

Programs on speciality “Pharmacy”

The terms of training at the full-time course – 5 years

The terms of training at the extension course – 5,5 years

Philosophy

Philosophy as social-cultural phenomenon. Philosophy trends in Ancient East and Antiquity. Philosophy in Middle Ages and in epoch of Renaissance. Classic European philosophy in XVII-XIX centuries. Formation and main strategies of development of post-classic philosophy. West philosophy in XX-XXI centuries. Philosophy trends in Belarus. Russian philosophy. Metaphysics and ontology. Philosophy of nature. The problem of man in philosophy and science. Philosophy of consciousness. Cognition as the subject of philosophic analyses. Science, its cognitive and social-cultural status. Society and main strategies of its analyses. Political and juridical philosophy. Philosophic problems of social dynamics. Philosophy of culture. Philosophy and value priorities in culture of XXI century.

Economic theory

Student should know and be able to explain: general economic conceptions and categories; trends of development of objective economic processes; main problems of economy; main economic goals of society; bases of behavior of consumer and producer in market economy; basic forms of fiscal and money-credit system; peculiarity of economic processes in the Republic of Belarus.

Student should be able: to analyze economic processes in the Republic of Belarus and abroad, to use economic knowledge for taking rational economic decisions and realization of future social and professional role, to find necessary information at different sources and analyze it, to distinguish objective and subjective analysis of economic information, to argue his/her own position during discussion of economic problems, to solve problems and tasks that are used for mastering academic material.

Sociology

Student should know and be able to explain: general sociological conceptions and categories, problems and functions of sociology, general sociological goals of Byelorussian society, trends of development of modern social processes, specificity of functioning of social institutions in the Republic of Belarus, social-stratification model of Belarusian society, characteristics of social communities in Belarus, peculiarities of social and cultural processes and social politics in the Republic of Belarus.

Student should be able: to analyze social and cultural processes in the Republic of Belarus and abroad, to use sociological knowledge for taking effective management decisions and realization of future social and professional roles, to find necessary information at different sources and analyze it, to distinguish objective and subjective analysis of social information, to argue his/her own position during discussion of social problems, to solve problems and tasks that are used for mastering academic material.

Politology

Student should know: general theoretic-methodological problems of politology, key approaches to analyses of political phenomena, methods of political research, specificity of development and functioning of the political system of the Republic of Belarus, essence of state, essence of political power and its subjects and objects, interrelation of politics and other spheres of society, specificity of political processes, trends of development of modern world, essence and functions of political consciousness and political culture, general ideological trends.

Student should be able: to form and argue his/her own political position, to analyze concrete political situations and processes in modern world and the Republic of Belarus, to participate in functioning of the political system of the society as a voter and a citizen, to show political culture, to interact with state institutions, to form his/her own interests and to express them with help of institutions of civil society, to use politological knowledge for solving professional problems, to take into account influence of politics on the other spheres of social life, to train his/her own leader traits, to aim at proper performance of his/her civil and professional duties, to value perspective of development of modern political processes, to offer means of solution of arising problems, to find necessary information at different sources and analyze it, to value its importance and use it in the process of taking decisions.

Bases of ideology of Byelorussian state

Student should know: theoretical propositions that explain phenomena of ideology, political ideology and state ideology; contents of basic ideas and propositions of general ideological and political trends of modern world; contents of the most important propositions of ideology of Byelorussian state.

Student should be able: to use in practice ideas and conceptions that express ideology of Byelorussian state, to explain the contents of basic ideas of Byelorussian state ideology, to analyze and value social and political processes in the country and the world, to set forth and defend ideas, values, principles and aims that form bases of organization and activity of Byelorussian society and state, to understand the processes that occur in political, social, economical and cultural spheres of Byelorussian society, to participate in social and political life of the Republic of Belarus.

Bases of Psychology and Pedagogics

Biological and psychological substructures of person. Social substructure of person. Orientation of substructure of person. Emotions and psychic conditions of person. Characteristics of substructure of person. Interpersonal relationship and intercourse. Interpersonal conflicts. Interaction of people in small groups. System psychological approach in administration. Person and group as subject and object of administration. Role and psychological functions of the leader in the system of administration. Psychological competence of graduate of higher educational establishment in his/her future profession.

Foreign language

Student should know: peculiarities of the foreign language system in phonetic, lexical and grammatical aspects (in comparison with mother tongue), social and cultural norms of everyday and business communication and rules of speech etiquette that give opportunity to use foreign language as means of communication in modern poly-cultural world, history and culture of the countries where the language that the students learn is native.

Student should be able: to carry out communication of social-cultural and professional character, to read and translate professional literature in foreign language (searching, fact-finding, review reading), to express his/her thoughts in written form in daily, political and professional spheres, to draw up documents using patterns of compiling business documents, to fill in blanks for participation, etc., to understand foreign speech in programme volume.

Physical culture

Higher mathematics

Bases of mathematics analyses. Elementary differential equations. Bases of theory of probability. Elements of mathematics statistics. Statical checking of hypothesis. Elements of theory of correlation.

Bases of analysis of variance. Time series analysis. Methods of optimization and administration in pharmacy.

Physics and biological physics

Introduction. Mechanics. Molecular physics. Electricity and magnetism. Optics. Atom and molecular physics. Nuclear physics. Biophysics of cell. Modeling biological processes.

Biology

Introduction. Molecular-genetic level of living beings organization. Biology as natural science about life, natural phenomena and mechanisms of vital functions and development of organisms. Nucleic acids – keepers of hereditary information. **Cellular level of living beings organisation.** Cell – an elementary genetic and structural-functional biological unit. Cell's living cycle. **Ontogenetic level of living beings organisation.** Multiplication – universal property of living beings that provides material continuity in the line of generations. Genetics, its subject, problems and methods. Changeableness and its types. Ontogenesis, its types and kinds. **Population-typical level of living being organization.** **Biospheric-biogeocenotic level of living being organization.** Ecology as science of relationship of organisms and their surroundings. Biological and social aspects of adaptation of people to conditions of vital functions. Parasitism as form of ecological relations in nature. Toxicity is a universal and spread phenomenon in nature.

General and inorganic chemistry

Student should know: subject and problems of general and inorganic chemistry, its significance for the development of pharmacy and for practical work of pharmacist, rules of safety measures during work in chemical laboratory, variants of solutions concentration, general natural phenomena of proceeding of chemical reactions (energy, direction of chemical reactions; chemical balance, speed of chemical reactions), general idea of solutions, solubility of different matters, colligative properties and peculiarities of solutions of electrolytes and inelectrolytes, usage of solutions of different concentration in pharmacy and medicine, theory of acid and base, ionic production of water, pH solutions, conditions of precipitation and dissolution of sediments, general idea of reactions with electron transfer, principles of preparing them and conditions of their proceeding, modern idea of matters structure (electron tunics of atoms, periodical law of D.S. Mendeleev, nature of chemical bond and structure of chemical compounds), complex compounds: general idea, structure, nomenclature, properties, stability, biological function, usage in pharmacy and medicine, chemistry of s-, p-, d-elements and their compounds, biological function, usage in pharmacy and medicine.

Student should be able: to work self-dependently with reference and educational literature on general and inorganic chemistry; to use properly nomenclature rules when naming inorganic compounds; to work with chemical reagents, devices, chemical tableware according to the rules of safety measures; to calculate energy characteristics of chemical processes, to forecast direction of their proceeding, to calculate balance concentration of matters according to given concentrations in constant of chemical balance; to calculate quantity of components of solutions of given concentrations and to prepare solutions of definite concentration; to give quantitative and qualitative characteristics of colligative properties of solutions of electrolytes and inelectrolytes; to forecast influence of solvent (environment) on proceeding of physical and chemical processes, to forecast precipitation of sediment in case of pouring together solutions of known concentration; to use law of mass action to ionic balances in solutions for solving professional problems; to forecast probable products of oxidation-reduction interactions and transformations of matters, to use numeral sense of standard oxidation-reduction potentials for valuation of oxidation-reduction ability of matters, to make equations of oxidation-reduction reactions in molecular and ionic forms and to make qualitative calculations in the equations; to forecast properties of atoms of

chemical elements, of their structure and properties of their compounds on the bases of periodical law of D.S. Mendeleev and electron tunics of atoms and to solve qualitative problems on these transformations; to make formulas of complex compounds, to forecast properties of atoms of elements to make complexes, to describe reactions of formation and dissociation of complex compounds in solutions, to use constant of stability and unstability of complexes for estimation of their solidity, to have idea of biological function and chemical bases of usage of complex compounds in pharmacy and medicine; to make qualitative calculations on transformations of inorganic matters; to conduct self-dependent experiment on studying properties of definite chemical matters and to design the results of this work; to use properties of chemical elements and of their compounds for solving academic and professional problems of usage in pharmacy and medicine, taking into account properties and reactionary compatibility of compounds for estimation of chemical compatibility of medicines.

Organic chemistry

Principles of organic compounds structure. Introduction. Classification and nomenclature. Electronic structure of molecules. Reciprocal atom influence in molecular. Spatial molecules structure. Stereoisomerism. Acid–base properties of organic compounds. Nucleophyles and electrophyles. Reaction classification. **The most important classes of mono- and polyfunctional organic compounds: composition and nomenclature peculiarities, reacting ability, identification.** Spectral methods of determinant of structure and identification of compounds. Hydrocarbons. Halogen-derivates from hydrocarbons. Alcohols, phenols, thioles, simple ethers and sulfides. Amines. Nitro-, dinitrocompounds. Aldehydes and ketones. Carbon acids, functional derivatives of carbon acids. Functional derivatives of carbonic acid. Sulphacids and their functional derivatives. **Heterofunctional organic compounds. Peptides and proteins.** Hydroxiacids, phenol acids and oxocarbon acids. Aminoacids. Aminoalcohols and aminophenols. **Carbohydrates.** Monosaccharides. Oligosaccharides and polysaccharides. **Hetrocyclic compounds. Nucleosides, nucleotides, nucleic acids.** Peculiarities of nomenclature and structure of hetrocyclic compounds. Five member heterocyclic compounds. Six member heterocyclic compounds. Condensed heterocyclic compounds. Alkaloids. Nucleosides, nucleotides. Idea of nucleic acids. **Lipids.** Classification of lipids. Saponifiable lipids. Isoprenoids. Terpens and terpenoids. Steroids. **Synthesis. Methods of organic substances elimination and purification. Physical substance constants as cleansing and identification criteria.**

Biological chemistry

Introduction to Biochemistry. Structure and functions of proteins. Meaning of biological chemistry. General biochemical components of tissues. Methods of biochemical research and their clinical significance. Proteins: structure and functions. Physical-chemical properties of protein. Levels of protein structure. Methods of purification and fractionation of proteins. Quantitative determination of proteins. **Enzymes.** Structure and properties of enzymes. Kinetics of enzyme catalysis. Mechanism of action of enzymes. Regulation of activity of enzymes. Activators and inhibitors of enzymes. Medical enzymology. **Introduction to metabolism. Biochemistry of nourishment. Structure and functions of membranes. Biological oxidation. Central metabolism ways.** Introduction to metabolism. Biochemistry of nourishment and digestion. Structure and functions of cellular membranes. Energy metabolism. Mitochondrial chain of electron transfer. Oxidative phosphorylation. Disconnection of oxidative phosphorylation and tissue respiration. Oxidative systems that are not connected to formation of adenosine-three-phosphorated acid. Common metabolism ways. **Metabolism and functions of carbohydrates.** Carbohydrates. Digestion of carbohydrates. Common ways of glucose metabolism. Aerobic oxidation of glucose. Aerobic glycolysis. Gluconeogenesis. Pentose phosphate way of conversion of glucose. Metabolism of glycogen, fructose and galactose. Regulation and disorders of carbohydrate metabolism. Photosynthesis. Photosynthesis phosphorylation. **Metabolism and functions of lipids.** Classification and functions of lipids. Digestion of and absorption of lipids. Transport of lipids. Oxidation of fatty acids and glycerin. Ways of usage of acetyl-coenzyme A in lipids metabolism.

Biochemistry of atherosclerosis and obesity. **Metabolism of proteins and amino acids.** Digestion of proteins. Role of processes of proteolysis. Functions of amino acids in cell. Transformation of amino acids in amino group. Amino acids decarboxylation. Intoxication of ammonia. Metabolism and functions of amino acids. Intercommunication of proteins, carbohydrates, lipids. **Metabolism of nucleic proteins. Structure and synthesis of nucleic acids. Biosynthesis of proteins. Methods of molecular biology.** Nucleic acids, structure, properties and functions. Metabolism of nucleotides. Synthesis of nucleic acids. Methods of molecular biology. Synthesis of protein. Regulation of synthesis of protein. Mutation. **Biochemistry of vitamins.** Introduction to vitaminology. Fat-soluble vitamins. Water-soluble vitamins C, P, B₁, B₂, B₆, PP. Water-soluble vitamins B₃, B₉, B₁₂, H. Pseudo-vitamins. **Regulation of metabolism. Biochemistry of hormones.** General mechanisms of regulation of metabolism. Mechanism of hormones action. Hormonal regulation of metabolism of fats, proteins and carbohydrates. Hormonal regulation of anabolic processes connected to growth and morphogenesis. Hormonal regulation of water-salt and mineral metabolism. **Biochemistry of some tissues and organs.** Biochemistry of blood. Biochemistry of liver. Biochemistry of kidneys and urine. **Pharmaceutical biochemistry. Pharmacokinetics, stages of fate of xenobiotics.** Introduction to pharmaceutical biochemistry. Biotransformation of xenobiotics.

Bases of Ecology and Nature protection

Ecology and nature protection. Introduction. Education in the sphere of environment in the Republic of Belarus. Ecology as scientific bases of nature protection. General regularities of action of ecological factors on organisms. **The most important abiotic factors.** Temperature, humidity, light. Morphoecological adaptations of organisms. Influence of ecological factors on enrichment of biologically active substances in medicines. **Biotic factors.** Types of interaction of organisms. Conception of ecological niche. Basal mediums of life. **Dynamics of ecosystems.** Population as a self-balancing system. Principles of exploitation of populations of medical plants. Ecogenetic successions of plants. Biorhythms. **Environmental safety and sustainable development.** Model of sustainable development. Conception of ecological safety in the Republic of Belarus. International cooperation of the Republic of Belarus in the sphere of environment. Public participation in decision of ecological problems of regions. **Influence of industrial pollution on environment.** Chemical and biological contaminants of different manufactures. Ecological safety of usage of biotechnologies in the Republic of Belarus. Ecology of pharmaceutical and biotechnical companies. **Existing environmental conditions in the Republic of Belarus.** Environmental resources in the Republic of Belarus. Biological and landscape variety. Plant resources. **Medico-ecological problems in the Republic of Belarus.** Ecological conditions in Belarus cities. Consequences of Chernobyl catastrophe for the population of Belarus. Influence of different types of pollution on health of the population of Belarus. **Nature protection in the Republic of Belarus.** Government institution of nature protection in the Republic of Belarus. National plan of actions on rational use of natural resources and environment protection. Problems of conservation of landscapes and biodiversity.

Latin

Introduction. Phonetics. Verb. Dictionary form. Building-up Imperativ, Indicativ, Conjunctiv. Noun: inclinations 1, 2, 3, 4, 5. Adjective. Participles. Numerals. Pronouns, adverbs. Prepositions, conjunctions. Botanic terminology. Chemical terminology. Clinical terminology. Formulation. Word formation.

Analytical chemistry

General problems of analytical chemistry. Chemical methods of finding out inorganic matters. Chemical balance in analytical chemistry. Protolytic balances. Major theories of acids and bases. Principal properties of solvent that are influencing on acid-basic properties of a matter. pH estimation of water solutions, where protolytic balances take place. Acid-basic buffer solutions. **Balances of complex formation.** Concept of complex compounds. Classification of complex compounds. Balance

in solutions of complex compounds. Influence of various factors on the process of complex formation in solutions. Usage of organic reagents in analytical chemistry. **Balances “sediment-solution”. Oxidation-reduction balances. Selection and preparation of samples. Division and concentration methods. Analytical chemistry and chemometrics.** Approximate calculations and significant numbers, concept of analytical signal. Methods of calculation of a matter concentration using size of analytical signal. Uncertainty and errors of measurements. Conceptual issues of mathematical statistics that are used in analytical chemistry. Statistical processing of analysis results. **Gravimetric method of analysis. General characteristics of titrimetric method of analysis. Acid-base titration.** Contents of the method. Acid-basic test devices. Basic types of profiles of acid-base titration. Errors of titration. Titration of polyatomic acids and polyacidic bases, concoctions of acids or concoctions of bases. Definition of nitrogen in organic compounds using Kjeldahl method. Usage of acid-base titration in water media. Usage of acid-base titration in non-water media. **Komplexometric titration.** General characteristic and classification of methods of komplexometric titration. Mercurymetric titration. Methods of detection of final point of titration. Metallo test devices. **Oxidation titration. Methods of oxidation-reduction titration.** General characteristic of methods of oxidation-reduction titration. Iodatometric titration. Chloridometric titration. Permanganometric titration. Nitritometric titration. Bromatometric titration. Dichromatometric titration. Cerimetric titration. **General characteristic of instrumental method of analysis. Basic constitution of electromagnetic absorption. Absorptive spectroscopic methods of analysis.** Atomic absorptive spectroscopy. Molecular absorptive spectroscopy in ultraviolet and visual area (spectrophotometry, photometry). Infrared spectroscopy. **Emissive spectroscopic methods of analysis. General characteristics and theoretical bases of chromatographic methods of analysis. Gas chromatography. Liquid chromatography.** Horizontal chromatography. Ion-selective chromatography. Exclusive chromatography. High-efficiency liquid chromatography. **General characteristics and classification of electrochemical methods of analysis. Conductometry. Potentiometric and coulometric methods of analysis. Radiometric methods of analysis.**

Physical and colloidal chemistry

Introduction. Physical chemistry and its significance in pharmacy. Thermodynamics and regularity of chemical phenomena passing. General problems and laws of chemical thermodynamics. Thermodynamics of chemical balance. Thermodynamics of phase equilibrium. Thermodynamics of solutions of non-electrolytes. Thermodynamics of solutions of electrolytes. Thermodynamics of electrode processes. Electrochemical methods of analysis in pharmacy. Potentiometry. Kinetics of chemical reactions and catalysis. Thermodynamics of surface phenomena. **Colloidal chemistry.** Classification of disperse system. Methods of preparation and scraping of colloidal solutions. Molecular-kinetic and optical properties of colloid systems. Structure and electric charge of colloidal particles. Electrokinetic effects. Resistance and coagulation of colloid systems. Different grain sizes of colloid systems. Aerosols, powders, suspension, emulsions, their properties. High-molecular compounds and their solutions.

Pharmaceutical botany

Introduction. Botany as biological science. Biological bases and principles of classification of plants. General characteristics of water plants. **Division mushrooms.** Division lichens. **Higher plants.** Division bryophytes. Division Lycopodiophyta. Division Equisetophyta. Division filicoid. Division Gymnospermae. **Division Magnoliophyta. Advanced characters of Magnoliophyta.** Morphology of vegetative organs of plants. Morphology of generative organs of plants. **Biology of fertilization: micro- and megasporogenesis, double fertilization.** Formation and types of seeds. Formation and classification of fruits. Modes of transmission of seeds. **Mainstreams of evolution and genealogy of bilobed.** Patterned sampling of subclass Magnoliidae. Patterned sampling of subclass Ranunculidae. Patterned sampling of subclass Caryophyllidae. Patterned sampling of subclass Hamamelididae. **Patterned sampling of bilobed plants.** Patterned sampling of subclass Dilleniidae. Patterned sampling of subclass Rosidae. Patterned sampling of subclass Lamiidae. Patterned sampling of subclass Asteridae. **Patterned**

sampling of monocotyledonous plants. Patterned sampling of subclass Alismatidae. Patterned sampling of subclass Liliidae. Patterned sampling of subclass Arecidae. **Bases of plant geography. Formation of plant cell.** Chemicals, their sorts, forms, places of localisation and usage in pharmacy. **Plant tissues.** Meristems. Ground tissues. Conductive tissues. Strengthening tissues. Parenchyma tissues. Eliminative tissues. **Anatomy of vegetative organs of plants.** Anatomical organization of root. Structure features of roots of monocotyledonous and bilobed plants. **Anatomy of caulis.** Gemma, structure and arrangement. Growing-point and its role in formation of organs and tissues of bine. Anatomical organisation of caulis of bilobed gramineous. **Structure features of caulis of bilobed plants.** Anatomical organisation of roots. **Anatomical organisation of caulis of woody plant. Anatomical organisation of various types of leaves. Growth, development and propagation of plants.**

Physiology and bases of General Human Morphology

Introduction. General Physiology and bases of General Human Morphology. General principles of functions regulation. Conduction of excitation, synaptic transmission, motion. Introduction. The subject and the problems of anatomy, histology, physiology. Biological bases of human vital activity. General characteristics of tissues, types of tissues. Structure of tissues. Human skeleton. Basic muscles of human body. General physiology of excitable tissues. Receptors. Structure and functions of peripheric nerves. Excitation conduction. Synapse. Synaptic transmission. Secretion. Physiological features of muscles. Mechanism of muscular contraction. Motion. **Physiology and Morphology. System mechanisms of homeostasis maintenance.** Fluid mediums of organism and barrier functions. Structure and functions of blood. Lympha. Erythrocytes. Blood groups. Leukocytes. Hemopoiesis. Hemostasis. Blood circulation. Structure of heart. Heart cycle. Phase analysis of ventricular systole and ventricular diastole. Automatism of heart. Physiological features of heart muscle. Regulation of heart. Structure and functional classification of blood vessels. Hemodynamics. Regulation of blood pressure. Respiration. Structure and functions of respiratory organs. Gas-transport system in lungs and tissues. Transport of gases. Regulation of gas structure of blood. Digestion. Structure and functions of digestive tract. Digestion in oral cavity and in stomach. Digestion in bowels. Role of pancreatic gland and hepar in digestion. Absorption. Regulation of level of nutrient matters in blood. Metabolism. Heat regulation. Secretion. Structure and functions of kidneys. Regulation of functions of kidneys. Structure and functions of endocrine glands. **Central nervous system: structure, functions, interactive activity. Autonomous (vegetative) nervous system.** Structure of central nervous system. Reflex theory. Physiological features of nervous centers. Mechanisms of coordination and integration of reflexes. Physiology of central nervous system: spinal medulla, rachidian bulb, mesencephalon. Reticular formation. Little brain. Autonomous nervous system: structure and functions. Neurophysiological mechanisms of motivations and emotions. Human higher nervous activity. Physiological foundations of mentality. Types of higher nervous activity. System organization of goal behavior. Sleep, remembrance and their neurophysiological mechanisms.

Microbiology

General microbiology. Introduction. Microbiology as a science. Principles of classification of micro-organisms. Morphology and structure of prokaryotes and eucaryotes. Physiology and biochemistry of microbes. Microbial ecology. Microbiology of medicinal plant raw material and ready medicinal norms. Microbiologic and molecular-biological bases of chemotherapy. **Bases of immunology.** Immunity. Types and systems of immunity. Immunocompetent cells. Cytokines. Antigens. Antibodies. Mechanisms of development of immune response. Immunodiagnosis, immunologic assessment. Immunopathology, immunoprophylaxis, immunotherapy. **Theory of infection. Microbial genetics. Medical microbiology.** Laboratory diagnostics of wound fevers and pyoinflammatory processes precipitated by staphylococcus, streptococcus, pseudomonade, Proteus, bacteroid, clostridium of tetanus and of gangrenous emphysema. Laboratory diagnostics of bacterial respiratory and respiratory infection precipitated by meningococcus, Bordetella, corynebacteria, nosogenic mycobacteria, legionella.

Laboratory diagnostics of bacterial enteric infections precipitated by Escherichia, Shigella, Salmonella, Klebsiella, cholera vibrio, Yersinia, Clostridia of botulism. Laboratory diagnostics of bacterial zoonotic infections precipitated by etiologic agents of Francis disease, brucella, Yersinia of lues, bacilli of malignant anthrax, Leptospira. Laboratory diagnostics of arthropod-borne infection precipitated by Borrelia, Rickettsia. Laboratory diagnostics of infections that are transmitted mainly through venereal pathway and are precipitated by gonococcus, treponema, chlamydia, mycoplasma. **General virology. Bacteriophagia. Medical virology.** Laboratory diagnostics of virus respiratory infections precipitated by orthomyxoviruses, paramyxoviridae, adenoviruses, herpesviruses, coronaviruses. Laboratory diagnostics of digestive, vector-borne and contact virus infections precipitated by picornavirus, reoviruses, Rhabdoviruses, flavivirus, Arenaviruses, filoviridae, bunyavirus. Laboratory diagnostics of virus infections precipitated by hepadnavirus, retroviruses. Oncogenic viruses. Prions and prion diseases. **Medical mycology. Medical protozoology.**

Pharmaceutical hygiene

Influence of environmental factors on health of person and public health. Influence of employment terms on health, working capacity and productivity of labor. Scientific basis of planning, facility, accomplishment and upkeep of pharmacy organizations and organizations of pharmaceutical industry. Hygienic requirements to manufacturing processes of production of drugs and to employment terms in pharmacy organizations and organizations of pharmaceutical industry. Methods of assessment of impact of environmental factors and employment terms on health. Main legislative and normative documents.

Paramedical first aid

Care for patients as a medical factor. Deontology, ethics, psychology in relationships of health workers to each other and to patients. Personal hygiene of patient. Position of patient in bed. Nutrition of patient. Body temperature and its measurement, care of feverish patients. Methods of action on blood circulation. Primary physiotherapy. Paramedical first aid rendered to patients having pathology of respiratory system. Paramedical first aid rendered to patients having vascular heart diseases. Paramedical first aid rendered to patients having gullet and stomach diseases. Paramedical first aid rendered to patients having bowels diseases. Paramedical first aid rendered to patients having hepatic, pancreatic gland diseases. Paramedical first aid rendered to patients having pathology of kidney and urinary tract. Paramedical first aid rendered to serious and agonal patients. General care of patients at preoperative period and postoperative period. Aseptics. Antiseptics. Wounds. Wound process. Desmurgy. Escape and loss of blood. Ambustion. Burn disease. Freezing injury. Traumas. Imperforate injuries. Abarticulations, fractures. Lancinating and inveterate surgical infection. Paramedical first aid in case of poisoning.

Pharmacology

Introduction to Pharmacology. Pharmacokinetics. Pharmacokinetics (sequel). Pharmacodynamics. Pharmacodynamics (sequel). Pharmacology of peripheral nervous system. Cholinergic agonists. Cholinergic antagonists. Adrenergic agonists. Adrenergic antagonists. Drugs acting on sensitive (afferent) nervous fibers. Pharmacology of central nervous system. General anesthetics. Anticonvulsants. Antiparkinsonic drugs. Opioid analgesics. Soporific and sedative drugs. Neuroleptics, mood stabilizing agents. Antidepressants. Psychoactivators. Nootropic drugs. Analeptic drugs. Drugs influencing tissue respiration. Biogenic stimulators. Drugs used in weight-reducing treatment. Preparations of hypophyseal hormone and hypothalamus hormone. Preparations of thyroid hormones, antithyroid drugs.

Pharmacotherapy

Introduction to Pharmacotherapy. General principles of Pharmacokinetics and Pharmacodynamics. Clinical pharmacology of antibacterial preparations. Modern classification of antimicrobial drugs.

Clinical-pharmacological characteristics of beta-lactam antibiotics. Clinical-pharmacological characteristics of aminoglycosides, macrolides, tetracyclines, glycopeptides, linkosamides. **Clinical pharmacology of antibronchoobstructive preparations.** Classification of modern antibronchoobstructive preparations. Clinical-pharmacological characteristics of group of agonists. Anticholinergic antibronchoobstructive preparations. Antibronchoobstructive preparations - derivatives form methylxanthine. Expectorant drugs, mucolytics and mucoregulators. Preparations that are used for treatment of gastroenteric tract pathology. Clinical-pharmacological characteristics of preparations that are used in gastroenterology. Clinical-pharmacological characteristics of preparations that are governing secretory and motor functions of digestive tract. Probiotics, enzymatic drugs and cathartics, antimicrobial drugs in gastroenterology. **Clinical pharmacology of preparations that are used for treatment of arterial hypertension and coronary heart disease.** Modern classification of antihypertensive preparations. Clinical-pharmacological characteristics of centrally-acting preparations, adrenoceptor blocking agents. Calcium antagonists, ACE inhibitors and angiotensin receptor blockers in treatment of arterial hypertension. Clinical-pharmacological characteristics of antianginal preparations. Clinical-pharmacological characteristics of nitrates. **Preparations that are used for treatment of antiarrhythmics and congestive heart failure.** Classification of antiarrhythmic preparations. Clinical-pharmacological characteristics of sodium channel blockers, beta-blockers, potassium channel blockers and calcium channel blockers. Basic groups of preparations that are used in treatment of heart failure. Cardioactive preparations. Diuretics. **Clinical pharmacology of basic and meclofenamate sodium preparations.** Clinical-pharmacological classification and characteristics of disease-modifying anti-rheumatic preparations. Classification of meclofenamate sodium preparations. Characteristics of basic groups of meclofenamate sodium preparations. **Clinical pharmacology of preparations that are used for correction of hemostasis violations.** Basic idea of hemostasis processes. Classification of preparations that are governing hemostasis. Clinical-pharmacological characteristics of antiaggregants, direct anticoagulants and indirect anticoagulants, thrombolytics. **Preparations that are used for treatment of diabetes mellitus and diseases of thyroid gland.** Clinical-pharmacological characteristics of insulin preparations and resin-based antihyperglycemic preparations. Clinical-pharmacological characteristics of preparations that are used for correction of superactive and diminished functions of thyroid gland.

Military education and extreme medicine

General military training. The subject Military education. Military men and military formations. Military topography. Ideological and legislative defense support. Ground forces. Basis of modern combined arms operation. Defense of separate power-driven battalion. Jump-off of separate power-driven battalion. Ride. Seating. Special troop action. Administration over commands in battle. **Health Maintenance Organization of troops.** Idea of military medicine. Problems and organization of medical service of military force of the Republic of Belarus in time of war. Modern system of treatment-evacuative support. Category of medical service of military command. Organization of action of medical staff of military command. Problems, organization and structure, organization of work of military field hospital, sanitary-epidemiological laboratory, sanitation and epidemiological center. Medical support of military command during tactical defense. Medical support of military command during attack battle. Basis of medical service management. General idea of International Humanitarian Law. Rights and duties of medical personnel during armed conflicts. **Toxicology of emergency situations.** Subject and problems of Toxicology of emergency situations. Incendiary agents. Multiple damages. Principles of diagnostics and delivery of health care in case of acute poisoning. Poisoning and high-toxic substances that have neurotoxic action. Poisoning and high-toxic substances that have cytotoxic action. Poisoning and high-toxic substances that have general poisoning action. Poisoning and high-toxic substances that have psychotomimetic action. Poisoning and high-toxic substances that have irritant action. Poisons of vegetative and animal origin. Poisoning with production and household toxic agents that are of frequent occurrence. Individual and collective means of protection of respiratory apparatus and skin. Instruments for radiation and chemical reconnaissance. Decontamination. **Critical emergency medicine.** General idea

of critical emergency situations. Medical-tactical characteristics of natural and anthropogenic (technological) disasters. State system of disaster warning and response. Medical-tactical characteristics of flash-points of nuclear-powered and chemical destruction. Basic principles and methods of defence of population in critical emergency situations. Individual and collective means of defence of population in critical emergency situations. Appraisal of the situation in critical emergency situations. Organization of treatment-evacuative support of injured people in critical emergency situations. General principles of organization of rendering urgent medical aid to injured people in critical emergency situations. Features of organization of rendering medical aid to injured people in different types of critical emergency situations. Organization of sanitary and hygienic and antiepidemic actions in emergency zones. Organization of medical supply of foundations rendering urgent medical aid in emergency situations. **Organization of medical equipment supply of troops.** Subject and contents of the course of medical supply. Medical equipment, its classification and characteristics. Sets of medical equipment. Mobile medical and sanitary technique. Doctor tools, sets, apparatus for equipment of stages of casualty evacuation. Regulations of storage, packing, moving and defense of medical equipment in the field. Determining demands in medical equipment and order of its requisitioning. Financial accounting and reporting in medical equipment. Organization of support of separate power-driven brigade with medical equipment. Organization of work of medical depot complexes and depot activities. Auditing work concerning medical equipment. Establishing and organization of work of chemists shop, medical depot activities, medical equipment section, medical company of brigade in the field. Order of handling with narcotic drugs, mind-altering drugs and medicines of the list "A" in the military force of the Republic of Belarus.

Clinical laboratory diagnostic

Introduction to clinical laboratory diagnostic. Laboratory service organization. Theoretical and analytical discipline bases. Laboratory investigations quality control. General clinical, microbiological and cytological laboratory investigations: general idea, methodical approaches, technological principles, analytical evaluation and authenticity of analysis results. Bases of hematological and immuological laboratory diagnostics Manual and automatic methodological approaches of hematologic research, advantages and disadvantages of these approaches. Cellular and humoral laboratory indices. Influence of medicobiologic, methodic and technology factors on the results of hematologic and immunologic laboratory research. Medical biochemistry: methodological approaches, technologic principles and analytical evaluation of laboratory analysis of protein, carbohydrate and lipid exchange. Medical biochemistry: methodological approaches, technologic principles and analytical evaluation of laboratory analysis of enzymes, presecretions, pigmental and water-mineral metabolism, acid-base balance. Laboratory research of system of hemostasis.

Labour protection

Judiciary and organizational policies of labour protection. Production sanitary. Accident prevention. Fire prevention.

Pharmaceutical Technology

Technology of medicines of pharmaceutical production. Pharmaceutical Technology as an applied science. The object and the purpose of the course. Basic terms. Aims of Pharmaceutical Technology. State rating of pharmaceutic production. Classification of medicines according to aggregate state of matter, insertion ways, classification of medicines as disperse systems, according to duration and direction of action. Batching by weight and size. Biopharmaceutics – theoretic trend in technology of medicines. Terms. Ways of absorption of medicines in organism. Bioavailability and methods of its measurement. Influence of pharmaceutical factors on therapeutic effectiveness of medicines. Powders. The definition. Characteristics. Requirements to powders. Classification. Stages of technology. General

rules and special cases of preparation of powders. Evaluation of quality. Labor saving tools. Directions of perfection of powders. Liquid pharmaceutical forms. Requirements. Classification. Solvents for liquid pharmaceutical forms. Cleaned water. Apparatus. Quality inspection. Storage. Non-aqueous solvents. Requirements to them. Ethyl hydroxide, its attenuating according to the tables of National pharmacopeia XI. Glycerin, mineral and fatty oils, polyethylene oxides, silicone fluids, dimethylsulfoxide and others. Solutions as pharmaceutical form. Designation of solution concentration in refill prescriptions. Classification according to nature of solvent, assignment, insertion ways. Methods of solutions production. Technological schemas. Special cases of preparation of solutions. Technology of mixtures. Usage of dropping glass installations for liquid pharmaceutical forms production. Concentrated solutions. Thinning of conventional pharmacopoeial liquids. Non-aqueous solutions. Solutions of high-molecular compounds. Influence of molecular structure of high-molecular compounds on solubility. Production of solutions of high-molecular compounds. Microheterogeneous systems as dosage forms. Characteristics. Solutions of covered colloids of collargol, protargol, ichthyol. Suspensions. Characteristics. Methods of preparation of suspensions: dispersing and condensational methods. Technology of emulsions. Insertion of medicinal matters into emulsions. Infusions and decoctions - water extracts from medicinal plant raw material or solutions of specially prepared extracts. Process of extraction from plant raw material. Forces influencing the quality of water extracts. Private technology of preparation of water extracts out of raw material containing volatile oils, blenna, hardening agents and others. Usage of liquid and dry extracts-concentrates. Liniments. Technology of homogeneous, emulsive, suspended and combined liniments. Unguentums as pharmaceutical form. Bases for unguentums, classification: lipophilic, absorbing and emulsive unguentums. Characteristics of bases for unguentums. Influence of bases on bioavailability of medicinal matters out of unguentums. General rules of insertion of medicinal matters in unguentums. Technology of homogeneous, heterogeneous and combined unguentums. Small-scale mechanization. Suppositories. Classification of suppositories according to their function. Bases for suppositories, their influence on bioavailability of medicinal matters in suppositories. Classification of bases for suppositories: hydrophilous, hydrophobic, diphilic bases, their characteristics.

Technology of medicines of pharmaceutic production. Methods of suppositories preparation: hand molding, outpouring. Calculation connected to suppositories production depending on the method of production. Pills. Additives used for pills production. Principles of selection of additives depending on chemical nature of drugs. Technology of pills. Sterile and made with aseptic method pharmaceutical forms. Nomenclature. Creation of aseptic conditions. Requirements. Normative documents. Sterilizing. Methods of sterilizing. Pyrogenic agents. Water for injections, production of it in chemists shops. Drugs for injectable preparation. Requirements to them. Sterilizing and decontamination of drugs. Requirements to packing and sealing material for injectable solutions, sterilizing of it. Technological scheme of production of injectable solutions. Features of technology of injectable solutions out of thermolabile drugs. Stabilization of injectable solutions. Isotonic solutions. Calculation of isotonic concentrations. Technology of isotonic and infuse solutions. Pharmaceutical forms for eyes. Gouttes, applications, unguentums. Requirements to eye gouttes and technology of eye gouttes in conditions of chemists shops. Regulation of pH solutions, isotonic processes, preserving, sterilizing. Problems of prolongation. Kinds of packing of eye gouttes. Features of technology of eye unguentums. Bases, sterilizing of them. Storage of eye pharmaceutical forms in chemist shops. Nomenclature. Shelf-life. Pharmaceutical forms for newborn babies and babies under 1 year. Pharmaceutical forms containing antibiotics. Powders, solutions, unguentums, suppositories. Selection of additives. Features of technology. Pharmaceutical inconsistency in pharmaceutical forms. Types of inconsistency: physical, chemical and pharmacological inconsistency. Ways of negotiation of inconsistency in pharmaceutical forms. Homeopathic drugs. Characteristics. Nomenclature. Technology of homeopathic drugs.

Technology of medicines of industrial production. Development of industrial production of medicines in the Republic of Belarus. General principles of production of medicines at pharmaceutical works and factories. General idea of engines and instruments. Accident prevention and labour protection. Energy in production processes. Thermal processes. Vapour as thermal medium. Powders and gatherings.

Breakage and classification of powders. Technological schemes of production of compound powders and gatherings. Apparatus. Tablets. Characteristics. Kinds of tablets. Requirements of National pharmacopeia XI. Qualitative assessment. Apparatus. Theoretical foundations of tableting. Characteristics of tablet machines. Additives that are used in tablets production. Technological schemes of tablets production. Direct compression. Covering tablets with overpouch. Pellet. Spansule. Pill. Pharmaceutical forms that are made using aseptic water and sterile pharmaceutical forms. Requirements to pharmaceutical forms for injections. Industrial production conditions. Characteristics of solvents for injectable preparations: water, nonwater, compound solvents. Ampule glass. Production of ampules and glass-tubings. Cleaning ampules. Production of ampule solutions. Filling, sealing and sterilizing. Labeling. Qualitative assessment of solutions in ampules. Comprehensive mechanization and automatization of ampule production. Features of private technology of solutions for injections in ampules. Infusion solutions. Pharmaceutical forms for eyes. Eye skins. Sterile suspensions, emulsions, powders and tablets. Features of industrial production of suspensions and emulsions, unguentums and pastes. Apparatus. Standardization. Private technology. Emplastrums. Classification. Production of emplastrums and medical pencils.

Technology of medicines of industrial production. Galena preparations. Characteristics. History. Classification. Medical solutions. Solvents. Intensification of the process of solution. Methods of solutions scraping (assertion, filtering, centrifugation). Standardization. Private technology. Medical gelpaps. Additives. Technological process of reception. Qualitative assessment. Microencapsulation of drugs. Production of suppositories. Production of gas dispersoids. Regularities of exhaustion of capillary-cellular raw material having cellular construction. Production of aromatic waters and surups. Tinctures. Characteristics of tinctures. Methods of tinctures reception. Qualitative assessment. Alcohol recuperating and purification. Fluid extracts 1:1 and 1:2. Methods of reception. Standardization. Thermal processes. Usage of vapour as thermal medium. Boiling-down. Boiling-down under suction. Adverse effects during boiling-down and methods of deliquescence of them. Drying. Statics and kinetics of drying. Characteristics of drying apparatus. Sublimate and spray drying. Consistent and dry extracts. Technological scheme of production. Methods of reception of primary drawing out. Cleaning out from ballast substances. Private technology of consistent and dry extracts. Production of liquid and dry extracts-concentrates. Oily extracts. Drugs that are made out of fresh herbal raw material. Preparations of biogenic stimulator. Methods of reception and cleaning of primary drawing out. Standardization. Private technology. Organic preparations. Features of raw animal material. Classification and methods of reception of organic preparations for internal and injection administration. Standardization. Private technology. Drugs having prolonged and directed action. Therapeutic systems, matricial, membranous, osmolar systems, systems of goal-directed delivery of drugs. Children and geriatric drugs. Production of enzymatic, hormonal and other preparations with microbiological synthesis. General processes and apparatus of biotechnology.

Pharmaceutical Chemistry

The subject and contents of pharmaceutical chemistry. General problems of pharmaceutical chemistry. Methodological bases and principles of classification of medicines. Sources and methods of reception of medicines. State regulations that are regulating medicines quality. Standardization of medicines and organization of quality control. Normative documents that are regulating medicines quality. Inorganic pharmaceutical substances. The medicines – derivatives from elements of group VI of periodic system: water, oxygen, peroxide and its compounds. The medicines – derivatives from elements of group V and VII of periodic system: iodine, potassium iodide, sodium iodide. Kalium bromide and natrium bromide. Hydrochloric acid, potassium chloride, sodium chloride. Hypochlorite. Sodium nitrite. Sodium thiosulfate. Sodium fluoride. Inorganic medicines: barium sulphate for roentgenoscopy, calcium chloride, calcium sulphate, magnesium sulfate, magnesium oxide, boric acid, sodium tetraborate. Aluminum compounds. Inorganic pharmaceutical substances. Compounds of zink, argentum, ferrum, platinic. Zinc sulphate, argentic nitrate, complex compounds of ferrum: ferrociron, ferramid. Compounds of gadolinium: gadopentetat gadolinium + meglumine, gadodiamide. Organic medicines. Kinds of alcohol

and ether: ethyl alcohol, ethyl oxide, glonoin. Aldehydes and derivatives from them: formaldehyde solution, aminoform, chloral hydrate. Carbohydrates: monosaccharides and polysaccharides. Glucose, saccharose, lactose, galactose, amyllum. Carboxylic acids and derivatives from them. Diuretic salt, calcium lactate, calcium gluconate, sodium citrate, Depakine Enteric. Ascorbic acid. Amino acids and derivatives from them. Glutamic acid, gammalone, cysteine, methionine. Amino acids and derivatives from them. Penicillamine, natriic salt and calcium salt of ethylene-diamine-tetracarboxylic acid. Derivates from proline: captopril, enalapril. Derivates from phenylalanine - melphalan. Beta lactamids. Penicillins. Benzylpenicillin, its sodium salt, potassium salt, Benzylpenicillinum novocainum, Benzylpenicillinum benzathinum, phenoxymethylpenicillin. Semisynthetic penicillins. Sodium salt of oxacillin, ampicillin, Amoxicillin, disodium salt of Carbenecillin, ureidopenicillins (piperacillin). Cephalosporins: sodium salt of cefazolin, Cephalexin, cefalotin, cefoperazone, cefotaxime, cefuroxime. Monobactams. Carbapenems. Inhibitors of beta-lactamases. Aminoglycosides. Streptomycin sulphate, kanamycin sulphate, gentamicin sulphate. Semisynthetic derivatives: amikacin. Macrolides and azalides. Erythromycin, clarithromycin, Roxithromycin, Azithromycin. Tetracyclines: tetracycline, oxytetracycline, metacycline, doxycycline. Nitrofenilalkylamines: chloramphenicol and ethers of it. Terpenes. Sources and methods of preparation, chemical structure, general methods of analyses. Menthol, validol, terpinhydrate, camphor and derivatives from it. Acetate of retinol. Statins: lovastatin, simvastatin. Prostaglandins: alprostadil, misoprostol, Latanoprost. Steroid compounds. Classification, sources and methods of preparation, features of chemical structure, general methods of analyses. Caciferols: preparation, analyses, forms of presentation, stability, storage. Oksidevit, dioksidevit. Derivative of indan – Fenilin. Cardenolides. Natural occurrence, preparation, features of chemical structure and biological activity. Standardization of drugs: (chemical, physical-chemical and biological methods). Digitoxin, acetyldigitoxin, digoxin, strophanthin, corglyconum. Steroid hormones. C-19 steroids: androgens (testosterone propionate, methyltestosterone); muscle pills (Anabo-lex, methylandrosterone, Phenobolinum). C-21 steroids: gestagens (progesterone, Praeginum), mineralocorticosteroids and glucocorticosteroids (desoxyeortieosterone, cortisol, hydrocortisone, prednisone, prednisolone). Fluoro-substituted derivatives: (dexamethasone, Fluocinolone acetonide) and others. Steroid hormones. Sources and methods of preparation, classification, features of chemical structure (space chemistry and biological activity), general methods of analyses. C-18 steroids (estrogens): folliculin, estradiol, ethinylestradiol, Mestranol. Phenols, quinones and derivatives from them. Phenol, thymol, resorcin, tamoxifen, propofol. Derivates from naphthoquinones (vitamins of group K) - phyloquinone. Synthetic water-soluble analogue according to the action - Vicasol. Derivates from paraaminophenol: paracetamol. Derivates from metaaminophenol: methyl sulphate of neostigmine. Aromatic acids and derivatives from them. General characteristics, representatives: benzoic acid, salicylic acid and their sodium salts, Osalmid, acetosalic acid. Derivates from phenylpropionic acid: ibuprofen, ketoprofen. Derivates from phenylacetic acid: diclofenac and its salts. Derivates from Butyrophenone: haloperidol, droperidol. Para-, ortho- and metaaminobenzoic acids and derivatives from them. Ethers of π -aminobenzoic acid: benzocaine, procaine hydrochloride, tetracaine hydrochloride. Diethylaminoantifebrins: trimecaine hydrochloride, lidocaine hydrochloride. Local anesthetics that are close according to their structure: bupivacaine, articaine hydrochloride. Derivates from amide of π -aminobenzoic acid - procainamide hydrochloride, metoclopramide hydrochloride. Derivates from m -aminobenzoic acid: amidotrizoic acid and its sodium and N- Methylglucamine salts. Derivates from π -aminosalicylic acid (antituberculous remedy): sodium π -aminosalicylate. Iodinated derivatives from aromatic amino acids: liothyronine, levothyroxine. Thyreoidin. Arylalkylamines, hydroxyphenylalkylamines. Biochemical background of preparation of medical substances of the phenylalkylamines row. Dopamine. Ephedrine hydrochloride. Epinephrin (adrenaline) and norepinephrine (noradrenaline), their salts. Isoprenaline hydrochloride (isadrine), fenoterol (Berotec, partusisten), salbutamol, verapamil. Derivates from displaced hydroxypropanolamine (beta-blocking agents): propranolol hydrochloride (Anaprilinum), atenolol, timolol. Fluoxetine (prozac). Hydroxyphenylaliphatic amino acids: levodopa and methylodopa. Aminodibromophenylalkylamines: bromhexine hydrochloride, ambroxol hydrochloride. Benzolsulfanilamides and Derivates from them. Streptocide. Sulfanilamides that are displaced in amide group, derivatives of fatty and heterocyclic series: sulfacetamide sodium (Sulfacyl-sodium), sulfamethoxazole + trimethoprim (co-trimoxazole, Biseptol),

sulfadimethoxine, sulfalene. Sulfanilamides that are displaced in amide and aromatic amine group: ftalilsulfametizol (phtalazol), Salazopyridazinum. Derivates from amide of benzenesulfonic acid: furosemide, hydrochlorothiazide (dichlothiazide, hydrochlorothiazide), bumetanide (Bufenoxum). Displaced Sulfonylurea as antidiabetic medicines: carbutamide (Bucarba ATX), glibenclamid, glipizide, Minidiab, Gliquidone (Glurenorm), gliclazide (Predian). Non-aromatic antidiabetic agents – biguanides: metformin. Derivates from benzolsulfochloramide: chloramine B, galazop (pantothenatecide). Heterocyclic compounds. Derivates from furfurane. Amiodarone, griseofulvin. Medicines of nitrofurane row: nitrofurantoin (Furadonin), Furaginum. Derivates from benzopyran. Coumarins and derivatives from them: Ethyl biscoumacetate (neodikumarin), Phepromaronum, acenocoumarol (syncumar). Derivates from benzo-gamma-pyrone. Sodium cromoglicate (Cromolyn-sodium, Intal). Chromane compounds: tocopherols (vitamins of group E) as medicines: tocopherol acetate. Phenylchromane compounds: flavonoids (vitamins of group P): rutoside (rutin), quercetin, dihydroquercetin. Derivates from indan: phenyndion (Phenylum). Derivates from pyrrol (vitamins of group B12): cyanocobalamine, hydroxocobalamin (oksikobalamin), Cobamamid. Derivates from tetrahydropyrrole. Lincomycins: Lincomycin hydrochloride, clindamycin. Derivates from pyrazole. Analgesine, Metamizole sodium (analgin), phenylbutazone (butadiene), propifenazon. Derivates from imidazole. Pilocarpine hydrochloride, bendazol hydrochloride (Dibazolium), clonidine hydrochloride (Clophelin), metronidazole, clotrimazole, ketoconazole, naphazoline nitrate (Naphthyzin), omeprazole, domperidone (motilium), xylometazoline (Halazolin). Histamine dihydrochloride. Derivates from histamine and close compounds according to structure: diphenhydramine hydrochloride (Dimedrol), chloropyramine (Suprastin), ranitidine, famotidine. Derivates from piridinmetanol: pyridoxin hydrochloride (vitamins of group B6), pyridoxalphosphate, pyricarbate (Parmidinum), Emoxipinum. Derivates from dihydropyridine: nifedipine, amlodipine, nicardipine. Derivates from pyridine-3-carboxylic acid: nicotinic acid, nicotinamide, nicetamid (diethylamide of nicotinic acid); Picamilonum. Derivates from pyridine-4-carboxylic acid. Antituberculous remedies and antidepressants on the bases of isonicotinic acid: isoniazid, ftivazide, protionamide, ethionamide, nialamide. Derivates from tropane: atropine sulphate, scopolamine hydrobromide and their synthetical analogues as compound ethers of amino alcohols and displaced carboxylic acids: homatropine hydrobromide, Tropacinum, Aprophenium and others. Derivates from ecgonine: cocaine hydrochloride. Derivates from chinoline and quinuclidin. Derivates from 4-displaced chinoline. Quinia, quinidine and their salts. Chloroquine phosphate (chingamin), hydroxychloroquine sulphate (Plaquenil). Derivates from 8-displaced chinoline as antibacterial medicines: quinosol, chlorquinaldol, nitroxoline (5-NOK). Derivates from chinoline-4-one (fluroquinolones): lomefloxacin, ofloxacin, ciprofloxacin, pefloxacin, norfloxacin. Derivates from isoquinoline. Derivates from benzilizohinolin: papaverine hydrochloride and its synthetical analogue – drotaverine hydrochloride (NO-SPA). Derivates from fenantrenizohinolin. Morphine, codeine and their salts, semisynthetical derivatives from morphine: apomorphine hydrochloride, ethylmorphine hydrochloride. Trimeperidin hydrochloride (promedol), fentanyl, alfentanil, tramadol hydrochloride, loperamide hydrochloride, naloxone hydrochloride. Derivates from pyrimidin. Derivates from pyrimidin-2,4-dione. Methyluracil, fluorouracil. Nucleosides: tegafur (phthorafurum), zidovudine (azidothymidine), stavudine. Derivates from 4-aminopyrimidine-2-one. Lamivudine. Derivates from pyrimidin-2,4-dione: primidone (hexamidine). Derivates from pyrimidin-2,4-trione: (barbituric acid): barbital, phenobarbital, thiopental-sodium, Benzobarbital (benzonal), hexobarbital-sodium (Hexenalum). Derivates from 1,2-benzotiazin. Piroxicam. Derivates from hydantoin. Phenytoin (diphenylhydantoin). Derivates from pirimidinotiazol (vitamins of group B1) as medicines: thiamine chloride and thiamine bromide, co-carboxylase, Phosphothiamini, Benfotiamine. Derivates from purine as medicines of different pharmacological groups. Meaning of metabolic antagonists in preparation of new medicines. Derivates from xanthine: caffeine, theophylline, theobromine, aminophylline (Euphyllin), Diprophyllinum, (Xantinol nicotinate, pentoxifylline. Derivates from guanine: acyclovir (zovirax), ganciclovir (Cymevene). Other derivatives from purine: inosine (Riboxinum), allopurinol, mercaptopurine, azathioprine. Derivates from pteridine. Acid folic and its analogues. Methothrexate. Derivates from izoalloksazin (vitamins of group B2) as medicines: riboflavin, riboflavin mononucleotide. Derivates from phenothiazines. Alkylaminoderivates: chlorpromazine hydrochloride (aminazin), promazine hydrochloride (propazine), levomepromazine,

trifluoperazine dihydrochloride (triftazine), fluphenazine decanoate (phthorphenazin-decanoate) and others. Atsilic derivates: etacisin, moracizin hydrochloride (etmozin). Derivates from Benzotiazepin: Chlordiazepoxide (Chlozepidum), medazepam, diazepam (seduxen), oxazepam, nitrazepam, phenazepam, alprazolam and others. Derivates from dibenzodiazepin. Clozapinum (Azaleptinum). Derivates from 1,5-benzotiazepin. Diltiazem. Derivates from iminostilben. Carbamazepine. Derivates from 10,11-dihydrodibenzotsiklohepten. Amitriptyline. Juridical and theoretical foundations of quality control of medicines in chemist shop. Qualitative express-analysis. Methodology of changing variants of multi-component medicines. Qualitative analysis. Quantitative analysis in quality control in chemist shop. Tool methods in express-analysis in chemist shops and laboratories. Analysis of injectable solutions out of thermolabile drugs. Stabilization of injectable solutions. Isotonic solutions and eye gouttes in chemist shop conditions. Analysis of chemist shop storage, concentrated products, half-finished products. Analysis of powders that are prepared in chemist shop. Stability and shelf-life of medicines (methods of definition and influencing factors). Dependence of chemical structure and biological activity of medical substances. Analysis of medical substances and metabolites in biological liquids. Standardization as system of formation of requirements to medicines quality. Condition and perspectives of standardization. State system of establishments that are providing medicines quality control. System of perfection of normative documents. Provision of quality in production, distribution, storing and use of medicines. International requirements to medicines production. Inspection. Proper laboratory practice. Accreditation of experimental laboratories. Certification of medicines. Registration of medicines. Clinical trials of medicines. Research of equivalence of generic medicines.

Toxicological chemistry

Subject, tasks and basic sections of toxicological chemistry. Organization of forensic medical expertise. Chemical-toxicological analysis of matters that are isolated from biomaterial with mineralization method. Methods of removal of oxidizers. Methods of discovering and quantitative definition of "metal" poisons. Group of matters that are isolated with distillation. Scheme of chemical-toxicological analysis of "flying" poisons. Chemical method of analysis of distillate. Toxicological meaning, discovering and quantitative definition of "flying" poisons. Definition of "flying" substances with gaschromatographic method. Expertise of alcoholic poisoning. Qualitative diagnostics of drunkenness. Poisoning with carbon monoxide. Methods of discovering and quantitative definition of carboxyhemoglobin in blood. Analyses of substances that are isolated with extraction with water. Biotransformation of foreign compounds in organism. General ways of biotransformation. Metabolites and toxicity. Chemical-toxicological analysis of matters that are isolated by polar solvents. Methods of isolation of medical and narcotic matters. Characteristics, toxicological meaning, discovering and quantitative definition of substances that are extracted with organic solvents from acidic medium. Characteristics, chemical-toxicological analysis of matters that are extracted with organic solvents from alkaline medium. Chemical-toxicological analysis of narcotic drugs. Toxicological screening of medical matters. Pesticides, general characteristics, classification. Methods of discovering and quantitative definition of definite specimens. Modern physical-chemical methods that are used in chemical-toxicological analysis.

Organization and economy of pharmacy

State policy in public health protection and pharmacy. Normative-legal provision of public health protection and pharmaceutical service. Organisation and economy of pharmacy as academic subject and scientific speciality. Structure of administration of the Ministry of Public Health Protection in the Republic of Belarus and of pharmaceutical service in the Republic of Belarus. Organizing-legal forms of enterprise management. Standardization of activity of pharmaceutical organization. **System of medicines quality control.** Controlling and allowing system of medicines of the Ministry of Public Health Protection in the Republic of Belarus. Pharmacopoeial committee and Pharmaceutical committee of the Ministry of Public Health Protection in the Republic of Belarus. Republic unitary enterprise "The

center of examinations and trials in public health protection”. **System of organisation of rendering medicinal help to the people and public health protection establishments.** Organisation of work of self-financing chemist shop. Organisation of work of chemist shop of ready medicines. Organisation of work of central regional chemist shop. Chemist shop of public health protection establishment. Control-analytical laboratory. Medicines quality control in chemist shops. **Wholesale group in the system of pharmaceutical enterprises.** Chemist shop storehouse. **Book-keeping calculation and accounts of pharmaceutical enterprises.** General characteristics of accounting policies of pharmaceutical enterprise. Recording of entry and sales of commodity stocks and supplies. Recording of basic means and other property. Recording of cash resources. Recording of labor and labor cost. Accounting balance-sheet. Accounting control of pharmaceutical enterprises. Taking inventory of commodity stocks and supplies. **Financial management and imposition of taxes in pharmacy.** Financial management. Fiscal system in the Republic of Belarus (pharmaceutical branch). Control and examination of activity of pharmaceutical enterprises. **Planning of activity of pharmaceutical enterprises.** System of planning in pharmacy. Forecasting basic index of activity of pharmaceutical organization. Strategic and tactical planning. **Economic analysis of activity of pharmaceutical enterprise.** Content economic analysis. Economic data that are characterizing business function of pharmaceutical enterprise. Methods of analysis of economic data. **Bases of pharmaceutical marketing.** Executive summary of pharmaceutical marketing. Managing pharmaceutical marketing. Medicines market exploration. Product portfolio policy of pharmaceutical enterprise. Pricing policy of pharmaceutical enterprise. Fundamental principles of determination of requirements. Strategy of marketing communications, shopping and merchandising policy of pharmaceutical enterprise. **Informative-advertising activity in pharmacy.** Executive summary of pharmaceutical information. Advertisement of pharmaceutical commodity. Informative-advertising work with the community. **Bases of management.** Theoretical bases of management. Organizations of pharmaceutical system as object of administration. System of administration of pharmaceutical personnel. Essence of management activity. Management of conflicts and stresses. Binding processes in communication management. Records management on enterprises of pharmaceutical profile. Labor, civil and economic law.

Medical and pharmaceutical commodity research

Introduction to commodity research analysis. Normative-organizational system of medical supply. Structure of medical and pharmaceutical supply of the systems “Pharmacy” and “Medical technique”, centralized and decentralized supplies. Classification and coding of methodical (pharmaceutical) commodity. Bar coding. Contracts in the system of medical supply, procedural and institutional base of contract relations in procurement activities of medical and pharmaceutical organizations. Commercial examination of medical and pharmaceutical commodities in the system of distribution. Commodity research analysis of the tools, apparatus and materials that are used for tissues joining: stitching materials, suture needles. Commodity research analysis of tools and apparatus for parenal method of insertion of medicines. Commodity research analysis of surgical tools. Commodity research analysis of special tools. Commodity research analysis of tools, apparatus and equipment for stomatology. Optical system of eye. Equipment for diagnostics and correction of eyesight: commodity research analysis. Commodity research analysis of breathing equipment. Commodity research aspects of technical methods diagnostics. Commodity research analysis of physiotherapeutic equipment. Commodity research analysis and examination of tissue and non-tissue materials that are used for preparation of medical device. Commodity research analysis of chemist shop equipment. Analysis of assortment of medical and pharmaceutical commodity according to its basic indices. Analysis of rationality of the assortment structure and its innovation. Usage of applied market research in the system of commercial commodity research in public health protection. Business game. Analysis of competitive power of medical and pharmaceutical commodity. Market positioning of medical and pharmaceutical commodity. Business game. Commercial examination of commodity-falsification on pharmaceutical market. Quality of commodity: administration, certification, control, statistical methods of analysis. Business game. Commodity research analysis with application of applied marketing examination of medicines. Business

game. Commodity research analysis of dressing material and medical plaster. Commodity research analysis of tare, packing, and means of closing of pharmaceutical commodity. Commodity research analysis of rubber articles and druggist rubber sundries. Commodity research analysis of parapharmaceuticals, dietary supplement, perfumery and commodity of renewal of assortment. Business game: formation of optimal price and communication tactics of medical and pharmaceutical organization in the system of commodity distribution.

Russian as foreign language

Requirements to the level of student speech skills. The quantity of the perceived information during fact-finding reading must be 70 %. The quantity of perceived information during combined kinds of reading (review - fact-finding reading, review - report reading) must be minimum 70 %. The text for speech recognition must contain minimum 40 % of superfluous information. The quantity of perceived information must be minimum 70 %. **Student should be able:** to conduct dialogue-discussion aiming at learning information on the given theme; to build monologue-description, (monologue-narration, monologue-objection) on special and social-cultural themes; to use detailed phrases in speech; to gauge information according to the level of its value; to separate and retell general information of the text using verbal tools (plan, summary), non-verbal tools (scheme, table) and without any tools; to build written utterance in the form of monologue-generalization (summary), presentation, report; to formalize written summary, presentation, report in the established way.

Requirements to organization of student self-dependent work. Students must have skills of sensible and self-dependent work with educational material and scientific information in Russian language and abilities to improve their qualification in future.

Culturology and Religion Studies

Introduction. Culturology and Religion Studies – system of science knowledge about culture, religion and academic subject. Origins of culturological thought. Development of culture. Essence of religion. Historical forms of religious beliefs. **Morphology of culture. Religion as social-cultural phenomenon.** System and structure of culture. Forms and subjects of culture. Religion as social-cultural phenomenon. **Historic dynamics of culture. Religion and free-thinking in culture.** Culture of primitive society. Culture of Ancient civilizations (Mesopotamia, Egypt, India, China). Antique culture: ancient Greece and ancient Rome. Formation and peculiarities of Christianity. General trends of Christianity. Culture of European Middle Ages and culture of Revival epoch. Culture of New and Newest Age. **Actual problems of modern culture. Problems of cultures dialogue.** Cultures of modern East. Problems of cultures dialogue. Modern culture and crisis of anthropogenic civilization. Byelorussian culture in the context of world culture. **Conclusion. Axiological priorities in culture of XXI century.** Contours of planetary civilization. Perspectives of sustainable development and modern strategies of social and cultural dynamics.

Bases of law and human rights

Bases of legal and state building in the Republic of Belarus. Constitution of the Republic of Belarus as legal basis of public health protection. Constitutional rights and liberty of the person and of the citizen, guarantees of realization of them. Right of the citizen on health protection in the system of constitutional rights and liberty of the person and of the citizen. Constitutional guarantees of realization of right of the citizen on health protection. **Legal base of public health protection in the Republic of Belarus.** Legislation about public health protection, its structure and sources. Legal guarantees of material and technical bases of public health protection. Financial-legal provision of activity of public health protection organizations. Legal regulation of medicines provision. Issuing licenses of pharmaceutical activity. **Labour law in the Republic of Belarus. Labour contract.** General thesis of

labour law in the Republic of Belarus. Legal conditions of young specialists. Labour contract with public health protection workers. Features of contract form of hire. **Labour rights and duties of public health protection workers.** Routine of working time and time of rest in public health protection. Job payment in public health protection organizations. Rights, duties and responsibility of public health protection workers. Labour arguments in public health protection. Pensionary provision of public health protection workers. **International humanitarian law.** Principle of respect to the person and his/her dignity. Protection from war consequences. Special protection of staff and equipment of the Red Cross. Protection of wounded and ill people during armed conflicts. Regulation of international armed conflicts. **Criminal responsibility for crimes against life and health of the person.** Infringement of public health protection law. Crimes against life and health of the person. Official and economic crimes. Measures of crimes prevention in public health protection. **Public health protection organizations as subjects of civil legal relationships.** Regulation of civil relationships. Civil-legal status of public health protection bodies. Right for property. Legal protection of mother and child.

Valeology

Introduction to valeology. Valeologic education. Rational nourishment, labour and rest. Personal hygiene. Overcoming of bad habits. Physical, psychical and reproductive health.

History of Pharmacy

History of medical university. History of pharmacy as the science and the subject of teaching. Pharmaceutical symbols and emblems. Doctoring and pharmacy in primitive society. Folk medicine. Medicine and pharmacy of Ancient Times: Babylon, Egypt, China, India, Greece, Rome. Medicine and pharmacy in Early and Developed Middle Ages Periods (V-XIV centuries). Medicine and pharmacy during Renaissance and Reformation Period (XV-XVII centuries). Medicine and pharmacy in Moscow state, Great Lithuanian Principality and Rech Pospolitaya. Medicine and pharmacy in the New Time period (1640-1918). Medicine and pharmacy in the Newest Time period (XX - beginning of XXI century). History of medical and pharmaceutical and biomedical ethics.

Ethics (including pharmaceutical)

History and modern condition of ethics (including pharmaceutical). Subject of ethics. Pharmaceutical ethics as a part of general ethics. History of ethical doctrines. Moral - ethical preconditions of a professional etiquette of the pharmacist in eposes of Ancient India and China, in works Hippocratis, Galen, Avicenna. Ethical doctrines of the Ancient East. The first Russian Pharmaceutical Charter and his ethical importance. The "Soviet" period of development of pharmaceutical ethics. A stage of formation of New pharmaceutical ethics. The concept of "responsible self-treatment». Self-treatment in the Republic of Belarus, Russia and countries of West. Pharmaceutical bioethics - section of bioethics. **Theoretical problems of ethics (including pharmaceutical) and the main moral values.** Origin of moral. Tendencies of development of moral in XX century. Moral values of the person in the basic categories of ethics. Freedom and responsibility. Good and evil. Suffering and compassion. Duty and conscience. Honour and advantage. Meaning of the life and happiness. Love as the maximum value. Pharmacy and the maximum moral values. **Bases of professional ethics in pharmacy: functions, principles, norms.** Concept "professional etiquette". Pharmaceutical deontology. Principles of autonomy, not causing any harm, blessing and validity in professional work of pharmacist. The code of marketing practice AIPM (Association of the international pharmaceutical manufacturers) - ethical standard of marketing of medical products (including medicines that are sold without doctor prescription). Ethical aspects of advertising medicines that are sold without doctor prescription. Ethical code of pharmacist. Principle of preference of patient interests to enterprises commercial interests. Competence and confidentiality of pharmacist work. Clinical pharmacist-consultant. **Person of pharmacist as a factor of successful interactions with client.** Psychological demands to person of pharmacist.

Structure of person. The I-concept of person. Paradigm of integrity of person. Psychological features of person of successful pharmacist. Character as algorithm of person behaviour. Abilities and pharmaceutical activity. Locus of control. Control over emotions. Autonomy of person. Account of age and individual features of client in professional work of pharmacist. Self-presentation. Resume - a professional portrait of applicant for a post. **Psychology of client.** Holistical approach to sick person. Modern comprehension of health. Etical and psychological aspect of disease and formation of personal reactions to illness. Stages of personal reaction of client on his/her own psychosomatic condition. «Internal picture of illness». Types of attitude to illness: normosomatosognosy, hypersomatosognosy, hyposomatosognosy. The factors influencing on formation of different types of attitude to illness: individual - psychological features of person, age. Pathological types of reaction to illness: depressive, phobial, hysterical and hypochondrial reactions. Anosognosia - denying of illness. **Ethics of communicative relationships with client.** Respect to person of client, his/her freedom and independence, honour and advantage as a basis of dialogue "pharmacist - client". Principles of cooperation of pharmacist with client: achievement of mutual consent, mutual trust and the mutual responsibility. Psychotherapeutic influence of person of pharmacist on client. Principle of dominance and principle of partnership in mutual relations of pharmacist and client. Features of dialogue of pharmacist with "difficult" client ("sluggish", garrulous, whimsical, aggressive, "boring"). Psychology of sick pharmacist. **Ethic-deontological aspects of relations of pharmacist to medicine.** Humanistic orientation of activity of pharmacist (safety, efficiency and quality of produced medicines). Reasonable usage of medicines by pharmacist. Deontological aspect of activity of pharmacist as consultant. Pharmacophilia. Pharmacophagy. Placebo-effect. «Toxic placebo». Pharmacophobia. Impossibility of pharmaceutical mistake. Types of pharmaceutical mistakes. Situational and mental factors promoting occurrence of mistakes. Constant updating of knowledge - factor of successful activity of pharmacist. **Mutual relations in pharmaceutical collective.** Dialogue and its structure. Communicative, interactive and perceptual parties of dialogue. Types of communicative barriers. Basic strategies of behavior during interaction: cooperation, counteraction, compromise, compliance, avoiding. Functions of social perception: knowledge of oneself, knowledge of the communicative partner, the organization of mutual activity on the basis of mutual understanding and making emotional relationships. Mechanisms of interpersonal perception: empathy, identification, attraction, reflection, causal attribution. Person of pharmacist and dialogue. Communicative competence of the chief pharmacist as a factor of successful work of collective. Rules of optimization of the process of dialogue with colleagues in pharmaceutical institution. **Conflicts in professional work of pharmacist.** Phenomenology and concept of conflict. Elements of conflict. Types of conflicts. Causes of conflicts. Stages of development of conflicts. Strategy of behavior in a disputed situation. Types of person of participants of the conflict. Disputed person is a chief. Collective and disputed person: tactics of behavior. Correction and management of conflict. Overcoming of stressful situations and development of emotional fastness - the important condition of successful activity of the pharmacist. **Ethics of interaction of the pharmacist and the doctor in modern conditions.** Harmonicity of interaction of pharmacist and doctor. Pharmacist as assistant of doctor in medical - diagnostic process. Role of pharmacist in informing doctor about medicines. Mutual aims of pharmacist and doctor. Mutual obligations of pharmacist and doctor to each other. The new concept of role of pharmacists in public health service system (VAZ, Tokyo, 1993). Appropriate pharmaceutical (chemist's) practice in conditions of retail and hospital drugstore (GPP) concerning relationship of pharmacist and doctor.

Pathology

Student should know: medical terms of pathology; terms of general nosology; role of causes, conditions and reactive properties of organism in origin, development and end of disease; causes and mechanisms of the most typical pathological processes and the most wide-spread typical disorders of organs and organism systems, their general display and meaning for organism in course of development of different diseases; general appropriateness of origin, development, end of the most wide-spread human

diseases and general display of these diseases; general principles of etiologic and pathogenetic preventive measures and therapy, principle abilities and ways of pharmacological correction of typical pathological processes and typical forms of pathology of separate organs and organism systems; meaning of experimental method in studying pathological processes, abilities, limitations and perspectives of this method; meaning of pathology for future development of preventive trend of modern public health protection.

Student should be able: to use the attained knowledge when studying the subjects “Pharmacology”, “Clinical pharmacology and bases of pharmacotherapy” and other pharmaceutical subjects; to use general terms of pathology and the most wide-spread medical terms during work with pharmaceutical and medical science literature and dialogue with medical specialists; to orient oneself in different forms of pathology (knowing that medical specialists have prescribes definite medical therapy for treatment of these forms of pathology); to use pathological knowledge in cases of applying of people for advices – both for possible recommendations and for explaining of harm of self-treatment; to formulate conclusion about presence and kind of typical form of pathology of hemic system according to the results of blood picture; to determine the pattern of fever according to temperature curve; to differentiate pathological types of breath; to define renal compromise according to the results of urine analysis and biochemical blood count; to determine general kinds of arrhythmia and signs of myocardial ischemia according to electrocardiogram.

Pharmacognosy

Definition of pharmacognosy as a science and an academic subject. General stages of pharmacognosy development. Methodology of the subject, basic terms and methods of examination. Problems of pharmacognosy in modern times. Integrative contacts to basic and specialized subjects, role in the practical activity of pharmacist. General idea of biochemical processes in plant organism. Mobility of chemical composition of medical plants in the process of ontogenesis and under the influence of ecological factors. Types of classification of medical plants and medical plant raw material. **General historical stages of usage and study of medical plants in the world medicine.** Influence of Arabic (Avizenna, Berunii and others), European (Galen, Hippocrates, Dioscorides and others) and other medical systems on pharmacognosy development. Origin and development of pharmacognosy as a science. Role of eminent scientists in pharmacognosy development (S.P. Krashennnikov, I.I. Lepehin, P.S. Pallas, P.M. Maksimovich-Ambodik, A.T. Bolotov, I.D. Dvigubski, A.P. Nelyubin, G. Dragendorf, A. Chirh, V.A. Tihomirov, Yu.K. Trapp, A.F. Gammerman, D.M. Shcherbachev, A.P. Orehov, S.Yu. Yunusov, G.K. Kryeier, V.S. Sokolov, M.M. Molodozhnikov and others). **Raw materials base of medical plants.** Modern condition of gathering of wild and cultivated medical plants. Imports and exports of medical plant raw material, perspectives of development of raw materials base in the Republic of Belarus. Constitution of the Republic of Belarus about environment protection. Protection and rational use of natural resources of medical plants, resources investigations (revelation of underbrush, stock accounting, mapping operation). Reproduction of wild medical plants. **Bases of procuring process.** Rational means of gathering medical plant raw material of different morphologic groups. Primary operation, drying, putting raw material in standard state, packing, marking, transportation and storage. **Methods of pharmacognosy analysis of medical plant raw material.** Sample taking and analysis of raw material on authenticity and adequate quality as consisted with acting normative and technical documentation. System of standardization of medical plant raw material. The order of development, endorsement and approval of medical plant raw material as consisted with acting normative and technical documentation. Categories and structure of acting normative and technical documentation on medical plant raw material. Requirements to the quality of medical plant raw material. Medical plants and raw material containing polysaccharides. Medical plants and raw material containing vitamins. Medical plants and raw material containing terpenoids. Medical plants and raw material containing bitter principles. Medical plants and raw material containing kardiosteroids (cardiac glycosides). Medical plants and raw material containing steroid and triterpene saponosides. Medical plants and raw material containing simple phenolic glycosides

and lignans. Medical plants and raw material containing amtratsen-derivates. Medical plants and raw material containing coumarins and chromones. Medical plants and raw material containing flavonoids. Medical plants and raw material containing tannins. Medical plants and raw material containing alkaloids. Medical plants and raw material containing different groups of biologically active substances.

Organization of provision of medical plant raw material. Measures aimed to increasing volume of provision of medical plant raw material. Chief procurement organizations and their functions. System of procurement organizations and their role in securing of the country with medical plant raw material. Influence of different factors on accumulation of biologically active substances in a plant. Commodity research analysis of medical plants and raw material and gatherings. General trends of scientific research in the field of medical plants study. Main scientific centers. Perspectives of usage of medical plants in the country.