using basic techniques and methods, perform initial calculations, final calculations using statistical processing of results, prepare and standardize solutions of analytical reagents. Use laboratory equipment; collect the simplest installations for laboratory research;
- use laboratory equipment, collect the simplest installations for conducting laboratory research, find enough information to compile a scientific report;
- analyze the obtained experimental data; describe the properties of the obtained chemical compounds; choose the research method, the method of conducting the experiment in accordance with the tasks set.
- find enough information to compile a scientific report.

Master the following practical skills:

- the technique of performing basic analytical operations in the qualitative and quantitative analysis of the substance. Skills of safe work in a chemical laboratory, the ability to handle chemical utensils, reagents, electrical appliances.

- skills of safe work in a chemical laboratory, the ability to handle chemical dishes, reagents, electrical appliances.
-the experiment technique, the techniques of performing the experiment according to a given or selected method, the working on devices (photocolorimeter, refractometer) skills and interpreting experimental data, the drawing up an object analysis scheme technique, the measuring physical quantities with a given accuracy techniques, the measuring the analytical signal techniques.
- the knowledge subject area professional language, the ability to present generalized information in a scientific language.

3.6. "Physical and colloidal chemistry"

Totally 6 credits

Lecture 54 hours

Practical classes 90 hours

Self-study of the students 36 hours

Types of control: credit test, exam

The purpose of the discipline: to create a solid foundation physical and colloidal chemistry students' theoretical and practical knowledge, necessary for further study of other chemical and professional disciplines.

Goals of the discipline:

- development of students' system knowledge in the main sections of physical and colloidal chemistry: chemical thermodynamics fundamentals; phase equilibria thermodynamics; the solutions study; electrochemistry basic concepts and methods; chemical kinetics, catalysis fundamentals; surface phenomena thermodynamics; dispersed systems physical chemistry fundamentals, high-molecular compounds solutions, necessary for further study and future practical activities,
- to teach students the physical and chemical methods of substances research that are widely used in pharmacy;
- instill skills in determining the substances physical constants;
- learn to analyze observations and measurement data and make generalizing conclusions based on them, as well as learn to use physical and chemical reference books.

Content of the discipline:

Physical and colloidal chemistry is the theoretical basis for a more complete and in-depth study of biochemistry, pharmaceutical chemistry, drug technology, toxicological chemistry, and also serves as the theoretical basis for many physical-chemical research methods used in pharmacy. The course covers such sections as fundamentals of chemical thermodynamics, chemical and phase equilibria, solutions theory, electrochemistry, chemical reactions and catalysis kinetics, surface phenomena, physical chemistry of dispersed systems (colloids, suspensions, emulsions, semi-colloids) and high-molecular compounds.

The program is designed with a focus on the ultimate goals of training; it includes the theoretical knowledge and practical skills that are necessary in the study of specialized disciplines (pharmaceutical, toxicological chemistry, drug technology), as well as in further independent practical work.

As a result of mastering the discipline "Physical and Colloidal Chemistry", the student should know:

- thermodynamics basic concepts and laws;
- solutions theory;

- electrochemistry (electrical conductivity of electrolyte solutions, electromotive potentials and electrode processes);
- kinetics of chemical reactions and catalysis;
- physical chemistry of surface phenomena;
- nature, classification, properties, methods of dispersed systems preparation and purification;
- properties of surfactants and high-molecular compounds solutions;
- basic rules of working in a chemical laboratory with reagents, dishes, measuring equipment;
- the operation principle of a refractometer, photoelectrocolorimeter, scale, etc.

Be able to:
- set up a simple chemical experiment, clearly formulate the results of observations and draw conclusions based on them;
- determine the physical constants of chemicals;
- build diagrams based on the results of the work performed;
- determine the change in the rate of reaction under the influence of the reacting substances concentration, temperature and catalysts;
- calculate the chemical reactions thermal effect, the chemical equilibrium constant, the chemical reactions rate constant, and other physical-chemical values according to the reference book and the experiment results;
- work with instruments when performing chemical studies: photoelectrocolorimeter, refractometer, using a centrifuge and a microscope.

Master the following practical skills:
- methods of substances physical and chemical analysis the training laboratory;
- solutions of specific theoretical and experimental problems;
- experimental techniques, methods of performing the experiment according to a given method of measuring the substances physical constants.
- work on the simplest equipment conducting chemical experiments.
- use laboratory equipment, appliances, chemical utensils and reagents in compliance with safety regulations.

3.9. "Botany"
Totally 7 credits
Lecture 48 hours
Practical classes 99 hours
Self-study of the students 63 hours
Type of control: credit test, exam
The purpose of the discipline: the development of the discipline "Botany" is to master the systematic biological knowledge necessary for understanding medical and biological disciplines assimilation number and the ability to perform the description and definition of plant tissues, organs, different systematic groups representatives.
Goals of the discipline:
- study of plant world development biological laws, study of the cell doctrine main provisions, its structure;
- study of the plant organs morphological and anatomical structures diversity, study of plant groups, including medicinal species, studied in the course of pharmacognosy and familiarization with the diagnostic signs of plants that are used in the raw materials determination;

- study of the main physiological processes occurring in the plant body;
- formation of ideas about the ecology, phytocenology and geography of plants and familiarization with rare and endangered plant species that are subject to protection and listed in the “Red Book”;
- formation of skills for preparing temporary micro-preparations and conducting histochemical reactions;
- skills formation of plants anatomical and morphological description and determination of plants by determinants;
- formation of students ' skills for solving problem and situational problems and skills for studying scientific botanical literature.

Content of the discipline:

The process of teaching botany is aimed at developing students' interest in their specialty and forming an understanding the richest medicinal flora rational use mportance.

The discipline "Botany" is one of the fundamental disciplines in the formation of a pharmacist. On the one hand, it is necessary for mastering a special pharmaceutical discipline-pharmacognosy, on the other-it gives future specialists the basics of biological knowledge necessary for understanding and mastering a number of medical and biological disciplines studied at the Faculty of Pharmacy – microbiology, human physiology, biochemistry, pharmacology, etc.

The course focuses on those sections and topics that are necessary for the assimilation of pharmacognosy and can be used in practice by pharmacy specialists. Thus, knowledge and skills in the morphology and anatomy of plant organs are necessary for successful macro-and microscopic analysis of plants; determining the identity and quality of medicinal plant raw materials.

Systematic review of holo- and covered-in-the-crop plants, most of which are medicinal, introduces the student to the characteristic features of departments, classes, a number of families, as well as to the biological and morphological-anatomical features of the species that are used in medicine.

Studying the basics of plant physiology will help to understand the processes that lead to the formation of biologically active substances used in medical practice.

As a result of mastering the discipline "Botany", the student should

know:

- biological patterns of the plant world;
- variety of morphological and anatomical structures;
- plant organs and their functions;
- plant groups, including medicinal species, studied in the course of pharmacognosy;
- diagnostic signs of plants that are used in determining raw materials.

Be able to:

- work with the MBR-1 microscope, Biolam;
- prepare temporary and permanent micro-preparations;
- conduct microchemical reactions;
- describe and identify plant tissues;
- be able to identify plant organs (root, stem, leaf) based on the description of tissues;
- be able to carry out anatomical and morphological description of plants;
- be able to identify plants;
- be able to conduct the simplest physiological experiments;

- acquire plant herbarization skills;
- be able to conduct a description of the phytocenosis;
- herbalize plants.

Master the following practical skills:

- organization of the search for the studied plants in natural phytocenoses;
- collection and drying of plant raw materials, their fixation, herbarization;
- growing plants on experimental plots;
- to carry out work aimed at protecting phytocenoses, thickets and individual plant species, in order to preserve the gene pool of regional floras;
- identification of plants by determinants, identification of plants by external signs in living and herbalized species; knowledge of plant research methods for the diagnosing medicinal plants and their impurities purpose;
- knowledge and methods that allow for the comparison of plant objects (or parts of them) and the examination of micro-and macroscopic features.

3.10. "Biochemistry"

Totally 6 credits

Lecture 44 hours

Practical classes 82 hours

Self-study of the students 44 hours

Type of control: credit test, exam

The purpose of the discipline:

to acquire knowledge about the metabolic processes course basic laws that determine the state of human health and adaptation at the molecular, cellular and organ level of the whole organism.

Learning goals:

- study of the structural and functional components (proteins, enzymes, vitamins and nucleic acids) of cells and the processes underlying the vital activity of a healthy organism;
- study of certain disorders that lead to the occurrence of diseases;
- study of hormones key roles in intercellular interactions and the metabolism regulation;
- study of the blood, liver and special tissues (connective, bone, muscle and nervous tissues) biochemistry and water-salt metabolism;
- study of energy formation in photosynthetic organisms;
- study of the drugs and poisons metabolism, the ways of their neutralization and isolation.

Content of the discipline:

Biochemistry is the science that studies the substances that make up living organisms, their transformations, as well as the relationship of these transformations with the activity of organs and tissues.

The great advances in biological chemistry in recent years have touched the very foundations of natural science. Fundamental discoveries in the field of biopolymer structure, molecular mechanisms of information storage and transmission, and regulation of metabolic processes at the molecular, cellular, and organizational levels served as the basis for the formation of new views on the life processes essence.

It is obvious that these achievements of biochemistry should take an essential place in the training of a pharmacist.

As a result of mastering the discipline "Biochemistry", the student should

know:

- the subject and tasks of biochemistry, the importance of biochemistry for medicine and pharmacist training;
- the main stages of the biochemical science development, the role of scientists in the creation and development of biochemistry;
- fundamentals of the structural organization of the most important biological molecules, its relationship to function;
- basic provisions of enzymology, the concept of enzymes, coenzymes, and cofactors, the kinetics of enzymatic reactions.

- temperature influence, PH, substrate and enzyme concentrations on the rate of the enzymatic reaction;
- enzymes activators and inhibitors, types of inhibition;
- the science main provisions of vitamins and their importance in the nutrition biochemistry;
- bioenergetics and biological oxidation, energy exchange;
- biochemical bases of the metabolism regulation, the role of vitamins, hormones, and the nervous system in regulatory processes.
- reception and transmission of the signal to the cell, mechanisms of hormonal signal transmission to target cells, adenylate cyclase, guanylate cyclase, and ca2+messenger systems.
- simple and complex endogenous lipids, their structure and functions, transport and deposition in the body;
- interchangeable and essential amino acids, deamination processes, amino acids transamination and neutralization of ammonia in tissues and liver;
- parameters of the body liquid environment;
- the chemical composition of blood plasma, their functions;
- biochemistry of specialized tissues: liver, nervous, muscular and connective;
- photosynthesis;
- drug metabolism.

Be able to:

- independently work with educational and scientific literature;
- independently set up a simple biochemical experiment and give a critical assessment;
- work with devices when performing biochemical studies: photoelectrocolorimeter, refractometer, etc;
- determine the activity of enzymes in biological objects;
- determine the amount of protein fractions in blood plasma and protein preparations;
- determine the vitamins content in products of plant and animal origin;
- determine the content of carbohydrate metabolism certain components;
- determine the amount of protein fractions in blood plasma and protein preparations;
- determine the content of low-density lipoproteins in the blood serum;
- determine the amount of creatinine in the urine;
- analyze pigments and oxidative processes in photosynthetic organisms;
- determine the quality in the urine, the products of toxic and medicinal substances neutralization.

3.11. “Pharmacology”

Totally 12 credits

Lecture 90 hours

Practical classes 162 hours
Self-study of the students 103 hours
Type of control: credit test, exam
The purpose of the discipline: to form students' understanding of the pharmacology role and place among the fundamental and medical sciences, the main tasks of pharmacology; basic knowledge of medicines that ensure their effective and safe use in various fields of medicine
Goals of the discipline:
- develop skills in analyzing medical prescriptions for medicines;
- develop students' knowledge of pharmacokinetics and pharmacodynamics, indications for use and adverse effects of the drugs main pharmacological groups.
Content of the discipline: Pharmacology is a medical and biological science of medicinal substances and their effect on the body. In modern conditions, the problem of optimizing the drug supply of the population largely depends on the qualifications of pharmaceutical workers. In order to ensure high-quality drug therapy for the population of the Kyrgyz Republic, pharmacists should receive appropriate training in the field of pharmacology, improve and expand their knowledge throughout their professional activities.
To achieve this goal, the department offers a program in basic pharmacology for students of the Faculty of Pharmacy, which is divided into 3 semesters. The program contains sections such as:
- general pharmacology and formulation;
- peripheral nervous system;
- central nervous system;
- tools that affect executive bodies and systems;
- chemotherapeutic agents.
The program also contains intermediate control points (written) and final ones at the end of the semester in the test form, as well as at the end of discipline study course, knowledge control in the test exam form. In addition, the introduction of a personal form is provided for students.
The program is periodically updated taking into account the appearance of new medicines on the market. The program meets the requirements of the 3rd generation SES and it is based on the WHO recommendation.
As a result of mastering the discipline "Pharmacology", the student should
know:
- the subject of study, goals and objectives of pharmacology, its place among other medical and pharmaceutical sciences;
-sources of information: the State Pharmacopoeia, the Register of Medicines of the Kyrgyz Republic, etc;
- principles of finding new medicines and scientific approaches to the creation of medicines;
- general principles of registration of prescriptions and composing prescription prescriptions of medicines, generally accepted abbreviations and designations in prescriptions, use of the Latin language, rules for storage and use of medicines;
- types of drug doses;
- general principles of drugs pharmacokinetics and pharmacodynamics, factors affecting them, the main undesirable and toxic reactions;
- classification and characterization of the drugs main groups, pharmacodynamics and pharmacokinetics, indications and side effects for the drugs use;
- sources of information: The State Pharmacopoeia, the State Register of Medicines, the form of essential medicines, the WHO etc.

Be able to:
- distinguish the concepts of dosage form, medicinal substance, medicinal product, medicinal product, medicinal raw material, dietary supplement to food, homeopathic remedy;
- analyze the correctness of registration and writing out a prescription for a drug, depending on the form of the prescription form approved by the Ministry of Health of the Kyrgyz Republic;
- to evaluate the pharmacokinetic and pharmacodynamic characteristics of drugs as criteria for the effectiveness and safety of drug therapy;
- evaluate the possibility of therapeutic, undesirable and toxic effects of medicines on the human body;
- orient the types of drug classification;
- search for information on the discipline;
- interpret the received information.

Master the following practical skills:
- skills in choosing a specific dosage form;
- skills of choosing a drugs certain dose;
- the ability to choose a specific route of drugs administration, taking into account the pathological condition;
- determine the correctness of the recipes design;
- calculate single and daily doses of medicines;
- choose a convenient dosage form for various diseases,
- orient the numerous arsenal of new medicines, their advantages over the used drugs;
- skills of drugs genetic and therapeutic substitution;
- the ability to analyze the information received from different sources;
- the ability to report the information received and the results of the analysis.

3.12. "Pharmacognosy"
Totally 18 credits
Lecture 108 hours
Practical classes 270 hours
Self-study of the students 162 hours
Type of control: credit test, exam

The purpose of the discipline: The formation of students' competencies on the general and special parts of pharmacognosy, which are based on the rational use of medicinal plant resources, taking into account scientifically based recommendations for the procurement, standardization, quality control, storage and processing of medicinal plant raw materials, as well as ways of using raw materials and the use of medicinal plant products in pharmaceutical practice.

Goals of the discipline:
- introduction of students with the pharmacognosy basic concepts, pharmacognostic analysis methods, pharmacognosy tasks at the present stage and its significance for the practical activity of a pharmacist; the main stages of the pharmacognosy development, scientific research modern directions in the field of medicinal plants; with the raw material base of medicinal plants (MP) and the organization of medicinal plant raw materials (PRM) preparations;
- study of the PRM classification system (chemical, pharmacological, botanical, morphological) and the nomenclature of medicinal plant raw materials and plant medicinal products and animal

origin permitted for use in medical practice and for use in industrial production, basic information about the distribution areas of medicinal plants used in medical practice;
- study of the main groups of biologically active substances of natural origin, their physical and chemical properties, biosynthetic pathways, methods of isolation and purification,
- students training in methods of macroscopic and microscopic analysis of whole and crushed medicinal raw materials and medicinal plant preparations, qualitative and quantitative determination of BAS in medicinal plant raw materials;
- formation of skills and abilities for the use in medical practice of plant medicinal products and animal origin, determination by morphological characteristics and with the help of appropriate determinants of medicinal plants and medicinal plant raw materials in live and herbalized form;
- formation of skills for conducting qualitative, microchemical reactions, quantitative determination of BAS and determination of numerical indicators in medicinal plant raw materials;
- development and improvement of regulatory documentation for plant and animal raw materials.

Content of the discipline:

Pharmacognosy is a pharmaceutical science that studies medicinal plants, medicinal raw materials of plant and animal origin and some products of plants primary processing and animals for introduction into medical practice. Pharmacognosy, together with other pharmaceutical disciplines, forms the professional knowledge of the pharmacist.

As a result of mastering the discipline "Pharmacognosy", the student should

know:

- pharmacognosy basic concepts, pharmacognostic analysis methods, tasks of pharmacognosy at the present stage and its significance for the practical activity of a pharmacist;
- the pharmacognosy development main stages, scientific research modern directions in the field of medicinal plants;
- procurement organization of medicinal plant raw materials; procurement organizations and their functions;
- a system of state measures for the rational use and medicinal plants protection;
- resource research methods to establish natural reserves of medicinal plant raw materials;
- general principles of medicinal raw materials rational procurement and measures for the protection of natural exploited thickets of medicinal plants;
- the nomenclature of cultivated medicinal plants; the main methods of their cultivation;
- the standardization system of medicinal plant raw materials (chemical, pharmacological, botanical, morphological);
- the nomenclature of medicinal plant raw materials and plant medicinal products 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 medicinal plants raw material mass and the biologically active substances accumulation;
- macro-and microscopic analysis methods of whole medicinal raw materials;
- fees analysis;
- morphological and anatomical features of medicinal raw materials approved for use in medical practice, possible impurities;
- the biologically active substances main groups of natural origin and their most important physical and chemical properties; the biosynthesis ways of the biologically active substances

main groups;
- isolation and purification methods of the main biologically active substances from medicinal plant raw materials;
- basic methods of qualitative and quantitative determination of biologically active substances in medicinal plant raw materials; medicinal raw materials biological standardization;
- raw material quality indicators and methods of their determination;
- requirements for packaging, labeling, transportation and storage of medicinal plant raw materials;
- requirements for the results of the medicinal plant raw materials analysis;
- rights and obligations of specialists working in the field of medicinal plant raw materials standardization;
- the main ways and forms of using medicinal plant raw materials in pharmaceutical practice and industrial production;
- basic information about the use of herbal medicines in medicine;
-safety regulations at working with medicinal plants and medicinal raw materials;
- know the modern ecology basic concepts, the macroecology structure, methods, global problems and tasks of ecology;
- know the environmental monitoring development of medicinal plant raw materials and phytopreparations and the improvement of analytical methods and their metrological assessment in relation to phytopreparations;
- know the main anthropogenic factors affecting the quality of natural medicinal plant raw materials;
- the rational use system of medicinal plants natural resources and their protection;
- the procurement system of medicinal plant raw materials in Kyrgyzstan;
- the complex resource research system of medicinal plants;
- the standardization system of medicinal plant raw materials and medicinal products of plant origin.

Be able to:

- determine the morphological characteristics of medicinal plants in live and herbalized form;
- use macroscopic analysis to determine the authenticity of medicinal plant raw materials;
- use microscopic analysis to determine the authenticity of medicinal plant raw materials;
- determine the medicinal plant raw materials in their whole form with the help of appropriate determinants; determine the composition of official fees;
- recognize the impurities of foreign plants when collecting, accepting and analyzing medicinal plant raw materials, as well as when determining it in whole, cut and powdered form;
- conduct 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, flavanoids, tannins, alkaloids, etc.);
- select chromatography methods for the analysis of medicinal plant raw materials;
- analyze medicinal plant raw materials for the content of essential oils, cardiac glycosides, saponins, alkaloids, anthracene derivatives, tannins, flavanoids, coumarins, vitamins, etc. according to the quantitative determination methods;
- determine the humidity, ash content, and pulverization;
- to carry out acceptance of medicinal plant raw materials, to take the samples necessary for its analysis;

- determine extractive substances in medicinal plant raw materials;
- recognize foreign plant impurities in medicinal plant raw materials;
- carry out the determination of radioactivity and heavy metals in medicinal plant raw materials;
- conduct a test for the pesticides content of medicinal plant raw materials;
- to determine the microbiological purity of medicinal plant raw materials;
- determine the operational reserve, the possible volume of annual billets;
- to carry out the preparation of medicinal raw materials of various morphological groups;
- to carry out acceptance, reduction of raw materials to the standard condition, analysis, processing, storage and release of medicinal raw materials and medicinal products of plant origin.

Master the following practical skills:

- recognize medicinal plants in live and herbalized form by morphological features;
- the technique of macro-and microscopic analysis for determining the authenticity of medicinal plant raw materials and recognizing foreign plant impurities during the collection, acceptance and analysis of raw materials;
- determination of MPR in whole and crushed form with the help of appropriate determinants;
- stocks determination and possible volumes of MPR harvesting;
-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, anthracenedione, coumarins, flavonoids, tannins, alkaloids, etc.);
- the methods of quantitative determination provided for in the relevant regulatory documents, MPR for the content of polysaccharides, essential oils, vitamins, cardiac glycosides, saponins, anthracenedione, coumarins, flavonoids, tannins, alkaloids, etc.);
- methods for determining numerical indicators;
- acceptance of MPR according to the pharmacopoeia;
- conducting statistical processing of the analysis results, to make a conclusion about the good quality of the MPR in accordance with the current requirements.
- the technique of conducting qualitative and microchemical reactions; the use of physico-chemical, titrimetric, analysis gravimetric methods;
- to recognize medicinal plants in live and herbalized form by morphological characteristics; to determine stocks and possible volumes of MPR harvesting;
- make a conclusion about the good quality of MPR in accordance with the current requirements.
- the technique of conducting qualitative and microchemical reactions; the use of physico-chemical, titrimetric, gravimetric and chromatographic methods of analysis;
- provide information and consulting services for the procurement and storage of raw materials and herbal medicines;
- 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.);
- methods of quantitative determination, provided for by the relevant regulatory documentation, of MPR for the content of polysaccharides, essential oils, vitamins, cardiac glycosides, saponins, anthracene derivatives, coumarins, flavonoids, tannins, alkaloids, etc.);
- methods for determining numerical indicators by methods provided for in the pharmacopoeia;
- acceptance of MPR according to the pharmacopoeia;
- the skills of conducting chemical and toxicological research to diagnose acute poisoning with medicinal plants containing toxic and potent substances;

- skills in creating conditions for storage, the use of plant-based medicines for various diseases.

3.13. "Pharmaceutical Chemistry"
Totally 18 credits
Lecture 108 hours
Practical classes 270 hours
Self-study of the students 162 hours
Type of control: credit test, exam

The purpose of the discipline:
Formation of a student – a future pharmacist is a complete system of knowledge, skills and abilities related to the development, production, quality assessment of medicines, as well as the relationship of their chemical structure with pharmacological activity and stability during storage; disclosure of the methodology for creating, evaluating the quality and standardization of medicines based on the laws of chemical and biological sciences, their particular manifestations and the history of drug use.
Goals of the discipline:
- theoretical knowledge acquisition on the basic laws of the relationship between the medicines structure and properties, methods of their production, qualitative and quantitative analysis, possible transformations forecasting of medicines during storage;
- formation of skills in the use of basic physical-chemical, mathematical and other natural science concepts and methods in solving professional problems;
- acquisition of skills and competencies to carry out quality control of medicines in accordance with legislative and regulatory documents in the conditions of pharmaceutical organizations;
- ability formation to analyze the results of their own activities to prevent professional mistakes;
- stimulating the general cultural competencies formation of a specialist through the development of a culture of thinking, the ability to analyze problems of different levels (ideological, social, personal);
- formation of the ability to participate in scientific research, to analyze and publicly present scientific information;
- formation of readiness to participate in the introduction of new methods and techniques in the medicines development, production and circulation;
- promote the professional competencies formation of a specialist in the practical pharmacy field and awareness of the future profession importance, readiness to solve professional problems and further improve their skills by expanding and deepening the professionally necessary knowledge and skills.
Content of the discipline:
Pharmaceutical chemistry as a science that studies the medicinal substance composition and structure, preparation methods, physical and chemical properties, quality control methods, the relationship between the structure of drug molecules and the nature of their pharmacological action, changes that occur during their storage.
Objects of pharmaceutical chemistry. State principles and regulations governing the quality of medicines.
General methods for analyzing the authenticity and quantitative content of medicines. General methods for analyzing the purity of medicines. General approaches to the analysis of medicinal

products: authenticity, purity and quantification on the example of medicinal products of inorganic and organic nature.

Pharmaceutical and pharmacopoeial analysis of medicines. The use of physical and chemical methods of analysis; spectral methods: infrared and ultraviolet spectrophotometry, nuclear magnetic resonance spectroscopy, chromatography methods (high-performance liquid, gas-liquid, thin-layer), electrophoresis, etc. Establishing the relationship between the structure of medicinal substances and their properties (pharmacological, physico-chemical); predicting the stability of medicinal products; principles and requirements that determine the medicinal products quality; selection of methods for assessing the medicines quality, both manufactured and manufactured in a pharmacy; medicines quality analysis in accordance with the requirements of the Pharmacopoeia.

As a result of mastering the discipline "Pharmaceutical Chemistry", the student should know:

-safety rules and procedures for working in chemical laboratories with reagents and devices;

- theoretical foundations of chemical sciences, the current level of their development, methods and methods of performing qualitative analysis, methods, techniques and methods of performing chemical and physical-chemical analysis to establish the qualitative state and quantitative definitions;
- methods of substances (chemical, chromatographic, extraction) separation;
- the nomenclature of industrial production drugs;
- isolation and purification methods of the main biologically active substances from medicinal plant raw materials;
- design and operation of modern laboratory and production equipment;
- features of the individual dosage forms analysis;
- medicinal substances physical-chemical constants, methods for determining the melting point, rotation angle, specific absorption index, boiling point;
- the concept of validation; validation characteristics of qualitative and quantitative analysis methods;
- chemical methods used as the basis for the qualitative analysis of medicines;
- the main structural fragments of medicinal substances, according to which the identification of inorganic and organic medicinal substances is carried out;
- general and specific reactions to individual cations, anions, and functional groups;
- chemical methods used as the basis for the quantitative analysis of medicinal products;
- equations of chemical reactions occurring during acid-base, redox, precipitation, complexometric titration;
- the principles underlying the physical-chemical methods of drug analysis.

Be able to:

- determine the general quality indicators of medicinal substances: solubility, melting point, density, acidity and alkalinity, transparency, color, ash, mass loss during drying;
- predict the presence of foreign impurities in medicines and medicines based on the preparation and medicines purification technology, establish the quantitative content of medicines in the substance and dosage forms by titrimetric methods;
- to establish the medicinal substances quantitative content in the substance of dosage forms by physical-chemical methods;
- conduct tests for the purity of medicinal substances and set limits on the content of impurities by chemical and physical-chemical methods;

- plan the medicines analysis in accordance with their form according to regulatory documents and evaluate their quality based on the results obtained;
- prepare reagents, reference, titrated and test solutions;
-- to carry out control, to establish the authenticity of medicinal substances by reactions to their structural fragments.

Master the following practical skills:

- skills of step-by-step quality control in the medicines production and manufacture, the simplest operations in performing qualitative and quantitative analysis;
- the technique of working on physical devices used for qualitative and quantitative analysis (photocolorimeter, spectrophotometer, pH meter);
- skills in interpreting the results of the analysis of medicines to assess their quality;
- standard operating procedures for determining the order and execution of documents for the declaration of finished product conformity to the regulatory documents requirements.

3.14. "Technology of medicines"

Totally 18 credits

Lecture 108 hours

Practical classes 270 hours

Self-study of the students 162 hours

Type of control: credit test, exam

The purpose of the discipline:

the formation of system knowledge, professional skills, skills for the development and manufacture of medicines in various dosage forms in the pharmacy (small-scale) conditions and industrial production, as well as the implementation of technological processes step-by-step control and the assessment of the dosage forms quality.

Goals of the discipline:

- teaching students the theoretical laws and basics of obtaining and converting medicines and excipients into dosage forms;
- formation of students' practical skills and skills in manufacturing medicines, evaluating the quality of raw materials, intermediates and finished products;
- development of students ' ability to determine the most effective and rational medicines (forms) and therapeutic systems based on the modern biopharmaceutical concept, as well as skills in developing technology, technological and hardware schemes for the production of selected dosage forms and drawing up regulatory documentation for them.

Content of the discipline:

The technology of medicinal products is pharmaceutical science an integral part, which studies the theoretical foundations and production processes of obtaining and processing medicinal substances into medicinal products by giving them a certain dosage form.

In the course of training, students study the relationship between the development stages, production, medicines rationing and use, the laws of general and particular nature in the production of medicines, the theoretical foundations acceptability in the practical production of various dosage forms.

The program is divided into sections according to the studied dosage forms and manufacturing conditions. Since the sections form one discipline with general theoretical foundations and

regularities, the program follows the maximum continuity of the material, the logical presentation and the relationship between the pharmacy production of medicines and the production of finished medicines. The program includes the provisions and requirements of national and international regulatory documents in the drug technology field. Much attention is paid to instilling practical skills and competencies necessary for a modern pharmacist-technologist.

Together with other pharmaceutical disciplines, drug technology is a mandatory and defining element, plays an important role in the formation of the pharmacist's profession, professional and general cultural competence of the pharmacist, and in providing special technological training.

As a result of mastering the discipline "Technology of medicines", the student must

to know:

- achievements of pharmaceutical science and practice, pharmacy and medicine development concepts at the present stage,
- the drug technology biopharmaceutical concept, pharmaceutical factors influence (the dosage form type, the drugs particle size, the drugs and excipients physical-chemical properties, the technological operations used, etc.) on the drugs bioavailability,
- optimizing the technology fundamentals of finished dosage forms based on the biopharmaceutical concept;
- information sources of reference, scientific, and normative nature,
- the main regulatory documents related to the production, quality control, distribution, storage and use of medicines, medicines and medical products,
- the standards main provisions of good pharmaceutical practices - GxP-standards (international, domestic, standards in the territory of the Customs Union: GLP, GCP, GPP, GMP, etc.);
- structure and significance of pharmacopoeia in the dosage forms technology;
-rules and norms of the sanitary and hygienic regime, sterilization methods;
- rules for ensuring aseptic conditions for the medicines manufacture;
- pharmaceutical procedure in accordance with the applicable tax laws;
- general principles for the selection, quality evaluation and operation of technological equipment (filtration plants, grinding machines and machines, sieving plants, plants and devices for sterilization, etc.),
- fundamentals of production environmental safety and use of medicines, safety regulations, labor protection rules.

Be able to:

- independently work with scientific and technical literature, regulatory documents, pharmacopoeia articles, reference materials for solving professional problems;
- to organize and ensure a sanitary regime, aseptic manufacturing conditions, obtaining purified water and for injection, its collection, storage and use;
- carry out technological expertise of the recipe, identify physical-chemical, chemical incompatibilities, suggest solutions and solve the problem of incompatibility, use rational ways to prevent undesirable interactions;
- check the dose, taking into account the age and weight of the patient, as well as the compliance of the narcotic substances prescribed amounts with the vacation permissible norms;
- to equip technologists' workplaces and production facilities with modern devices and equipment and ensure their proper operation;
- choose the most effective and rational dosage forms and therapeutic systems based on the modern biopharmaceutical concept;

- take into account the influence of pharmaceutical factors (the drug therapy type, the medicinal substances particle size, the explosives qualitative and quantitative composition, the technological process and devices, etc.) on the quality and bioavailability of the dosage form;
- to produce medicines according to individual prescriptions, industrial regulations and other regulatory documentation in the conditions of pharmacies, small-scale production;
- produce concentrates, semi-finished products and preparations in the form of intra-apical blanks and evaluate their quality;
- solve the problems of physical-chemical, structural-mechanical, antimicrobial stability of dosage forms;
- to carry out in practice the types of intra-pharmacy control;
- conduct research on the improvement of medical devices and their manufacturing technology, work in contact with doctors;
- analyze the identified cases of medical devices unsatisfactory manufacturing, determine the cause and take measures to eliminate errors;
- draw up technological and hardware schemes for the production of medicines;
- register the technological process and the results of quality control in the appropriate journals;
- to identify frequently repeated prescriptions, to carry out intra-pharmacy preparation of medicines, to study the possibility of transferring them into production;
- take into account the storage conditions influence and the packaging type on the stability of the medical devices;
- to carry out step-by-step control of technological processes and medicines (forms) in pharmacies quality, in pharmaceutical industries;
- make working prescriptions for obtaining a given amount of medicines;
- observe the rules of occupational health and safety;
- observe the deontological principles of relations with the teams of pharmaceutical organizations, doctors, and patients.

Master the following practical skills:

- the use of materials from Pharmacopoeias and other normative literature in the manufacture and production of medicines;
- carrying out technological calculations of the drugs manufacture and production;
- drawing up technological and hardware schemes for the drugs production;
- finding the optimal approach to solving practical issues;
- practical skills in ensuring sanitary conditions, aseptic manufacturing conditions; equipping technologists' workplaces and production facilities with equipment and ensuring their proper operation;
- practical skills in the implementation of recipe technological expertise, detection and prevention of pharmaceutical incompatibility;
- practical skills in the manufacture of dosage forms according to individual prescriptions, industrial regulations and other regulatory documentation in the conditions of pharmacies, small-scale production; the manufacture of concentrates, semi-finished products and preparations in the form of intra-pharmacy blanks;
- competencies in the field of pharmaceutical technology for the implementation of pharmacist professional activities – production, control and licensing, information and educational and research.
- bibliographic search with the use of modern information technologies.

3.15. “Management and economics of pharmacy”
Totally 18 credits
Lecture 180 hours
Practical classes 270 hours
Self-study of the students 162 hours
Type of control: credit test, exam
The purpose of the discipline:
The formation of students – future pharmacists –theoretical knowledge and practical skills to solve professional problems in organizing the population provision, medical organizations with effective, high-quality, safe, affordable medicines, other products of the pharmacy range and the qualified pharmaceutical services provision.

Goals of the discipline:
training of specialists who are able to solve professional problems in the field of drug circulation, including:
- in the field of organizational and managerial activities;
- in the field of control and licensing activities;
- in the field of population drug provision in outpatient and inpatient conditions;
- in the field of research and awareness-raising activities.

Content of the discipline:
Management and Economics of Pharmacy (MEP) is one of the most important specialized disciplines that forms the professional knowledge and skills of a specialist working in the drug circulation field. This is a dynamic discipline, the content of which is constantly changing under the influence of the external environment (political, economic, social) and requires the inclusion of new knowledge: in the field of good pharmaceutical practices international standards, pharmaceutical logistics and economics, pharmacoeconomical analysis.
MEP is a comprehensive applied discipline, which examines the issues of public policy in healthcare and pharmacy, the organization of modern pharmaceutical business, regulatory documents and instilling skills to work with them. The discipline next section is the accounting and economic and financial activities analysis of the pharmacy organization in accordance with the current legislation. In market conditions and budget deficits, the participation of the pharmaceutical business in solving socially significant issues is of great importance, in particular, the release of medicines under preferential programs, the provision of medical and preventive institutions with medicines and medical products, the conduct of pharmacoeconomical analysis in the preparation and conduct of public procurement of medicines and MI.
In general, the study of the discipline allows the future specialist-pharmacist – to solve professionally both special and economic problems of the drug supply organization to the population at the outpatient and inpatient level, to make management decisions, and in general to solve problems in the field of medicines circulation state regulation.
As a result of mastering the discipline "Management and Economics of Pharmacy", the student should know:
- the modern system structure of organization and financing of health care in the Kyrgyz Republic;
- legislation fundamentals of the Kyrgyz Republic on the protection of citizens' health and ensuring sanitary and epidemiological well-being in the country;

- legal and state regulation principles of relations in the field of medicines circulation;
- the main regulatory and legal documents in the field of medicines circulation;
- the structure and functioning of the quality control state system, medicines effectiveness and safety;
- legal, legislative and administrative procedures and policies related to all aspects of pharmaceutical activities;
- the system of works and services public procurement;
- fundamentals of good pharmaceutical practice standards – GxP-Standards;
- fundamentals of foreign economic activity and organization of pharmaceutical products wholesale trade;
- organization fundamentals of insurance medicine in the Kyrgyz Republic, the work principles of pharmaceutical organizations for the implementation of state programs to provide health care to the population, including preferential categories of citizens;
- the basic principles of state regulation and the pricing process for pharmaceutical products at all stages of the goods movement;
- the procedure for forming a distribution network (retail and wholesale) in the pharmaceutical market;
- principles of audit and management of pharmaceutical organizations business processes;
- fundamentals of the drug provision organization for outpatient and inpatient patients, including on preferential terms;
- fundamentals of pharmacoeconomics, methods of ABC-VEN and ABC-XYZ-analyses in the pharmaceutical organizations activities;
- organization of storage in pharmaceutical organizations of medicines various groups, medical products and pharmacy range other products;
- the procedure for the release of medicines from the pharmacy to the population and health care organizations (PH);
- rules for conducting pharmaceutical expertise of prescriptions and requirements from the PH;
- manufacturing organization in the form of intra-pharmacy preparations and according to the PH requirements of medicines in pharmacy organizations;
- maintenance of accounting records by pharmaceutical organizations of the wholesale and retail level;
- reporting methods for internal and external users of accounting information;
- basic principles of accounting for inventory items, cash and settlements;
- rules for accrual, deduction and deduction from wages;
- basic forms of non-cash payments for goods and services;
- tax systems of pharmaceutical organizations;
- methods of drawing up external reports of pharmaceutical organizations (accounting, statistical, tax);
- financial analysis methods of the pharmaceutical organizations main performance indicators;
- analysis and planning fundamentals of the main economic indicators of pharmaceutical organizations financial and economic activities;
- economy fundamentals of pharmaceutical organizations;
- conducting information work methods and techniques among various groups of pharmaceutical information consumers;
- basics of promoting a healthy lifestyle;
- methods and techniques of conducting sanitary and educational work;

- approaches to solving professional problems, taking into account the bioethical aspects of the pharmacist's activity;
- fundamentals of pharmaceutical ethics and deontology.

Be able to:

- use the regulatory and legal documentation provisions in the field of medicines circulation and the data of reference and scientific literature to solve professional problems;
- to carry out information, educational and sanitary-educational work;
- organize wholesale and retail trade of medicines and pharmacy products;
- organize the medicines production and quality control in the conditions of pharmaceutical production and pharmacies, taking into account the requirements of good pharmaceutical practices;
- comply with the rules for handling toxic, narcotic, psychotropic substances, ethyl alcohol and properly draw up documentation on their subject-quantitative accounting;
- develop accounting policies, keep records of inventory items, cash and settlements, and prepare reports for internal and external users of accounting information;
- conduct inventory of inventory items, cash and settlements;
- conduct financial and economic analysis, main performance indicators analysis of pharmaceutical organizations;
- conduct state analysis of the pharmaceutical organization property and obligations; assess the risk degree of entrepreneurial activity;
- to carry out pharmaceutical expertise of prescriptions and requirements-invoices, to dispense medicines to outpatient and inpatient patients;
- determine the cost of finished medicines and medicines of individual manufacture;
- keep track of the recipe in the relevant documentation;
- conduct subject-quantitative accounting of medicines in pharmaceutical organizations;
- keep records of preferential and free provision of medicines to the population;
- document the conduct of laboratory and packaging work;
- select a supplier, enter into supply contracts, taking into account the methods of franking, and prepare documentation on the claim work;
- place orders for the supply of pharmacy products;
- forecast and plan the economic performance of the pharmacy;
- analyze commodity stocks and determine the sources of their financing;
- orient the information flows of professional information about medicines;
- organize the storage in pharmaceutical organizations of medicines various groups, medical products and other products of the pharmacy range;
- organize the storage of medicines manufactured in pharmacy organizations in accordance with their physical and chemical properties and storage period;
- use ABC-VEN and ABC-XYZ analyses in the activities of medical and pharmaceutical organizations;
- implement measures to comply with the sanitary regime and pharmaceutical order in the pharmacy organization;
- observe the principles of ethics and deontology, bioethics in dealing with medical and pharmaceutical workers, consumers

Master the following practical skills:

- regulatory and legal documentation regulating the circulation of medicines;
- normative, reference and scientific literature for solving professional problems;

- rational organization principles of pharmacy workers workplaces, including the equipment use;
- rules and procedures for conducting pharmaceutical expertise of prescriptions and requirements-invoices, dispensation of medicines to outpatient and inpatient patients;
- methods of organizing intra-pharmacy quality medicines control;
- the rules and procedure for conducting pharmaceutical expertise of prescriptions for preferential drug provision programs and distribution of medicines under preferential prescriptions;
- skills of organizing subject-quantitative accounting in a pharmacy organization;
- registration skills of medicines for release, including those made extemporally;
- the basics and principles of compliance with the procedure for conducting and documenting inventory;
- skills of compliance and control of the pharmaceutical order and sanitary regime in the pharmacy organization;
- methods and techniques of inventory items accounting;
- skills in organizing and conducting accounting of various operations in a pharmacy organization: accounting for labor and wages, conducting cash transactions, the procedure for non-cash payments with organizations, settlements with customers, accounting for circulation costs;
- financial and economic analysis methods of the pharmacies main performance indicators;
- skills in the formation of prices for medicines and other pharmaceutical products;
- the skills of organizing the proper storage, drugs accounting, including narcotic, psychotropic drugs and precursors;
- the procedure for carrying out work in the field of licensing, conformity assessment, registration of medicines and pharmaceutical products;
- ABC/VEN and ABC/XYZ analysis methods;
- rules and procedures for participation in public procurement;
- rules and procedures for the organization of medicines public procurement in healthcare organizations;
- rules and procedures for the organization of wholesale and retail sales of medicines and pharmaceutical products.

3.16. “Fundamentals of pharmacotherapy and clinical pharmacy”
Totally 10,2 credits
Lecture 68 hours
Practical classes 146 hours
Self-study of the students 92 hours
Type of control: credit test, exam
The purpose of the discipline:
to teach students the choice of pharmacotherapy for over-the-counter medicines based on knowledge of pharmacodynamics, pharmacokinetics, interaction and undesirable effects of medicines in various diseases; to develop skills and abilities, to advise drug users about the rational and correct use of selected medicines based on the latest objective information about medicines.
Goals of the discipline:
- to form students' understanding of the pharmacotherapy importance and clinical pharmacy for effective, safe and rational drug therapy;

- to form the students' skills and abilities necessary to assess the possibility of using drugs for pharmacotherapy, and, if necessary, to carry out generic replacement of drugs; to inform, instruct and warn the patient about the rational use of the selected drugs.

Content of the discipline:

The modern reforms main goal of the pharmaceutical sector is to improve the situation for the patient in every possible way, which dictates the need for changes in the system of pharmacists basic education, which would ensure a greater focus of specialists on the needs of the patient and improve his health.

At the meetings of the WHO advisory group on the development of pharmacist training programs, in recent years, special attention has been repeatedly drawn to the need to improve them in accordance with the current requirements for the advisory functions of a pharmacist on the medicines rational use.

Currently, in most countries of the world, there is a tendency to increase the list of drugs allowed for over-the-counter release. In order to promote the concept of responsible self-medication, the pharmacist must provide the patient with accessible, evidence-based, comprehensive information about the drug used for treatment.

In order to ensure the improvement of the population drug supply and health care institutions of the Kyrgyz Republic, pharmaceutical sector employees should receive training in the field of rational use of medicines and improve and expand their knowledge in this field throughout their professional career.

The developed program on the subject "Fundamentals of pharmacotherapy and clinical pharmacy" provides that the pharmacist should be ready to advise drug users on the basis of the latest objective information about medicines, to inform and instruct the patient about the rational and correct use of the selected medicines.

As a result of mastering the discipline "Fundamentals of Pharmacotherapy and Clinical Pharmacy", the student should

know:

- the subject of study, pharmacotherapy and clinical pharmacy goals and objectives, its place among other medical sciences;
- information sources: regulatory legal acts in the field of drug circulation; Kyrgyz Republic Medicines Register, the main medical databases on the Internet;
- state drug policy main directions of the Kyrgyz Republic;
- WHO concepts on the Rational use of medicines and Essential Medicines;
- principles of preclinical and clinical examination of new medicines and generic drugs;

procedure for registration of medicinal products in the Kyrgyz Republic;

-- genetic (international nonproprietary) names of medicines according to the program;

- rational pharmacotherapy basic principles of the most socially significant diseases based on knowledge of pharmacodynamics, pharmacokinetics, interactions and adverse effects of medicines in accordance with the WHO concept of Personal medicines.
- sources of information: The State Pharmacopoeia, the State Register of Medicines, the form of essential medicines, the WHO, etc.

Be able to:

- orient the numerous arsenal of new medicines, their advantages over the used drugs, interchangeability and the most commonly used medicines synonyms.
- "read" and analyze medical prescriptions correctly;

- analyze the drugs effect on the totality of their pharmacodynamic and pharmacokinetic properties;
- to select the necessary medicines for the most appropriate and effective treatment of the patient;
- evaluate the possibility of using drugs for pharmacotherapy, and, if necessary, carry out a generic replacement of drugs;
- inform and instruct the patient about the rational use of the selected medicines;
- choose the most rational combination of drugs for pharmacotherapy;
- evaluate the effectiveness and safety of drug therapy, warn the patient about possible effects of drugs, measures for their prevention and correction;
- conduct information and advisory work with the population;
- search for information on the discipline;
- interpret the received information.

Master the following practical skills:

- read quickly, control and correct doctor's prescriptions;
- systematize and classify data on synonyms and analogues across the entire range of medicines registered in the Register of the Kyrgyz Republic;
- master the genetic skills and therapeutic replacement of medicine;
- master recommendations on the rational drugs use in matters of incompatibility;
- to be guided in the release of medicines according to doctors' prescriptions for patients of different age categories;
- to replace the missing drugs with an analog;
- calculate doses for toxic and potent drugs for adults and children;
- skills to analyze the information received from different sources;
- the ability to report the information received and the results of the analysis.

3.17. “Toxicological chemistry”

Totally 6credits

Lecture 36 hours

Practical classes 90 hours

Self-study of the students 54 hours

Type of control: credit test, exam

The purpose of the discipline:

- to form a field of knowledge in the field of chemical and toxicological research, to teach the student the scientific research method, the experience formulation and its careful conduct under precisely defined conditions, the logically correct construction conclusions arising from the data obtained, as well as their strict documentation;
- to draw up an expert opinion in conducting a chemical and toxicological analysis for diagnostic purposes and an act of conducting a forensic chemical examination;
- forensic medical examination based on the data, clinical diagnosis, make a plan for conducting a chemical-toxicological analysis using a complex of chemical and physical-chemical research methods.

Goals of the discipline:

- to form general ideas about the objects of chemical and toxicological analysis;
- instill the skills and abilities necessary to detect and identify toxic substances that have caused poisoning in various research objects;

- to form knowledge in the field of metabolism and biotransformation of toxic and medicinal substances in the body and in the corpse;
- to form knowledge on the distribution of certain toxic and highly active medicinal substances in various organs and systems, their persistence in objects and the possibility of determining some substances in the presence of others;
- isolate, detect and quantify toxicological substances in biological objects during forensic chemical analysis;
- isolate and determine toxic substances in biological fluids and other objects during chemical and toxicological analysis for diagnostic purposes;
- to give an expert assessment of the chemical and toxicological analysis results of various research objects, taking into account the compounds toxicokinetics.

Content of the discipline:

Toxicological chemistry is one of the special pharmaceutical disciplines dealing with the study of the toxic and potent substances properties, their behavior in the human body and the corpse, the development of methods for the isolation and determination of toxic compounds and metabolites in biological objects.

Mastering the theoretical and practical basics of toxicological chemistry is necessary for a pharmacist to further specialize in forensic chemistry, clinical toxicology, narcology, clinical pharmacy, and ecology.

As a result of mastering the discipline "Toxicological Chemistry", the student must know:

- organization of forensic chemical expertise in the Kyrgyz Republic. The forensic chemical departments structure, forensic medical laboratories, the bureau of medical examination. Legal and methodological bases of forensic chemical expertise;
- the main documents regulating the work in the field of forensic chemical examination;
- xenobiotics isolation methods of organic and inorganic nature from a biological object. The effect of ballast substances on the detection of toxicologically important compounds in a biological object;
- features of qualitative and quantitative analysis of substances that caused poisoning.
- theoretical foundations of isolation methods, separation and concentration of substances (precipitation, extraction, chromatography);
- theoretical foundations of the most important quantitative determination methods of substances (gravimetric, titrimetric);
- instrumental methods fundamentals analysis (optical, chromatographic, electrochemical);
- the basics of mathematical statistics necessary to assess the accuracy, reproducibility and correctness of the analysis results;
- most advanced methods general principles of analysis (mass spectrometry, chromato-mass spectrometry, X-ray spectral).

be able to:

- work independently with forensic chemical literature, conduct a search, turn what you read into a tool for solving professional problems (highlight the main provisions, the consequences of them and the applications specifically used in solving the problems of forensic chemical expertise);

- conduct scientific research to improve existing and develop new isolation and analysis methods of toxic substances;
- be guided by the main legislative documents regulating the activities of a forensic medical expert (chemical expert) and use only the methods approved in forensic chemical practice for conducting the examination;
- observe the safety regulations at working with toxic and potent substances, organic solvents, acids and alkalis, gases, etc;
- decide on the feasibility of conducting chemical and toxicological analysis, on the choice of methods for isolating and analyzing a chemical compound, based on its physical and chemical properties and the nature of the object;
- isolate various chemical compounds of organic and inorganic nature and their metabolites from biological objects and objects of the external environment;
- purify poisons and their metabolites isolated from biological material and concomitant substances of endo-and exogenous origin;
- use chemical, biological and physical-chemical methods of analysis to identify toxic substances and their metabolites, find a rational combination of these methodsl;
- carry out the quantitative determination of substances using modern physical and chemical methods;
- perform express chemical and toxicological analysis for the diagnosis of acute poisoning;
- on the basis of the applied analysis method, the results obtained, as well as general and particular patterns of poisons behavior in the body and the corpse, to evaluate the results of chemical and toxicological analysis;
- draw up documentation during the forensic chemical examination and draw up a report of forensic chemical research.

Master the following practical skills:

- preparation of titrated solutions, solutions of standard substances, indicators, etc.;
- chemical, biological, instrumental methods use of analysis for the identification and determination of toxic substances and their metabolites;
- interpretation of the chemical and toxicological analysis results;
- conducting a chemical and toxicological study to diagnose acute poisoning, drug and alcohol intoxication;
- ensuring proper storage and accounting of narcotic drugs, psychotropic substances and their precursors;
- chemical experiment techniques;
- information transformations: text, tabular editors, internet technologies for professional activities;
- use of theoretical knowledge to explain the results of chemical experiments.

3.18. “Social Pharmacy”

Totally 4 credits

Lecture 30 hours

Practical classes 54 hours

Self-study of the students 36 hours

Type of control: credit test, exam

The purpose of the discipline:

to teach students a science-based approach to the implementation of drug provision for privileged categories of patients and pharmaceutical care for the safe and medicines rational use of medicines.

Goals of the discipline:

- study of the social drug significance;
- information support of drug therapy within the framework of the implementation of the rules of proper Pharmacy practice.

Content of the discipline:

In modern conditions, the problem of optimizing the drug supply of the population largely depends on the pharmaceutical workers qualifications. The pharmacist must be well prepared to interact with the patient, he needs knowledge in the field of psychology and behavioral theory of drug users. The concept of behavioral sciences and health psychology is at the heart of social pharmacy, which explains the need to study this subject.

In addition, according to the concept of pharmaceutical care, which currently defines the professional philosophy of pharmaceutical activity in most developed countries, the pharmacist interacts much more closely with the population due to the provision of information about medicines, as well as advice on the rational use of medicines. International requirements for the organization of pharmaceutical care define the participation of pharmaceutical specialists in promoting a healthy lifestyle and protecting the health of the nation, which implies the formation of socially oriented competencies among pharmaceutical specialists.

Currently, social pharmacy is defined as "the science that studies drug-related issues from a broader perspective and includes legal, ethical, economic, political, social, communicative, and psychological aspects in order to promote the safe and rational use of medicines".

Knowledge of the subject "Social pharmacy" for students of the Pharmacy Faculty is extremely important, since in the Kyrgyz Republic there are programs of preferential drug provision: the Program of State Guarantees and the Additional program of compulsory medical insurance.

As a result of mastering the discipline "Social Pharmacy", the student should

know:

- the subject of study, goals and objectives of social pharmacy, its place among other medical and pharmaceutical sciences;
- legal, ethical, economic, political, social, communicative and psychological aspects of the medicines circulation in order to promote their safe and rational use;
- state programs in the field of public health protection of the Kyrgyz Republic and preferential drug provision;
- features of drug provision for outpatient and inpatient patients within the framework of preferential drug provision programs;
- mechanisms for compensating the cost of medicines to different patient populations;
- quality management of pharmaceutical services; optimization and development of regulatory practices;
- basic principles of pharmaceutical care;
- sources of information: The State Pharmacopoeia, the State Register of Medicines, the form of essential medicines, the WHO, etc.

be able to:

- acquire independently new knowledge in this discipline, analyze it, apply the acquired knowledge in practice and in the study of other disciplines;

- communicate appropriately with the patient in the pharmacy using pharmaceutical communication skills;
- to implement the rules of proper pharmacy practice in the course of work; to form the skills of responsible self-medication among drug users;
- use normative, reference and scientific literature to solve professional problems;
- to carry out pharmaceutical expertise of prescriptions, to release drugs to outpatient and inpatient patients;
- monitor the adverse effect of medicines and notify the regulatory authority for the circulation of medicines about them;
- search for information on the discipline;
- interpret the received information.

Master the following practical skills:

- the main terminology used in social pharmacy;
- pharmaceutical communication skills;
- the ability to work independently with primary sources;
- the ability to work independently with educational and reference literature;
- the ability to systematize information and use it in pharmaceutical activities;
- skills in providing appropriate information about drugs when performing pharmaceutical care of the patient;
- skills in applying methods and calculations to determine the compensation of the cost of medicines to various patient populations;
- skills of prescriptions pharmaceutical examination;
- skills to analyze the information received from different sources;
- the ability to report the information received and the results of the analysis.

3.19. “Pharmaceutical Management and Marketing”

Totally 6 credits

Lecture 36 hours

Practical classes 90 hours

Self-study of the students 54 hours

Type of control: credit test

The purpose of studying the discipline:

the formation of students' theoretical, methodological and practical professional competencies in the field of pharmaceutical management and marketing.

Goals of the discipline:

- development of students ' pharmaceutical intelligence, pharmaceutical awareness and pharmaceutical culture, organizational and economic thinking;
- development of basic skills in the use of management methods and functions in practical pharmaceutical activities;
- development of basic skills in the use of marketing methods and tools in practical pharmaceutical activities;
- preparation of students for the application of the acquired knowledge in conducting scientific research.

Content of the discipline:

With the formation of market relations, the goals, principles and methods of management of pharmaceutical organizations undergo significant changes and diversification. Companies that reform their management systems provide themselves with strong competitive positions and

opportunities for further effective development. Managers are encouraged to successfully and effectively use all types of resources: material, financial, human, information, etc. The development of market relations and competition in the pharmaceutical market determines the need for scientific and practical use of the main provisions of marketing and its features in the field of drug supply to the population.

Management and marketing in pharmacy (management and marketing) is one of the most important specialized disciplines that forms the professional knowledge and skills of a specialist working in the field of drug circulation.

Management and marketing as the philosophy of the pharmaceutical and pharmacy organization contributes to the successful response to changes in the external environment, to the requirements and requests of consumers, provides management decisions based on market research and analysis of the organization's capabilities. Knowledge and use of the theory and practice of management and marketing ensures the organization's success in competition, penetration into new markets, winning over consumers and ultimately achieving goals aimed at improving the quality of pharmaceutical services.

As a result of mastering the discipline "Pharmaceutical Management and Marketing", the student should

know

- trends in the development of the global and national pharmaceutical market;
- theoretical foundations of management and marketing, the main provisions of organizational, strategic, and financial management;
- techniques and methods - organizational and economic research;
- fundamentals of the management function and management decision-making;
- the concept and types of communication, the main elements and stages of the communication process;
- fundamentals and regulation of economic and business activities;
- fundamentals and legislation in the field of human resources management;
- methods of evaluating the organization's activities;
- fundamentals of marketing research and marketing information systems;
- product characteristics, assortment and product policy of the organization;
- the concept and types of logistics, general principles;
- methods of marketing communications, advertising and promotion;
- foreign economic activity, international marketing.

be able to:

- conduct organizational and economic research to optimize the processes of providing medical care;
- conduct market research;
- give a general description of the innovation, investment, and price policy of the state and / or the enterprise in the pharmaceutical market;
- implement management procedures for the implementation of the main processes in the pharmaceutical market (planning, organization, disposal, coordination, control);
- use the provisions of regulatory and legal documentation in the field of medicines circulation and the data of reference and scientific literature to solve professional problems;
- use ABC-XYZ – analyzes in the activities of pharmaceutical organizations;
- observe the principles of ethics and deontology in dealing with medical and pharmaceutical workers, consumers;

- organize sales activities at the wholesale and retail levels and manage sales channels;
- organize a complex of marketing communications for the sale of pharmaceutical products;
- conduct foreign economic activities of a pharmaceutical organization;
- organize office work in pharmaceutical organizations.

Master the following practical skills:

- regulatory and legal documentation regulating the medicine circulation;
- methods and tools of marketing research;
- methods of ABC/XYZ analysis, segmentation, evaluation of organizations, market;
- methods and management style of the organization;
- methodology for determining the assortment policy of a pharmaceutical organization;
- methods of organizing sales activities;
- methods and form of business communication.

3.20. "Standardization and quality control of medicines"

Totally 6 credits

Lecture 36 hours

Practical classes 90 hours

Self-study of the students 54 hours

Type of control: credit test

The purpose of the discipline:

the formation of students ' professional competencies for work in the field of healthcare and the medicine production, medical devices, the main directions of improving the quality control of medicines for solving professional tasks of a pharmacist.

Goals of the discipline:

- to provide students with knowledge about the basic principles, the procedure for organizing and conducting the safety assessment, quality of medicines and metrology;
- provide students with a methodology for conducting pharmaceutical analysis of medicines at the stages of development, receipt, storage and use;
- teach students to apply modern research methods to the analysis of medicines;
- to develop students ' skills in drawing up regulatory and technical documents for monitoring the quality and safety of medicines and conducting analysis in accordance with the current regulations governing the quality of medicines.

Content of the discipline:

The state drug policy main principles of the Kyrgyz Republic, aimed at protecting the health of citizens, are to ensure the availability, safety, effectiveness and quality of medicines and their rational use. Therefore, standardization and quality control of medicines at the present stage requires knowledge of drug production modern principles, procedures for their registration, modern methods of quality control, international experience in the field of quality control and combating falsification of medicines.

The training course "Standardization and quality control of medicines" is the final stage in the training of a pharmacist-analyst.

As a result of mastering the discipline "Standardization and quality control of medicines", the student should

know:

- moral and ethical norms and principles related to the scientific activity of a pharmaceutical worker;

- advanced medical and pharmaceutical terminology;
- the nomenclature of medicinal and auxiliary substances used in the production of medicinal products;
- long-acting and targeted medicines;
- methods of medicine standardization;
- fundamentals of public health policy;
- state regulation of the production of medicines in pharmacies and pharmaceutical companies, the rules of GMP, GLP, GCP, GPP;
- types of medicinal substances classifications and medicinal products (chemical, pharmacological, etc.);
- relativity of the quality standards of medicinal products, relative and absolute methods of analysis, the specifics of their use in assessing the quality of medicinal products;
- sources and methods of obtaining medicinal substances;
- features of medicines standardization and types of regulatory documentation;
- implementation of medicine quality control at the stage of development, manufacture, distribution, transportation, storage and consumption in accordance with regulatory documentation;
- basic methods of qualitative and quantitative determination of active substances in medicines;
- methods of medicines biological standardization;
- requirements for the packaging and storage of medicines in accordance with the regulatory documentation;
- the main use of the studied drugs in medical practice;
- safety regulations in working with medicines.

be able to:

- use the regulatory documentation regulating the quality of medicines;
- perform tests for purity and permissible limits of impurities;
- perform tests confirming the authenticity (identification) of medicines;
- prepare titrated solutions, reference solutions, reagent and indicator solutions;
- determine the melting point, boiling point, solidification temperature, distillation limits, humidity, density, pH by the methods provided for in the regulatory documentation;
- to determine the solubility, color, transparency and chromaticity of solutions; to determine the concentration of solutions by refractometric, polarimetric, photoelectrocolorimetric, spectrophotometric, chromatographic methods;
- carry out quality control of in-store products in accordance with regulatory requirements, orders and instructions;
- predict possible methods of analysis and storage conditions of medicinal substances and medicinal products by chemical structure;
- perform statistical processing of experimental data to confirm the reliability of the results obtained;
- to take samples of medicinal products for testing in accordance with regulatory documents;
- conduct acceptance control at pharmacy storehouses;
- use normative, reference and scientific literature to solve professional problems.

Master the following practical skills:

- conducting quality control of various dosage forms;
- state registration of medicinal products on the territory of the Kyrgyz Republic;

- forecasting the terms and conditions of medicine storage, based on the physical, chemical properties and methods of preparation;
- identification of drugs that have fallen into disrepair, drugs with an expired expiration date, falsified, counterfeit and substandard drugs;
- carrying out qualitative and microchemical reactions to the main biologically active substances contained in medicinal plants and raw materials; basic methods of qualitative and quantitative determination of biologically active substances in medicinal plant raw materials; biological standardization of medicinal plant raw materials;
- ensuring proper storage and accounting of narcotic drugs, psychotropic substances and their precursors;
- implementation of quality control of medicines;
- basic technologies of information transformation: text, tabular editors, techniques of working on the Internet for professional activities.

3.21. "Pharmacoeconomics and Pharmacoepidemiology"
Totally 5 credits
Lecture 30 hours
Practical classes 45 hours
Self-study of the students 75 hours
Type of control: credit test, exam

The purpose of the discipline:
Formation of an understanding of the medicines rational use principles in the population and understanding of the pharmacoepidemiology and pharmacoeconomics key issues, an understanding of the methodological tools of pharmacoepidemiology and pharmacoeconomics as the basis for obtaining information on the use, effectiveness and safety of medicines.
Goals of the discipline:
- to develop the ability to analyze information about the effectiveness and safety of a drug obtained in the course of randomized clinical trials;
- existing "models" study of medicines use both in medical practice and in society in order to develop measures to improve pharmacotherapy;
- develop the ability to conduct a comparative analysis of the relationship between costs and efficiency, safety, and quality of life in alternative treatment (prevention) schemes of the disease.
Content of the discipline:
Over the past decades, the number of medicines on the market has increased significantly, bringing many new drugs to medical practice, but also a number of difficulties in the field of quality control and rational use of medicines.
In 2000 The International Pharmaceutical Federation (IPF) and the International Federation of Drug Manufacturers and Pharmaceutical Organizations have jointly signed the document "Ensuring the quality and safety of medical products for the protection of the patient". Its goal is to protect the well-being of patients around the world by providing good quality, proven safety and efficacy of medicines.

Currently, the main goal facing the pharmaceutical practice is to provide patient-focused medical care, accompanied by all the necessary cognitive functions. This includes consulting, providing information on medicines, monitoring drug therapy, as well as technical aspects for the provision of pharmaceutical services.

In recent years, pharmacoepidemiological studies have been developing in the direction of studying models of the actual use of drugs, which allows us to clarify the parameters of their optimal use and identify options for irrational drug therapy. The focus of pharmacoepidemiological research is on clinical audit (quality assessment) and the search for ways to rationalize pharmacotherapy at the population level, while converging the models of drug use in everyday ("typical") practice and those recommended by clinical guidelines. In this regard, the pharmacist, along with information about the therapeutic effectiveness and safety of medicines, the main treatment regimens for common diseases, should also have knowledge of the economic assessment of drug therapy.

As a result of mastering the discipline "Pharmacoeconomics and Pharmacoepidemiology", the student should

know:

- the subject, goals and objectives of pharmacoepidemiology, its place among other sciences and its significance for public health;
- principles and methods of studying the use of drugs in different populations;
- the structure of the anatomical therapeutic chemical classification of medicines;
- theoretical foundations of drug statistics and methods of theoretical and experimental, clinical, pharmacoepidemiological studies;
- the significance and scope of pharmacoepidemiological studies.

- the subject, goals and objectives of pharmacoeconomics, its place among other sciences and its significance for healthcare;
- understand correctly the basic economic concepts and categories;
- know the main methods of pharmacoeconomical analysis;
- types and classification of costs in pharmacoeconomics;
- assessment of the costs and availability of medicines; Drug forms, clinical guidelines and clinical protocols;
- sources of information: The State Pharmacopoeia, the State Register of Medicines, the form of essential medicines, WHO, etc.

be able to:

- use the international anatomical therapeutic chemical classification of medicines;
- comprehensively assess the feasibility of using medical technologies, various types of pharmacotherapy in connection with the assessment of the consequences (results) and the cost of medical interventions;
- critically evaluate the content of advertising of medicines;
- monitor the adverse effects of medicines and notify the regulatory authority for the medicine circulation;
- perform the main types of pharmacoeconomical analysis;
- be able to perform pharmacoeconomical calculations based on the calculations obtained, make an analysis, form conclusions and generalizations;
- make cost calculations, information on idea of the QALY indicators;

- search for information on the discipline;
- interpret the received information.

Master the following practical skills:

- the main terminology used in pharmacoepidemiology;
- understanding of the anatomical therapeutic chemical classification of medicines;
- methodological tools of pharmacoepidemiology as a basis for obtaining information on the use, effectiveness and safety of drugs in populations;
- the main terminology used in pharmacoeconomics;
- the most important methods, be able to perform pharmacoeconomical calculations;
- skills of using economic knowledge in the implementation of effective pharmaceutical activities;
- methods of calculating the costs necessary to achieve the desired effectiveness and safety of medical interventions to demonstrate the ability and willingness to apply the results of mastering the discipline in professional activities;
- skills to analyze the information received from different sources;
- the ability to report the information received and the results of the analysis.

THE VARIABLE PART

3.7. "Resource Studies"

Totally 1 credit

Lecture 6 hours

Practical classes 9 hours

Self-study of the students 15 hours

Type of control: credit test

The purpose of the discipline:

To deepen theoretical knowledge on the issues of resource science, procurement, processing, analysis of medicinal plant raw materials; to acquire skills in solving professional problems related to the rational use of medicinal plant resources.

Training of competent specialists in the field of rational use of medicinal plant resources and obtaining high-quality phytopreparations and phytoarsenals.

Goals of the discipline:

Organization of the procurement process of medicinal plant raw materials, standardization and quality control of medicinal plant raw materials, improvement of dosage forms from medicinal plant raw materials.

Content of the discipline:

Resource science of medicinal plants is a section of botany and pharmacognosy devoted to the study of stocks of wild species, their placement, the organization of harvesting, their profitability and protection of medicinal plants.

As a result of mastering the discipline "Resource Science", the student should know:

- the rational use system of natural resources of medicinal plants and their protection;
- the procurement system of medicinal plant raw materials in the country;
- the complex system resource research of medicinal plants;
- the standardization system of medicinal raw materials and medicinal products of plant origin.

be able to:

- carry out statistical processing of data from resource studies;
- determine the operational reserve, the possible volume of annual billets;
- determine by various methods the stocks of medicinal plants in specific thickets;
- to carry out the preparation of medicinal raw materials of various morphological groups;
- acceptance, bringing raw materials to standard condition, analysis, processing, storage and release of medicinal raw materials and medicinal products of plant origin.

Master the following practical skills:

- identification of plants by external characteristics;
- acceptance of medicinal plant raw materials;
- sampling required for analysis;
- conducting statistical processing and registration of the pharmacognostic analysis results;
- make a conclusion about the good quality of MPR in accordance with the current requirements;
- the technique of conducting qualitative and microchemical reactions;
- the use of physical-chemical, titrimetric, gravimetric and chromatographic methods of analysis.

3.8. "Medical and Pharmaceutical commodity science"

Totally 3 credits

Lecture 15 hours

Practical classes 30 hours

Self-study of the students 45 hours

Type of control: credit test

The purpose of the discipline:

to form students ' systematic knowledge about the consumer properties of goods and to instill skills for conducting commodity analysis in the system of commodity movement of medical and pharmaceutical goods.

Goals of the discipline:

- students acquire knowledge about the basics of commodity science of medical and pharmaceutical products;
- mastering commodity research thinking and skills of conducting commodity analysis of medical and pharmaceutical products;
- formation of students ' skills in assessing the quality of medical and pharmaceutical products using commodity analysis and expertise during acceptance in pharmaceutical organizations;
- skills formation of analytical work with information (educational, scientific, regulatory, reference, databases on medicines and medical devices, etc.), commodity analysis in order to manage the assortment of pharmaceutical organizations;
- formation of skills in working with regulatory documents regulating the handling, storage, labeling, packaging of medical and pharmaceutical products;
- to develop skills in determining and deciphering the codes of medical and pharmaceutical goods in accordance with the commodity nomenclature of foreign economic activity of the Customs Union;
- study of the storage conditions influence, type of packaging on the quality of medical and pharmaceutical products.

Content of the discipline:

Medical and pharmaceutical commodity science is an independent discipline that studies the regulation of the medical circulation and pharmaceutical goods, the consumer properties of

medical goods, i.e. the properties that a product used in medicine should have in accordance with its purpose in the medical and diagnostic process. When studying certain types of medical and pharmaceutical products, the functional requirements for them are considered, in accordance with their purpose, the properties of the material from which they are made, the rules of acceptance, the timely detection of falsified, substandard medicines and medical products; the study of environmental factors affecting their consumer properties; the issues of packaging and labeling in accordance with regulatory documentation, ensuring the necessary conditions for storage and transportation of medicines and medical products in the process of circulation.

As a result of mastering the discipline "Medical and Pharmaceutical commodity science", the student should

know:

- the main provisions of general commodity science, the subject and tasks of medical and pharmaceutical commodity science;
- concepts of the consumer properties of pharmaceutical products and medical equipment and the factors affecting them;
- functional properties of medical and pharmaceutical products that are intended for diagnostic, therapeutic and preventive purposes in medicine, as well as ensuring good pharmaceutical practice;
-- classification and coding of medical and pharmaceutical products;
- methods of assortment analysis; requirements for labeling, packaging and storage of pharmaceutical products and medical equipment;
- methodology and methods of conducting commodity analysis and safety assessment of medical and pharmaceutical products;
- factors affecting the quality of goods at all stages of circulation;
- the ability to prevent the influence of external factors on the quality of goods;
- goods storage technology of the pharmacy range;
- main regulatory and legal documents;
- properties of packaging materials and types of packaging used in medicine and pharmacy;
- fundamentals of logistics of foreign economic activity and international rules of commodity analysis and expertise of pharmaceutical and medical products.

be able to:

- to carry out the acceptance of pharmaceutical products in terms of quantity and quality, with the conduct of commodity analysis to assess their consumer properties and safety;
- conduct range commodity analysis of pharmaceutical products and medical equipment products and form its optimal structure;
- sell pharmaceutical products and medical equipment; perform their pre-sale preparation, taking into account the characteristics of consumer properties;
- analyze the packaging and labeling of medicines and other products of the pharmacy range, medical products;
- use codes in the process of foreign economic activity and conformity assessment;
- identify obsolete, falsified and substandard pharmaceutical and medical products and withdraw them from circulation for further destruction in accordance with the current legislation of the Kyrgyz Republic.

Master the following practical skills:

- skills of working with normative, reference and scientific literature to solve professional problems;

- use modern information support resources in the sphere of turnover of pharmaceutical and medical products;
- skills in conducting commodity analysis of pharmaceutical, medical goods and medical equipment products;
- skills in identifying substandard and falsified medicines and medical products according to the indicators “Description”, “Packaging” and “Labeling”;
- the skills of taking measures to identify substandard and falsified medicines and medical devices during acceptance and circulation on the market;
- skills in the acceptance and release of medical and pharmaceutical products in terms of quantity and quality, with the conduct of commodity analysis to assess their consumer properties and safety;
- skills to ensure the necessary conditions for the storage and transportation of medicines and medical products in the process to prevent damage to medicines and medical products;
- skills in evaluating medicines and medical devices according to the indicators "Description", "Packaging" and "Labeling".

3.9. “Biotechnology of medicines”
Totally 2 credits
Lecture 18 hours
Practical classes 24 hours
Self-study of the students 18 hours
Type of control: credit test

The purpose of the discipline:
formation of system knowledge on modern methods of obtaining medicines by biotechnological methods of synthesis and transformation.

Goals of the discipline:
- students acquire knowledge about modern methods of targeted impact on biological processes and objects in order to obtain medicines (drugs);
- students acquire knowledge about the use of the vital activity of microorganisms in the production technologies of drugs, the ways of biosynthesis of the main groups of biologically active substances; the fundamental principles of quality control methods and authenticity, the rules of storage and release of drugs produced by biotechnological methods;
- formation of students ' theoretical knowledge on the production organization of biotechnological drugs, to evaluate the technical characteristics of biotechnological equipment; to ensure the conditions for the aseptic conduct of the biotechnological process and its compliance with modern requirements for the organization of production; to take into account the influence of biotechnological factors on the efficiency of the technological process and to maintain optimal conditions for the biosynthesis of the target product;
- training the assessment of the raw materials quality, nutrient media, intermediates and target products in compliance with the requirements of international standards;
- teaching students the ability to correctly assess the compliance of biotechnological production with the rules of Good Manufacturing Practice(GMP), the requirements of environmental safety in relation to the biological objects used in production – producers and target products;

- formation of working skills with scientific and reference literature and effective use of modern information technologies in the field of pharmacy and medicine to solve professional problems.

Content of the discipline:

The discipline "Biotechnology" presents the current state of the scientific direction and technological progress in the field of pharmacy and medicine: the production of medicines using macro-and microorganisms and industrial biocatalysts.

The study of this discipline is due to the fact that the pharmacist needs to know the basics of obtaining with the help of biotechnology widely used currently such groups of medicines as antibiotics, enzymes, hormones, vitamins, etc. It provides for the acquisition of knowledge, skills and practical skills in the study of the biotechnological method of production, methods of synthesis, control, isolation and purification of medicines, as well as the importance of the processes and devices used for these purposes, and the features and advantages of drug biotechnology.

Biotechnology is a profile subject that expands the knowledge, skills and competencies of a general pharmacist and ultimately forms a specialist with a higher education in the specialty "Pharmacy".

As a result of mastering the discipline "Biotechnology of medicines", the student must to know:

- modern achievements of fundamental biological sciences and biomedical technologies;
- the concept of species-specificity of medicinal substances, especially high-molecular-weight ones;
- basic terms and concepts of biotechnology;
- about the main directions of biotechnology development;
- about the technical and economic features of biotechnological processes;
- about the resources of natural biocenoses as a source of biologically active substances;
- on the evolution of the biosphere as a result of anthropogenic activity and on the ways of influencing this process;
- requirements for production facilities, equipment, raw materials, materials, reagents used in the production of immunoprophylactic drugs;
- the main regulatory documents related to the production, quality control, compliance with environmental safety, storage, international and domestic (internal) standards in relation to medicines obtained by biotechnological methods, as well as biological objects-their producers;
- the main processes of production of immunobiological drugs, the basics of cellular and genetic engineering;
- preparation technology of nutrient media for biosynthesis;
- deep and surface methods of enzyme producers cultivation;
- biosynthesis technology of enzyme preparations, immobilized enzymes;
- biosynthesis technology of amino acid and antibiotic preparations;
- operation principles and design of bioreactors;
- biotechnological processes and devices of periodic and continuous action;
- environmental aspects of biotechnology;
- biological methods of waste treatment in the biotechnological industry;
- conditions for maintaining optimal conditions for the biosynthesis of the target product and solving situational problems in case of deviations from these conditions.

be able to:

- acquire independently information and knowledge on biotechnological processes and methods of obtaining drugs, analyze them, apply the knowledge gained in practice and in the study of other disciplines;
- use normative, reference and scientific literature to solve professional problems;
- search for the necessary information to solve professional tasks;
- interpret the received information

Master the following practical skills:

- application of the basic terminology used in biotechnology;
- practical work with regulatory documentation: laboratory, experimental and industrial regulations in the production of biotechnological drugs;
- the ability to work independently with primary sources, educational, reference literature;
- the ability to systematize information and use it in pharmaceutical activities;
- the ability to analyze and apply in practice the information obtained from various sources to solve professional issues.

3.10. "Ecology"

Totally 2 credits

Lecture 16 hours

Practical classes 26 hours

Self-study of the students 18 hours

Type of control: credit test

The purpose of the discipline:

training of competent specialists in the field of rational use of medicinal plant resources and obtaining high-quality phytopreparations and phytoarsenals.

Goals of the discipline:

- study of an integrated approach to solving pharmacological and environmental problems;
- protection and rational use of plant resources;
- possess information about the most important global and regional environmental issues;
- establish the impact of the pharmaceutical industry on environmental pollution.
- trace the impact of various environmental pollutants on human health.

Content of the discipline:

Ecology is the science of the relationship between living organisms and their environment. This is the knowledge of the economy of nature, the simultaneous study of all the relationships of the living with the organic and inorganic components of the environment. One of the main reasons for the growth of public interest in the environment in the world is the global aggravation of the environmental situation. This process, as scientists predict, will inevitably continue in the future, if humanity does not urgently adopt the concept of the ecological imperative in the development of the world community.

The complex of modern environmental knowledge communicated to young people at the stage of higher education is designed to organize their future professional activities in the conditions of a possible increase in the global environmental crisis, a significant further impoverishment of natural resources and an increase in the risk of man-made disasters, that is, what can be avoided

only with a deep greening of all types of economic and other activities in society. Already among the peoples of ancient civilizations, there was an understanding of the importance of natural science: on the pyramid of Cheops (28 centuries BC), scientists read a hieroglyphic inscription-an edification to the living generation today:
"People will die from not being able to use the forces of nature."
As mentioned above, the subject of modern ecology can be defined as the study of the laws of functioning and development of ecosystems at various hierarchical levels, including the biosphere, and the identification of those properties and characteristics of ecosystems that determine the environmental safety of humans and the necessary biodiversity of living things on the planet.
One of the most important conditions for achieving human ecological safety and the evolution of man and nature is the formation of an ecological worldview and environmental ethics in the human community. The given formulations of the object and subject of modern ecology as a science allow us to draw a conclusion about their historical nature.
In the course of social development, the change of civilizations, they can change significantly, since the goals of the development of society, the needs of the latter and the types of human activity will change.

As a result of mastering the discipline "Ecology", the student must

to know:

- basic concepts of modern ecology, the structure of macroecology, methods, global problems and tasks of ecology;
- development of environmental monitoring of medicinal plant raw materials and phytopreparations;
- the main anthropogenic factors affecting the quality of natural medicinal plant raw materials.

be able to:

- determine the moisture content, ash content and pulverization in medicinal plant raw materials;
- recognize foreign plant impurities in medicinal plant raw materials;
- to carry out the determination of radioactivity and heavy metals in medicinal plant raw materials;
- conduct a test for the pesticides content of medicinal plant raw materials;
- to determine the microbiological purity of medicinal plant raw materials.

Master the following practical skills:

- the ability to express and logically justify the proposed scheme for analyzing the situation and solving the use of natural resources in the region;
- skills of situation analysis and the ability to identify errors in the professional language of the subject area of knowledge;
- skills in interpreting the use of natural resources;
- scientific representation of the main stages, events, dates, names of significant figures and their role in the history of the society development;

- biological theories, laws and rules of the unity of living and inanimate nature, relationships of living organisms, ethical aspects of some research in the field of biotechnology (cloning, artificial insemination, introduction of genetically modified plants into culture);
- skills of assessment and forecasting of a specific environmental situation;
- methods of using modern computer technologies for obtaining and processing environmental information.

3.11. "Biopharmacy"
Totally 3 credits
Lecture 18 hours
Practical classes 45 hours
Self-study of the students 27 hours
Type of control: credit test

The purpose of the discipline:
Formation of theoretical knowledge, skills, and skills for the development and manufacture of medicines in various dosage forms, taking into account biopharmaceutical principles.
Goals of the discipline:
- study of biopharmaceutical factors (type of dosage form and route of administration, physical-chemical properties of drugs, chemical modification of drugs, nature of excipients, technological process and mechanization means of technological processes used, etc.) and their impact on the bioavailability of drugs;
- formation of students ' practical knowledge, skills and abilities of biopharmaceutical quality assessment of finished medicines.
Content of the discipline:
Biopharmaceutical is the theoretical basis of drug technology in pharmacy, which studies the dependence of the drug therapeutic effect on various exogenous and endogenous variables.
The main task in drug technology is to optimally increase the therapeutic effectiveness of drugs and reduce to a minimum their possible side effects on the body. This is possible in studying the technology taking into account the biopharmaceutical concept of drug technology, knowledge of the influence of pharmaceutical factors (dosage form type, the drug particle size, the physical and chemical properties and the concept of drugs and excipients, the technological process and the means of mechanization of technological processes used, etc.) on the drugs bioavailability, bioequivalence and, in general, on the therapeutic effect of drugs.
The importance of such knowledge increases due to the widespread introduction of generic drugs into medical practice, an increasing range of excipients that allow to adjust, direct, and prolong the pharmacological effect of medicines. In general, in the world pharmaceutical practice, preclinical and clinical studies in the creation of new drugs include biopharmaceutical screening, related to the influence of pharmaceutical factors on the release, pharmacokinetics, pharmacodynamics and toxicokinetics of drugs. A significant factor in the effectiveness of such studies is the level of professional training of specialists in the field of biopharmacy.
As a result of mastering the discipline "Biopharmacy", the student should
know:
- regulatory documentation regulating the production and quality of medicines at pharmaceutical companies; basic requirements for dosage forms and indicators of their quality;
- the nomenclature of modern excipients, their properties, purpose;

- the drugs nomenclature of industrial production;
- principles and methods of obtaining dosage forms, methods of delivery;
- theoretical foundations of biopharmaceuticals, pharmaceutical factors influencing the therapeutic effect in the extemporal and industrial production of dosage forms;
- theoretical foundations of the absorption, distribution and excretion of substances, pathways of metabolism;
- the influence of the excipients nature, the type of dosage form on the rate of absorption, the effectiveness and stability of drugs;
- the structure and principles of modern laboratory analytical operation and technological, as well as production equipment;
- the main trends in the development of pharmaceutical technology, new directions in the creation of modern dosage forms and therapeutic systems.

be able to:

- apply in practice the main provisions of the main regulatory documents and standards;
- apply practical knowledge on the operation of pharmaceutical machines, apparatuses, equipment and devices;
- evaluate the possible biopharmaceutical effect on the drug properties of pharmaceutical equipment and machines;
- use physical and chemical methods of analysis to conduct studies to determine the quality of medicines;
- apply biopharmaceutical methods in the study of the medicine quality by the "in vitro" method»;
- apply methods for assessing the disintegration, dissolution and release of medicinal substances from medicinal products;
- theoretically justify the choice of the optimal technology option, taking into account the influence of biopharmaceutical factors;
- evaluate the quality of medicines by pharmaceutical indicators;
- observe the rules of occupational health and safety;
- observe ethical and deontological principles of professional relations with colleagues, medical professionals and the public;
- carry out the selection of excipients in the development of dosage forms, taking into account the influence of biopharmaceutical factors;
- Choose the packaging material depending on the type of dosage form, the route of administration and the physical-chemical properties of drugs and excipients and evaluate its possible biopharmaceutical effect.

Master the following practical skills:

- skills in working with devices for evaluating biopharmaceutical characteristics (disintegration, solubility, abrasion, etc.);
- sample preparation methods;
- skills in conducting biopharmaceutical analysis of dosage forms;
- skills in manufacturing all pharmaceutical and industrial dosage forms, taking into account the biopharmaceutical concept;
- skills in analyzing prepared dosage forms;
- skills of working and using normative, reference and scientific literature to solve professional problems.

3.12. General hygiene
Totally 2 credits
Lecture 10 hours
Practical classes 32 hours
Self-study of the students 18 hours
Type of control: credit test

The purpose of the discipline:
- students acquire knowledge and skills in general hygiene;
- to form the future pharmacist's knowledge of the basics of hygiene and the ability to give a hygienic assessment of the working conditions and operating conditions of pharmacies in the manufacture, storage, production and sale of medicines and to teach them to develop sanitary and hygienic and anti-epidemic measures.

Goals of the discipline:
- mastering the hygienic assessment methods of the main environmental factors, working conditions in pharmacy and pharmaceutical organizations, the regime and nature of the pharmacists work;
- violations identification of the sanitary and hygienic and anti-epidemic regime of the manufacture, storage, and sale of medicines;
- development of the students ' ability to carry out the necessary measures to ensure optimal conditions for the professional activity of the staff;
- formation of students ' ability to use the main normative documents in the field of occupational hygiene and physiology, certification of workplaces for making managerial decisions;
- formation of students ' ability to carry out measures to preserve and strengthen the health of the population, prevent occupational and occupational-related diseases, maintain a high level of performance;
- students ' skills formation of sanitary and educational work with the population;
- motivation formation of the population to maintain and strengthen health.

Course contents:
General hygiene is a training discipline that reveal the purpose, subject, tasks and methods of hygiene as a science, the structure of the environment and health, laws and methods for the study of environmental influences on population health, the risk factors concept as the basis of disease prevention modern concepts, the organization principles of preventive measures and legislation regulating.
As a result of mastering the discipline "General Hygiene", the student should know:
- pharmaceutical organizations hygiene, sanitation theoretical foundations as a systematizing set of standards and rules for asepsis and antiseptics, rules for sanitary treatment of premises of industrial pharmacies, equipment and tools;
- information on methods of diseases prevention related to natural and climatic and microclimatic conditions, the chemical composition of drinking water, soil, atmospheric air,

indoor air and lighting, conditions of education and upbringing, everyday life, work and recreation;
- indicators of public health, factors that shape it, diseases associated with the adverse effects of climatic and social factors, hygienic aspects of nutrition, principles of food safety, fundamentals of preventive medicine, organization of preventive measures aimed at improving the health of the population;
- qualitative and quantitative characteristics of ionizing radiation and its sources, the biological effect of ionizing radiation and the conditions on which they depend, the structure of radiological departments of hospitals, the organization specifics of radiation safety in each of its divisions, radiation safety standards;
- hygiene of pharmaceutical organizations; sanitary and hygienic requirements for the device, organization of work and regime of production pharmacies; conditions and mechanisms of occurrence of intra-pharmacy infections, sanitary, hygienic and anti-epidemic regime of pharmaceutical organizations;
- components of a healthy lifestyle, ways and methods of its formation, the importance of bad habits, prevention of their acquisition;
- methods for evaluating the effectiveness of sanitary, hygienic and preventive measures, sources of scientific and medical information in the field of hygiene and sanitation.

be able to:

- distinguish and apply the main groups of sanitary, hygienic and anti-epidemic measures;
- carry out measures to preserve and strengthen the health of the population, prevent occupational and occupational-related diseases, maintain a high level of performance;
- to carry out measures with the population for the primary and secondary prevention of the most common diseases, to carry out preventive measures to increase the body's resistance to adverse environmental factors using various methods of physical culture and sports, hardening, promotion of a healthy lifestyle;
- to carry out the prevention of alimentary-dependent diseases and the principles of ensuring food safety;
- identify violations of the sanitary, hygienic and anti-epidemic regime of the manufacture, storage, and sale of medicines;
- give recommendations on radiation protection in the production of radiopharmaceuticals;
- perform preventive, hygienic and anti-epidemic measures, conduct a hygienic assessment of the pharmaceutical organizations sanitary improvement, organize the working hours in various departments of the production pharmacy, conduct sanitary and educational work and promote a healthy lifestyle with an explanation of its elements;
- evaluate and adjust the daily routine, the diet of the pharmaceutical organizations personnel, conduct sanitary and educational work on the formation of a healthy lifestyle;
- be able to carry out the necessary measures to ensure optimal conditions for the professional activity of the staff;
- be able to use the main regulatory documents in the field of occupational hygiene and physiology, certification of workplaces for making managerial decisions.

Master the following practical skills:

- system organizing methods of the sanitary, hygienic and anti-epidemic measures in pharmaceutical organizations;
- methods of carrying out sanitary and educational work on hygienic issues (environmental hygiene, occupational and recreational hygiene, food hygiene, hygiene of children and

adolescents, personal hygiene) with the population and personnel of pharmaceutical organizations;
- elements of hygienic diagnostics and the main methods of evaluating the effectiveness and adequacy of nutrition and components of the daily routine;
- skills in the radiation protection organization of personnel in the production of radiopharmaceuticals;
- determining methods and interpreting the hygienic assessment results of air cleanliness, air sanitation, disinfection of equipment, inventory, hygienic assessment of sanitary improvement and organization of water supply to various departments of pharmaceutical organizations;
- the skills of carrying out preventive measures to prevent the occurrence of the most common diseases, the implementation of general health measures to promote a healthy lifestyle, taking into account risk factors;
- the ability to use the regulatory and legislative sanitary and hygienic base and the application of hygienic thinking, when solving health problems in the field of preventive activities.

3.13. "Evidence-based medicine"
Totally 1,33 credits
Lecture 14 hours
Practical classes 14 hours
Self-study of the students 12 hours
Type of control: credit test

The purpose of the discipline:
To train students in a science-based approach for choosing effective and safe interventions, for which there is strong evidence of their usefulness.
Goals of the discipline:
- outline the basic principles of clinical epidemiology;
- formation of the course participants ' ideas about the importance and role of evidence-based medicine and clinical epidemiology as the fundamental sciences in providing quality medical care to specific patients;
- to develop the skills and abilities necessary for the search for medical information and its critical assessment for making a scientifically-based decision in the diagnosis, treatment, prevention and prognosis of diseases in the clinical practice of a doctor;
- to form an idea of the importance of clinical epidemiology, biostatistics for the interpretation of the results of clinical trials;
- to form an understanding of clinical guidelines, protocols, standards, and quality indicators for evaluating the practical use of EBM principles in practical healthcare;
- to develop the skills necessary for the application of evidence-based medicine and clinical epidemiology in everyday practice in the provision of medical care to specific patients.
The content of the discipline:
The history of the EBM development. Basic concepts, principles, and capabilities of EBM. Types of clinical trial designs. Epidemiological bases of evidence-based information: reliability assessment and confidence interval. Systematic and random errors. The main stages in the practice of EBM. Formulation of a clinical question. Types of clinical questions. The ratio of the type of clinical question and the main types of clinical trial design. Medical applications of computer networks. Telemedicine. Universal search engines. Specialized portals. A list of useful

medical resources. The quality of medical publications and their critical evaluation. The general algorithm for evaluating the article.

As a result of mastering the discipline "Evidence-based Medicine", the student should know:

- basic principles of clinical trial planning;
- methods and criteria for selecting the information necessary to select the most effective and safe pharmacotherapy;
- the form system;

be able to:

- identify the causes (risk factors) of the disease;
- evaluate the potential efficacy and safety of medicines;
- to select the most clinically and economically effective and safe drug in a specific clinical situation;
- use the system of evidence and the principles of evidence in making informed decisions on the implementation of preventive and curative measures;
- analyze scientific articles and systematic reviews for their scientific validity;
- work with various sources of information.

Master the following practical skills:

Taking into account the severity of the disease, the urgency of the condition and the manifestation of the main symptom complex:

- selection of a group of medicines;
- the choice of a specific drug, taking into account the pharmacodynamics and pharmacokinetics, and the functional state of the body;
- choice of dosage form, dose and route of administration of drugs (multiplicity, dependence on food intake and other medicines);
- prediction of the risk of side effects of drugs.