MINISTRY OF HEALTH OF UKRAINE
ODESA NATIONAL MEDICAL UNIVERSITY
Department of Organization and Economics of Pharmacy with postdiploma specialization

CONFIRMED by
Vice-rector for scientific and pedagogical work

_____ Eduard BURIACHKIVSKYI
«_1_» _September_ 20_25_y.

WORKING PROGRAM IN THE DISCIPLINE

PHARMACEUTICAL AND MEDICAL COMMODITY SCIENCE

Level of higher education: second (master's degree)

Field of knowledge: 22 «Health care»

Specialty: 226 "Pharmacy, industrial pharmacy"

Specialization: 226.01 «Pharmacy»

Educational and professional program: Pharmacy, industrial pharmacy

2025

The work programme is based on the educational and professional programme 'Pharmacy, Industrial Pharmacy' for the training of specialists of the second (master's) level of higher education in the specialty 226 'Pharmacy, Industrial Pharmacy' specialisation 226.01 "Pharmacy" in the field of knowledge 22 'Health Care', approved by the Academic Council of ONMedU (Minutes No. 10 of 27 June 2024) and the educational and professional programme 'Pharmacy, Industrial Pharmacy' for training specialists of the second (master's) level of higher education in the specialty I8 "Pharmacy (by specialisation) specialisation I8.01 'Pharmacy' in the field of knowledge I 'Health Care and Social Security', approved by the Academic Council of ONMedU (Minutes No. 8 of 24 April 2025).

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The working program is approved at the meeting of the department of Organization and Economics of Pharmacy with postdiploma specialization

Minutes No. 1 dated 28/08/2025.

Head of the department _____ Oksana BIELIAIEVA

Approved by the guarantor of
the educational and professional program _____ Liana UNHURIAN

Approved by the subject-cycle methodological commission for pharmacy's disciplines of ONMedU
Minutes No. 1 dated 29/08/2025

Head of the subject-cycle methodological commission for pharmacy's disciplines of ONMedU

_____ Natalia FIZOR

Revised and approved at the meeting of the department of Organization and Economics of Pharmacy
Minutes No. __ dated __/__/20__.
Head of the department _____

Revised and approved at the meeting of the department of Organization and Economics of Pharmacy

Minutes No. __ dated __/__/20__.

Head of the department _____

1. DESCRIPTION OF THE DISCIPLINE:

Name of indicators	Field of knowledge, specialty, specialization, level of higher education	Characteristics of the academic discipline
The total number of: Credits: 5.0 Hours: 150	Field of knowledge I Health care and social security Specialty I8 Pharmacy (by specialization) Specialization I8.01 "Pharmacy" Level of higher education second (master's degree)	Full-time education Compulsory subject
		Year of training: 4
		Semesters VII, VIII
		Lectures (30 hours,)
		Seminar (0 hours)
		Practical (70 hours)
		Laboratory (0 hours)
		Independent work (50 hours)
		Final control - graded test

2. THE PURPOSE AND OBJECTIVES OF THE DISCIPLINE, COMPETENCIES, AND PROGRAM LEARNING OUTCOMES.

Purpose: higher education student's acquisition of comprehensive professional competencies in conducting commodity analysis, studying quality requirements and acceptance rules, as well as methods of rational organization of storage of finished medicines and medical devices.

Objectives:

1. ensuring understanding of key differences in the product characteristics of various groups of pharmacy assortment based on the systematization of legislative requirements for quality assurance, rules of circulation and state registration of medicines, medical devices, special food products and other pharmacy goods
2. mastering methods for conducting commodity analysis and assessing the quality of finished medicines, medical devices and medical supplies in accordance with current regulations
3. acquiring practical skills in the rational organization of storage of pharmaceutical products, taking into account factors that affect their quality, stability and shelf life
4. development of the ability to monitor product quality, timely identify and withdraw from circulation low-quality, falsified and prohibited for sale by authorized state bodies pharmacy products
5. deepening professional competencies in the field of ensuring the quality of pharmaceutical products and making informed management decisions within the framework of pharmaceutical activities

The process of studying the discipline is aimed at forming elements of the following competencies:

General (GC):

- GC 1. The ability to think abstractly, analyze and synthesize, learn and be modernly trained.
- GC 2. Knowledge and understanding of the subject area and understanding of professional activity.
- GC 5. Ability to evaluate and ensure the quality of work performed.
- GC 6. Ability to work in a team.
- GC 9. Ability to use information and communication technologies.

Special / professional (SC/FC):

- SC1.Ability to integrate knowledge and solve complex pharmacy problems in broad or multidisciplinary contexts.
- SC2. Ability to collect, interpret and apply data necessary for professional activities, research and implementation of innovative projects in the field of pharmacy.
- SC8. Ability to provide consultation on prescription and non-prescription medicines and other pharmacy products; pharmaceutical care during the selection and sale of medicines of natural and synthetic origin by assessing the risk/benefit ratio, compatibility, taking into account biopharmaceutical, pharmacokinetic, pharmacodynamic and physicochemical and chemical features, indications/contraindications for use, guided by data on the health status of a particular patient.
- SC12. Ability to ensure proper storage of medicinal products of natural and synthetic origin and other pharmacy products in accordance with their physicochemical properties and the rules of Good Storage Practice (GSP) in healthcare facilities.
- SC13. Ability to organize the activities of a pharmacy to provide the population and healthcare institutions with medicines and other pharmacy products and to implement appropriate reporting and accounting systems in them, to carry out commodity analysis, and administrative paperwork taking into account the requirements of pharmaceutical legislation.

Program Learning Outcomes (PLO):

- PL0 1. Have and apply specialized conceptual knowledge in the field of pharmacy and related fields, taking into account modern scientific achievements.
- PL0 2. Critically reflect on scientific and applied problems in the field of pharmacy.
- PL0 3. Have specialized knowledge and skills to solve professional problems and tasks, including for the purpose of further developing knowledge and procedures in the field of pharmacy.
- PL0 5. Evaluate and ensure the quality and effectiveness of activities in the field of pharmacy.
- PRL 9. Formulate, argue, clearly and specifically convey to specialists and non-specialists, including higher education students, information based on their own knowledge and professional experience, the main trends in the development of world pharmacy and related industries.
- PLO 11. Determine the advantages and disadvantages of medicines of natural and synthetic origin of various pharmacological groups, taking into account their chemical, physicochemical, biopharmaceutical, pharmacokinetic, pharmacodynamic characteristics and the type of dosage form. Recommend medicines and other pharmacy products to consumers, providing advisory assistance and pharmaceutical care.
- PLO 15. Predict and determine the impact of environmental factors on the quality and consumer characteristics of medicinal products of natural and synthetic origin and other pharmacy products, organize their storage in accordance with their physicochemical properties and the rules of Good Storage Practice (GSP).

As a result of studying the academic discipline, a higher education applicant must:

Know:

- principles and levels of standardization, types of standards;
- designation of regulatory documentation;
- basic classification approaches to pharmacy products;
- basic concepts and principles of quality management;
- the procedure for state registration in Ukraine of medicines, medical devices, special food products and other pharmaceutical products;
- key differences in the product characteristics of individual groups of pharmaceutical products;
- regulatory documents regulating the circulation of medicines and medical devices in Ukraine;
- rules for rational storage and transportation of medical and pharmaceutical products;

- Pharmaceutical care algorithms when dispensing medical devices and related pharmaceutical products from pharmacies.

Be able to:

- conduct a commodity analysis of pharmacy products, taking into account current regulatory requirements;
- accept goods and provide a substantiated assessment of their quality in accordance with established standards;
- verify the correctness of labeling of finished medicines and medical devices, including compliance with regulatory documentation;
- distribute received goods to appropriate storage areas and departments in accordance with the requirements of good storage practices;
- conduct incoming quality control of medicines and medical devices in order to identify counterfeit, substandard and prohibited products;
- create and maintain proper storage and transportation conditions for pharmaceutical products in accordance with current standards and GSP (Good Storage Practice) requirements;
- detect violations of storage conditions, prevent the negative impact of external factors on product quality and initiate appropriate corrective actions;
- apply risk management principles in the sphere of circulation of medicines and medical devices to prevent situations that may threaten the quality, safety or effectiveness of pharmacy products;
- apply knowledge of legislation and regulatory documents when making professional decisions in the field of circulation of pharmacy products.

3. CONTENT OF THE DISCIPLINE

Topic 1. Fundamentals of commodity science. Regulatory documentation in the pharmaceutical industry. The concept of a product and its consumer value. Definition of the concepts of "goods", "assortment of goods". Quality of goods as the main category of commodity science. The emergence and development of commodity science. The subject of commodity science. The purpose and tasks of commodity science in the system of training pharmacists at the current stage of pharmacy development. Integration of commodity science with other disciplines. Definition of the concept of "standardization". Principles, levels, subjects and objects of standardization. Main goals and tasks of standardization. Definition of the concept of "standard". Types of standards. Designation of regulatory documentation (ND). Structural elements of the national standard, quality control methods (MCQ). Rules for the construction and presentation of technical specifications (TU). Requirements for the designation of standards and technical specifications. The procedure for approval and validity of regulatory documentation. Certification. Technical regulations and conformity assessment of medical devices. Registration of medicines.

Topic 2. Classification of goods. Coding of goods. The concept of classification of goods and its categories. Purpose, purpose, features and general rules of classification. Types of classification of goods. Coding systems of goods. Coding system in the commodity nomenclature of foreign economic activity (TN FEA). Barcoding.

Topic 3. Fundamentals of commodity analysis of pharmacy products. Definition of the concepts of "analysis", commodity analysis", "expertise", commodity expertise". Functions, goals and objectives of commodity analysis. Features of commodity analysis of medical and pharmaceutical goods. Main stages of commodity analysis. Requirements for medical and pharmaceutical goods. Main properties of materials (physical, chemical, technological, etc.) that ensure the quality of goods. The concept of commodity operations, their classification and characteristics. Acceptance and release of goods, quality assessment, organization of storage and transportation. The process of movement of goods in the pharmacy network andcommodity operations related to it. The procedure for drawing up contracts with suppliers of medical and pharmaceutical goods. Classification of

medical goods depending on storage conditions: by physicochemical properties, method of application, shelf life, types and methods of packaging. and organoleptic quality indicators, requirements for the quality of medical goods.

Topic 4. Packaging and labeling of medical devices. Packaging and its functional purpose. Packaging properties. Assortment of consumer packaging for medical devices. Labeling of consumer packaging of medical devices. Information signs on the packaging of medical devices. Labeling structure. DSTU EN ISO 15223-1:2022 "Medical devices. Symbols used for marking on medical devices, labels and accompanying documentation". Requirements for marking medical devices depending on the safety class.

Topic 5. Packaging and Labeling of Finished Medicinal Products. Closure Systems. Classification of medicinal products depending on storage conditions: by pharmacological action, physicochemical properties, route of administration, shelf life, method of production, aggregate state, types and methods of packaging, and organoleptic quality indicators; quality requirements for dosage forms. Packaging and its functional purpose. Classification of medicinal product packaging (primary, secondary, group, consumer, and transport packaging). Properties of packaging. Packaging, labeling, and transportation of medicinal products. Definitions of the terms “container,” “pharmaceutical container,” and “packaging.” Classification of closure systems according to purpose, design features, methods of fixation, materials, and manufacturing methods. Requirements for closure systems (general, specific, and sanitary-hygienic). Storage conditions. Packaging materials and requirements for them. Classification and assortment. Storage of packaging materials.

Topic 6. Commodity analysis of transport packaging. Classification of packaging. Requirements for containers for pharmaceutical use. Assortment of consumer packaging. Glass, metal and polymer containers and technical requirements for them. Cardboard packaging and technical requirements for it. Types of transport packaging and its purpose. Marking of transport packaging. Basic technical requirements for transport packaging. Storage of packaging. Organization of packaging management. Organization of packaging circulation (multi-turnover packaging, certificate for returned packaging, penalties, report on the movement of packaging). Types and sizes of transport packaging. Classification of transport packaging. Unification of packaging. Transport marking. Main, additional and informational inscriptions. Manipulation signs. Transport equipment. Technical requirements for transport packaging.

Topic 7. Fundamentals of materials science. Metallic materials. Classification of materials, their properties, areas of application in pharmacy. Classification, composition, properties, information about the technology of their production. Quality requirements. Definition of the concept of "metals", their characteristic properties, classification. Basic requirements for metal materials used for the manufacture of medical devices. Classification of metals and alloys. Physical and mechanical properties of ferrous and non-ferrous metals. Ferrous metals and their alloys (list and definition). Alloyed steels (definition). Quality indicators of metals and alloys. Classification of steels by degree of alloying. Corrosion-resistant stainless steels. Non-ferrous metals and their alloys (basic list and definition). Physicochemical properties of copper and its alloys. Main copper alloys and their grades used for the manufacture of medical instruments. Precious metals (list, properties and use in medicine). The concept of the technological process of manufacturing medical devices. Materials for the manufacture of medical instruments.The concept of metal corrosion and protection against it.

Topic 8. Rubber, methods of production. Production of rubber products. The concept of rubber. Classification of rubber. Production of rubber. The concept of the technological process of manufacturing rubber products. Aging of rubber. Storage and restoration of rubber products. Requirements for rubber quality, labeling, packaging, storage, sterilization and disinfection.

Topic 9. Glass, ceramic materials and products made from them. Definition of the concept of "glass". Composition and properties of glass. Classification of glass for medical devices by purpose. Ceramic materials (definition, composition and properties). Wood, cardboard, paper, leather and their substitutes. Requirements for the quality of materials, labeling, packaging, storage, sterilization and disinfection.

Topic 10. Polymeric materials and plastics used in pharmacy General characteristics of natural and synthetic polymers and plastics based on them (definition, composition). Classification of plastics by purpose and composition. Information on the technology of their manufacture. Composition of plastics and requirements for their functional properties. Application of polymers in pharmacy and medicine. Requirements for the quality of plastic products. Labeling, packaging, storage conditions and sterilization of plastic products.

Topic 11. Commodity analysis of medical general surgical instruments. Medical classificationinstruments. Classification of general surgical instruments. Cutting instruments (knives and scalpels, medical chisels, surgical hammers, rasps, medical scissors and saws, bone nippers). Clamping instruments (hemostatic clamps, clamps for temporary vascular crossing, gastric and intestinal clamps, needle holders, forceps, forceps, forceps). Main structural elements. Material used for the manufacture of medical instruments. Testing for corrosion resistance. Classification. Assortment. Technical requirements. Functional tests. Packaging, labeling, transportation, storage. Methods of determining quality. Sterilization. Rules for acceptance and accounting. Impression instruments (hooks, wound retractors, Buyalsky's spatula, spatulas, etc.). Probing and bouging instruments. Main structural elements. Classification. Assortment. Technical requirements. Functional tests. Packaging, labeling, transportation, storage. Methods of determining quality. Sterilization. Rules for acceptance and accounting.

Topic 12. Commodity analysis of special instruments: neurosurgical, ophthalmological and otorhinolaryngological. Classification of special instruments by purpose. Neurosurgical instruments. Instruments for opening bone tissues (rotary drill with a set of drills and cutters, wire saw, nippers, bone forceps). Cutting instruments (scissors, hemostats, wound dilators, spatulas, cannulas, bone spoons). Ophthalmic instruments (scalpels and knives, scissors, eye spoons, loops, spatulas, tweezers, impression instruments, probes, Filatov-Martsinkovsky set). Otorhinolaryngological instruments. Diagnostic devices, cutting instruments, tracheotomy instruments, ear instruments, auxiliary instruments. Purpose of each group of special instruments. Main elements and design features. Materials used to manufacture special instruments. Classification by purpose. Assortment. Technical requirements. Packaging, labeling, transportation and storage. Methods of determining quality. Sterilization.

Topic 13. Commodity analysisspecial instruments: urological, obstetric and gynecological. Classification of special instruments by purpose. Urological instruments. Catheters, bougies, probes, devices for crushing stones in the bladder and their removal. Obstetric and gynecological instruments. Obstetric instruments, instruments for embryotomy, gynecological instruments, vacuum devices, a set of instruments for abortion. Purpose of each group of special instruments. Main elements and design features. Materials used for the manufacture of special instruments. Assortment. Technical requirements. Packaging, labeling, transportation and storage. Methods of determining quality. Sterilization.

Topic 14. Commodity analysisdental instruments. Dental equipment: dental chairs, drills, dental units, flexible sleeves, handpieces. Products for therapeutic dentistry: dental burs, root canal instruments, instruments for filling teeth and removing dental plaque. Filling material. Instruments for surgical dentistry: dental forceps, dental elevators. Auxiliary instruments. Products for orthopedic dentistry and prosthetics: artificial teeth, abrasive instruments, devices for prosthetics.

Topic 15. Commodity analysis of technical equipment for traumatology. Product types, assortment of tools and equipment used when working with plaster. Instruments for skeletal traction. Instruments used in osteosynthesis. Assortment of medical splints. Classification by purpose of equipment used in traumatology, and technical requirements for it. Product analysis of instruments and equipment for traumatology upon their acceptance. Storage of technical equipment for traumatology.

Topic 16. Commodity analysis of suture materials and piercing needles. Sutures and their purpose. Classification of sutures. Absorbable sutures: catgut, oxcelon, vicryl, etc. Non-absorbable sutures, linen threads, lavsan threads, horsehair, metal wire, Michel staples. Conditionally absorbable

sutures. Product types. Technical requirements for sutures. Sterilization of sutures. Packaging, labeling, transportation and storage of sutures in accordance with standards. Surgical needles. Classification of needles by purpose: surgical, cutaneous, general purpose (thick and thin), ophthalmic, piercing, intestinal (bent, straight, with a flat-oval part), vascular (bent and straight), renal. Product types. Classification of needles depending on their design: by shape, by degree of bend, cross-section and tip, shape of the eye, size. Atraumatic needles. Ligature needles and forks. Symbols of needles. Technical requirements for needles. Packaging, labeling, transportation and storage. Methods of sterilization of surgical needles, forks and ligature needles. Methods of determining quality. Suturing surgical devices.

Topic 17. Commodity analysis of instruments and devices for punctures, injections, transfusions and suction. Assortment of disposable and reusable syringes. Classification of syringes by design and purpose. Injection and puncture-biopsy needles. Infusion and transfusion devices. Technical requirements. Packaging, labeling, transportation and storage. Methods of determining quality. Sterilization. Trocars. Equipment for transfusions, injection and suction

Topic 18. Commodity analysis of disinfection and sterilization equipment. Concept of disinfection, sterilization and pre-sterilization treatment. Disinfection and sterilization methods used in pharmacy and medicine. Physical methods of disinfection and sterilization (thermal sterilization, sterilization by infrared, ultra-high frequency, ultraviolet radiation, radiation and plasma sterilization) of medical and pharmaceutical products. Chemical methods of disinfection and sterilization of medical products. Agents used for chemical disinfection and sterilization. Sterilization equipment (steam sterilizer, air sterilizer, gas sterilizer, sterilization boxes, etc.). Classification of steam sterilizers: by design, heating method, control. Stationary, portable, double-sided steam sterilizers, etc. Installations for radiation sterilization of medical instruments, suture material and pharmaceuticals with an electron accelerator and gamma rays. Plasma sterilizers. Disinfection equipment (portable boilers, stationary boilers, disinfection chambers, disinfection shower installations, hydraulic controls, "Disinfal" type sprayer, manual sprayers, etc.).

Topic 19. Commodity analysis of rubber products and patient care items. Purpose of rubber products and patient care items. Hollowrubber products obtained by molding (rubber hot water bottles, rubber ice packs, rubber liners, rubber liners, syringes, rubber irrigation cups, uterine rings, rubber cylinders and bellows). Tubular elastic products: gas discharge tubes, catheters and probes. Elastic products for anesthesia and artificial respiration: airships, intubation tubes, anesthesia masksOronasal. Latex products: surgical and anatomical gloves, fingertip gloves, caps for medical pipettes, nippleschildren's. Patient care items. Packaging, labeling, storage, transportation. Disinfection and sterilization.

Topic. 20. Commodity analysis of Wound Dressings and Preformed Dressing Products. Dressing Materials and Their Purpose.Types of dressing materials: absorbent medical cotton wool (ophthalmic, hygienic, surgical), compress cotton, gauze, and lignin. Main types of raw materials used for the production of dressing materials and the requirements for them. Preformed wound dressings: nonwoven medical bandages (sterile and non-sterile). Modern wound dressings used in the treatment of infectious and inflammatory diseases of the skin and soft tissues. Types of adhesive plasters. Conducting commodity evaluation (determination of product type and quality assessment). Laboratory determination of functional properties of dressing materials (absorbency, capillarity, wettability).
Packaging, labeling, transportation, and storage.

Topic 21. Ocular optics. Commodity analysisdevices and means for research, correction and protection of the organs of vision. Devices and tables for testing visual acuity. Devices for determining eye refraction. Devices and apparatus for testing visual functions. Devices for examining and testing the eye. Ocular lenses: purpose, classification (by nature of optical action, by number of optical zones for correcting ametropia of vision, by purpose). Lenses for correcting eye refraction anomalies (myopia, hyperopia, astigmatism). Lenses for presbyopia and convergence anomalies (strabismus). Technical requirements for ocular lenses, marking, packaging, transportation, storage. Methods for determining the type, sign and optical power of a lens. Eyeglass frames: purpose, classification (by rim shape, by materials,

by type of earpieces), technical requirements. Protective glasses: purpose, classification, technical requirements for glass and frames. Devices for controlling vision correction devices (dioptrimeter, centriscope). Technical requirements for ophthalmic devices, packaging, transportation. Prescriptions for glasses. Selection of glasses. Latin terms used when writing a prescription for glasses. Contact lenses: classification, marking, packaging, storage.

Topic 22. Commodity analysis of related pharmacy products. Mineral waters. Classification. Requirements for mineral waters. Packaging, labeling, transportation and storage of mineral waters. Rules for accepting mineral waters. Determination of organoleptic indicators.Requirements for labeling and advertising of special food products. Definition, classification and characteristics of baby food products. State regulation of the production and circulation of baby food products. Packaging, labeling and certification of baby food products. Pharmaceutical care when choosing baby food products. Cosmetics. Classification of cosmetic products. Technical regulations for cosmetic products dated January 20, 2021 No. 65. General requirements for cosmetic products. Packaging, labeling and storage of cosmetic products. Special food products, classification and characteristics. Classification, storage, labeling of essential oils. Disinfectants. Assortment. Release form. Packaging, labeling, transportation and storage of disinfectants. Repellents. Classification, labeling, storage. pharmaceutical care when dispensing repellents. Storage of medical leeches and care for them. oral care products. Toothbrushes, toothpastes, mouthwashes and irrigators. Pharmaceutical care for the dispensing of oral care products.

Topic 23. Oxygen, nitrous oxide used in medicine. Product analysis of oxygen, respiratory and anesthetic equipment. Medical oxygen. Requirements for the quality of medical oxygen. Medical oxygen passport. Oxygen cylinders and oxygen pillows (assortment, marking, technical requirements, storage). Acceptance of oxygen cylinders and their return to the supplier. Reducer. Disinfection of oxygen pillows and mouthpieces after their use. Safety rules when working with oxygen. Accounting for released oxygen. Nitrous oxide. Acceptance of nitrous oxide cylinders from the supplier. Release of nitrous oxide by warehouses. Procedure for using nitrous oxide in cylinders in medical institutions. Storage and transportation of nitrous oxide cylinders. Oxygen-respiratory and anesthetic equipment: oxygen concentrators, oxygen inhalers and inhalation anesthesia devices. Product identification operations when accepting oxygen-respiratory and anesthetic equipment.

Topic 24. Commodity analysis of inspection, endoscopy and introscopic devices. Product types, assortment of instruments for examination, endoscopy and introscopy. Classification of instruments for examination, endoscopy and introscopy by purpose. Methods of disinfection and sterilization of parts of instruments for examination, endoscopy and introscopy that come into contact with patients. Product analysis of instruments for examination, endoscopy and introscopy upon receipt. Care of instruments and their storage.

Topic 25. Acceptance of goods at the pharmacy warehouse. Acceptance and release of goods, quality assessment, organization of storage and transportation. The process of movement of goods in the pharmacy network andcommodity operations related to it. The procedure for drawing up contracts with suppliers of medical and pharmaceutical goods. Acceptance of goods to the pharmacy warehouse by quantity and quality. Release of goods from pharmacy warehouses.

Topic 26. Organization of storage of medicines and medical devices. The main factors that affect the quality of pharmaceutical products. Requirements for drugs and their storage. Quality control, stability and shelf life of drugs. Storage requirements for different groups of drugs depending on their physicochemical properties. Assortment of medical devices. The main factors that affect the quality of medical products. Requirements for medical devices and their storage conditions. Quality control, shelf life.

Topic 27. Prevention of the circulation of counterfeit medicines in Ukraine. Relevance and causes of falsification of medicines. Classification signs of falsification of medicines. Detection of falsified medicines during incoming quality control. Means of protecting packaging and labels of medicines from counterfeiting.

Topic 28. Commodity analysisdiagnostic devices. Product types, assortment of diagnostic devices and apparatus. Classification of diagnostic devices by purpose. Methods of disinfection and sterilization of parts of diagnostic equipment that come into contact with patients. Product analysis of diagnostic devices upon receipt. Care of devices and their storage. Classification and structure of devices for measuring human blood pressure. Conducting a product analysis of devices for measuring blood pressure in pharmacies. Pharmaceutical care during the sale of devices for measuring blood pressure. Classification of means for controlling human body temperature. Structure of a medical maximum thermometer. Tests and test systems as pharmacy assortment products. Principle of operation, classification and characteristics of tests for determining pregnancy. Glucometers, characteristics, purpose and principle of action.

Topic 29. Commodity analysis medical equipment. Electrotherapeutic equipment. Ultrasound therapy devices. Phototherapeutic equipment. Product types and purpose of medical equipment. Assortment and technical requirements. Methods of disinfection of parts of medical equipment that come into contact with the patient. Product analysis of medical equipment upon receipt (compliance of the device with the accompanying documentation, completeness, integrity of packaging, compliance with labeling). Care of devices and their storage

Topic 30. Modern medical products. Rehabilitation and orthopedic devices. Types of exoskeletons Implantable medical devices and active implantable devices. Biomaterials for implants. Artificial joints, breast implants, hips. Cochlear implants. Modern medical devices and technologies used in ophthalmology. Smart contact lenses. Drug-releasing contact lenses. Remote monitoring systems for progressive diseases. Cybersecurity in medical device quality systems. Security and ethics.

4. THE STRUCTURE OF THE DISCIPLINE

Topic names	Number of hours					
	Total	including				
		lectures	seminars	practical	lab classes	ISW
Topic 1. Fundamentals of Commodity Science. Regulatory Documentation in the Pharmaceutical Industry.	6	2	-	4	-	-
Topic 2. Classification and Coding of Goods.	4	2	-	2	-	-
Topic 3. Fundamentals of Commodity Analysis of Pharmacy Assortment Goods.	4	-	-	2	-	2
Topic 4. Packaging and Labeling of Medical Devices.	2	-	-	2	-	-
Topic 5. Packaging and Labeling of Finished Medicinal Products. Closure Systems.	8	2	-	4	-	2
Topic 6. Commodity Analysis of Transport Packaging.	2	-	-	-	-	2
Topic 7. Fundamentals of Materials Science. Metallic Materials.	8	2		2		4

Topic 8. Rubber: Methods of Production. Manufacturing of Rubber Products.	4	-	-	-	-	4
Topic 9. Glass, Ceramic Materials and Products Made from Them.	4	-	-	-	-	4
Topic 10. Polymeric Materials and Plastics Used in Pharmacy.	4	-	-	-	-	4
Topic 11. Commodity Analysis of General Surgical Medical Instruments.	6	2	-	4	-	-
Topic 12. Product analysis of special instruments: neurosurgical, ophthalmological, otorhinolaryngological.	4	-	-	4	-	-
Topic 13. Commodity analysis special instruments: urological, obstetric and gynecological.	2	-	-	2	-	-
Topic 14. Commodity analysisdental instruments	2	-	-	2	-	-
Topic 15. Commodity analysis of technical equipment for traumatology.	4	-	-	-	-	4
Topic 16. Commodity analysis of suture materials and piercing needles.	4	2		2	-	-
Topic 17. Commodity analysis of instruments and devices for punctures, injections, transfusions and suction	4	2	-	2	-	-
Topic 18. Commodity t analysis of disinfection and sterilization equipment.	6	2	-	-	-	4
Topic 19. Commodity analysis of rubber products and patient care items.	6	2	-	4	-	-
Topic. 20. Commodity analysis of Wound Dressings and Preformed Dressing Products.	4	2	-	2	-	-
Current test control.Practical skills test No. 1	2	-	-	2	-	-
Topic 21. Ocular optics.Commodity analysis instruments and means for research, correction and protection of the organs of vision.	6	2	-	4	-	-

Topic 22. Commodity analysis of related pharmacy products	10	2	-	8	-	-
Topic 23 Commodity analysis of oxygen, respiratory and anesthesia equipment.	6	-	-	2	-	4
Topic 24. Commodity analysis of devices for inspection, endoscopy and introscopy.	4	-	-		-	4
Topic 25. Acceptance of goods at the pharmacy warehouse.	4	2	-	2	-	-
Topic 26. Organization of storage of medicines and medical devices.	4	-	-	4	-	-
Topic 27. Preventing the circulation of counterfeit medicines in Ukraine.	6	2	-	-	-	4
Topic 28. Commodity analysis medical devices for diagnosis and treatment.	8	2	-	6	-	-
Topic 29. Commodity analysis of medical equipment.	4	-	-	-	-	4
Topic 30. Modern medical products. Practical skills test No. 2	6	-	-	2	-	4
Graded test	2	-	-	2	-	-
Total hours:	**150**	**30**	**-**	**70**	**-**	**50**

5. TOPICS OF LECTURES / SEMINARS / PRACTICAL CLASSES / LABORATORY CLASSES

5.1. Topics of lectures

Topic name	Hours
Topic 1. Lecture 1. Fundamentals of commodity science. Regulatory documentation in the pharmaceutical industry.	2
Topic 2. Lecture 2. Classification and coding of goods.	2
Topic 5. Lecture 3. Packaging, labeling of finished medicines. Closure Systems.	2
Topic 7. Lecture 4. Fundamentals of materials science. Metallic materials	2
Topic 11. Lecture 5. Commodity analysis of medical general surgical instruments.	2
Topic 16. Lecture 6. Commodity analysis of suture materials and piercing needles.	2
Topic 17. Lecture 7. Commodity analysis of instruments and devices for punctures, injections, transfusions and suction	2
Topic 18. Lecture 8. Commodity analysis of disinfection and sterilization equipment.	2
Topic 19. Lecture 9. Commodity analysis of rubber products and patient care items.	2

Topic. 20. Lecture 10. Commodity analysis of dressing materials and finished dressings.	2
Topic 21. Lecture 11. Ocular optics. Devices and means of vision correction and protection	2
Topic 22. Lecture 12. Commodity analysis of related pharmacy products	2
Topic 25. Lecture 13. Receiving goods into the pharmacy warehouse.	2
Topic 27. Lecture 14. Preventing the circulation of counterfeit medicines in Ukraine.	2
Topic 28. Lecture 15. Commodity analysis medical devices for diagnosis and treatment	2
Total	**30**

5.2. Topics of seminar classes
Seminar classes are not provided.

5.3. Topics of practical classes

Topic name	hours
Topic 1. Practical lesson 1. Regulatory documentation, standards as a guarantee of the quality of medicines and medical devices.	2
Topic 1. Practical lesson 2. Registration of medicinal products. Conformity assessment of medical devices.	2
Topic 2. Practical lesson 3. Classification and coding of pharmacy products	2
Topic 3. Practical lesson 4. Fundamentals of commodity analysis of pharmacy products.	2
Topic 4. Practical lesson 5. Packaging and labeling of medical devices.	2
Topic 5. Practical lesson 6. Packaging and labeling of finished medicines.	2
Topic 5. Practical lesson 7. Sealants. Packaging materials in pharmacy.	2
Topic 7. Practical lesson 8. Fundamentals of materials science. Metallic materials.	2
Topic 11. Practical lesson 9. Commodity analysis of cutting and clamping general surgical instruments.	2
Topic 11. Practical lesson 10. Commodity analysis of impression probing and bougie general surgical instruments.	2
Topic 12. Practical lesson 11. Commodity analysis of neurosurgical and ophthalmological special instruments.	2
Topic 12. Practical lesson 12. Commodity analysis of special otorhinolaryngological instruments.	2
Topic 13. Practical lesson 13. Commodity analysisurological, obstetric and gynecological special instruments.	2
Topic 14. Practical lesson 14. Commodity analysisdental instruments.	2
Topic 16. Practical lesson 15. Commodity analysis of suture materials and piercing needles.	2
Topic 17.Practical lesson 16. Commodity analysis of instruments and devices for punctures, injections, transfusio ns and suction	2
Topic 19. Practical lesson 17. Commodity analysis of rubber products	2
Topic 19. Practical lesson 18. Commodity analysis of patient care items.	2
Topic 20. Practical lesson 19. Commodity t analysis of finished dressings.	2
Practical lesson 20. Practical skills test No. 1	2
Topic 21. Practical lesson 21. Ocular optics. Anomalies of refraction of the eye**.**	2

Topic 21. Practical lesson 22. Commodity analysis devices and means for research, correction and protection of the organs of vision.	2
Topic 22. Practical lesson 23-26. Commodity analysis of related pharmacy products	8
Topic 23.Practical lesson 27. Commodity analysis of oxygen, respiratory and anesthesia equipment.	2
Topic 25 Practical lesson 28. Acceptance of pharmacy products into the pharmacy warehouse.	2
Topic 26. Practical lesson 29. Organization of storage of medicines and medical devices.	2
Topic 26. Practical lesson 30. Cold chain. Requirements for storage of vaccines and toxoids.	2
Topic 28.Practical lesson 31. Commodity analysistonometers, thermometers, glucometers.	2
Topic 28. Practical lesson 32. Commodity analysisinhalers and nebulizers.	2
Topic 28. Practical lesson 33. Commodity analysis of products for individual oral care.	2
Practical lesson 34. Modern medical products. *Practical skills test No. 2*	2
Practical lesson 35. *Graded test*	2
Total	**70**

5.4. Topics of laboratory classes

Laboratory classes are not provided.

6. INDEPENDENT STUDENT WORK

Title of the topic / types of assignments	hours
Topic 3. Preparation for practical lesson 3.	2
Topic 5. Preparation for practical lesson 5.	2
Topic 6. Working with methodological developments.	2
Topic 7. Preparation for practical lesson 6.	4
Topic 8. Working with methodological developments.	4
Topic 9. Working with methodological developments.	4
Topic 10. Working with methodological developments.	4
Topic 15.Work with methodological developments.	4
Topic 18. Working with methodological developments.	4
Topic 23. Preparation for practical training 17	4
Topic 24. Working with methodological developments.	4
Topic 27. Working with methodological developments	4
Topic 29. Working with methodological developments.	4
Topic 30. Preparation for practical training 34	4
Total	**50**

7. FORMS AND METHODS OF TEACHING

Forms of training.

The discipline is taught in the form of lectures, practical classes, and organization of independent work of the applicant.

Teaching methods:

Lectures: story, explanation, conversation, discussion, discussion of problem situations, situational learning, illustration (including multimedia presentations), demonstration.

Practical classes:oral response in the form of a survey on the topic of the lesson; testing (written or computer-based) using test tasks, modeling situations, performing calculations, explaining and evaluating their results, and completing practical tasks.

Independent work: independent work with recommended basic and additional literature, with electronic information resources, independent solution of practical tasks.

8. FORMS OF CONTROL AND CRITERIA FOR ASSESSING LEARNING OUTCOMES

Forms of current control:oral interview, testing, assessment of practical skills, solving situational problems, assessment of activity in the lesson.

Final control form: graded test

Criteria for assessing the learning outcomes of higher education applicants during current control

Rating	Evaluation criteria
Excellent "5"	The applicant is fluent in the material, takes an active part in discussing and solving a situational problem, and confidently demonstrates practical skills.
Good "4"	The applicant has a good command of the material, participates in the discussion and solution of a situational problem, and demonstrates practical skills.
Satisfactory "3"	The applicant does not have sufficient knowledge of the material, participates uncertainly in the discussion and solution of the situational problem, and demonstrates practical skills with significant errors.
Unsatisfactory "2"	The applicant does not possess the material, does not participate in the discussion and solution of the situational problem, and does not demonstrate practical skills.

Only those applicants who have fulfilled the requirements of the curriculum in the discipline, have no academic debt, and their average score for current academic activity in the discipline is at least 3.00 are allowed to take the final test in the form of a differentiated assessment.

Graded test is carried out: in the last lesson (the lesson is separated as a separate control measure) after the end of classes before the beginning of the examination session - in the case of a tape learning system, in the last lesson of the educational component - in the case of a cyclical learning system.

The methodology for conducting final (semester) control of the educational component in the form of graded test is unified and involves the use of standardized forms.

Criteria for assessing the learning outcomes of higher education applicants during final control

Rating	Evaluation criteria
Excellent "5"	The student correctly, accurately and completely completed all the tasks of the ticket, clearly and logically answered the questions posed by the examiners. Thoroughly and comprehensively knows the content of theoretical questions, is fluent in professional and scientific terminology. Thinks logically and builds an answer, freely uses the acquired theoretical knowledge when analyzing practical tasks. Correctly answered all the questions posed and convincingly substantiated his point of view, could offer and justify an alternative solution to individual issues.

Good "4"	The candidate has sufficiently completed all the tasks of the exam, has clearly and logically answered the questions posed by the examiners. He knows the content of theoretical questions in sufficient depth and comprehensively, has professional and scientific terminology. He thinks logically and builds an answer, uses the acquired theoretical knowledge when analyzing practical tasks. However, when presenting some questions, he lacks sufficient depth and reasoning, and makes minor errors, which are eliminated by the candidate himself when the examiner points them out.
Satisfactory "3"	The student has incompletely completed all the tasks of the ticket, the answers to additional and leading questions are unclear, vague. He has the main volume of theoretical knowledge, uses professional and scientific terminology inaccurately. He experiences significant difficulties in constructing an independent logical answer, in applying theoretical knowledge when analyzing practical tasks. There are significant errors in the answers.
Unsatisfactory "2"	The candidate did not complete the exam task, in most cases did not answer the additional and leading questions of the examiners. Did not master the basic theoretical knowledge, showed a low level of mastery of professional and scientific terminology. The answers to the questions are fragmentary, inconsistent, illogical, cannot apply theoretical knowledge when analyzing practical tasks. The answers contain a significant number of gross errors.

9. DISTRIBUTION OF POINTS OBTAINED BY HIGHER EDUCATION STUDENTS

Points in the academic discipline for applicants who have successfully completed the program are converted into a traditional four-point scale according to the absolute criteria given in the table:

National assessment for discipline	**Total points for the discipline**
Excellent ("5")	185 – 200
Good ("4")	151 – 184
Satisfactory ("3")	120 – 150
Unsatisfactory ("2")	Below 120

The multi-point scale (200-point scale) characterizes the actual success of each applicant in mastering the academic discipline. The conversion of the traditional assessment into a 200-point one is performed by the University's information and technology department using the "Contingent" program according to the appropriate formula: Average score of success (current success in the discipline) x 40. The ECTS rating scale evaluates the achievements of applicants in the academic discipline who are studying in the same year of the same specialty, according to the points they received, by ranking, namely:

Evaluation on the ECTS scale	**Statistical indicator**
A	Top 10% of applicants
B	Next 25% of applicants
C	Next 30% of applicants
D	Next 25% of applicants
E	Next 10% of applicants

The ECTS scale establishes the applicant's belonging to the group of the best or worst among the reference group of fellow students (faculty, specialty), that is, his rating. When converting from

a multi-point scale, as a rule, the limits of grades "A", "B", "C", "D", "E" do not coincide with the limits of grades "5", "4", "3" according to the traditional scale. The grade "A" on the ECTS scale cannot be equal to the grade "excellent", and the grade "B" - to the grade "good", etc. Applicants who received grades "FX" and "F" ("2") are not included in the list of ranked applicants. Such applicants automatically receive an "E" score after retaking. The "FX" score is assigned to applicants who have scored the minimum number of points for current educational activities, but who have not passed the final test. A grade of "F" is given to students who have attended all classroom classes in the academic discipline, but have not achieved a grade point average (3.00) for their current academic activity and are not admitted to the final examination.

10. METHODOLOGICAL SUPPORT

- Syllabus of the academic discipline
- Work program of the academic discipline
- Methodological recommendations for lecture classes
- Methodological recommendations for practical classes
- Methodological recommendations for independent work of higher education students
- Multimedia presentations
- Illustrative materials

11. QUESTIONS FOR PREPARATION FOR THE FINAL TEST

1. The concept of a product and its consumer value. The concept of classification of goods and its categories. The purpose, purpose and general rules of classification. Types of classification of goods.
2. Definition of the concept of "standardization". Principles, levels, subjects and objects of standardization. Main goals and objectives of standardization. Definition of the concept of "standard". Types of standards. Designation of regulatory documentation (RD).
3. Commodity coding systems. Coding system in the commodity nomenclature of foreign economic activity (TN FEA). Barcoding. Calculation of the check digit.
4. Definition of the concepts "analysis", "commodity analysis", "expertise", "commodity expertise". Functions, goals and objectives of commodity analysis.
5. Requirements for medical and pharmaceutical products. Basic properties (physical, chemical, technological, etc.) that ensure the quality of goods. The concept of commodity operations, their classification and characteristics.
6. Classification of materials, their properties, areas of application in pharmacy. Composition, properties, information on the technology of their manufacture. Requirements for the quality of materials. Labeling, packaging, storage conditions. Sterilization.
7. Definition of the concept of "metals", their characteristic properties, classification. Basic requirements for metal materials used for the manufacture of medical devices.
8. Materials for the manufacture of medical instruments. The concept of metal corrosion and protection against it.
9. Classification of medical instruments. Testing for corrosion resistance. Classification of general surgical instruments. Basic design elements of medical instruments. Material used for their manufacture.
10. Cutting tools. Clamping tools. Impression tools. Probing and bushing tools. Classification. Assortment. Technical requirements. Functional tests.
11. Packaging, labeling, transportation, storage of medical instruments. Methods of determining quality. Sterilization. Rules for acceptance and accounting.
12. Classification of special tools by purpose. Purpose, main design elements, assortment, technical requirements
13. Dental equipment. Products for therapeutic dentistry. Filling material. Instruments for surgical

dentistry. Products for orthopedic dentistry and prosthetics.
14. Classification of non-metallic materials, their properties, applications in cosmetology, pharmacy and medicine. The concept of rubber. Classification of rubber. Obtaining rubber. The concept of the technological process of manufacturing rubber products. Aging of rubber. Storage of rubber products. Requirements for the quality of rubber, labeling, packaging, storage, sterilization and disinfection.
15. Definition of the concept of "glass". Composition and properties of glass. Classification of glass for medical devices by purpose. Requirements for the quality of materials, labeling, packaging, storage, sterilization and disinfection.
16. Ceramic materials (definition, composition and properties). Requirements for the quality of materials, labeling, packaging, storage, sterilization and disinfection.
17. Wood, cardboard, paper, leather and their substitutes. Requirements for the quality of materials, marking, packaging, storage, sterilization and disinfection. Requirements for the quality of materials, marking, packaging, storage, sterilization and disinfection.
18. General characteristics of natural and synthetic polymers and plastics based on them (definition, composition). Classification of plastics by purpose and composition. Information on the technology of their manufacture.
19. Rubber products and patient care items. Purpose, packaging, labeling, storage, transportation. Disinfection and sterilization.
20. Suture materials and their purpose. Classification of suture materials. Technical requirements. Sterilization of suture materials.
21. Surgical needles. Classification. Product types. Atraumatic needles. Ligature needles and forks. Symbols of needles. Technical requirements. Packaging, labeling, transportation and storage. Sterilization methods. Methods of determining quality. Suturing surgical devices.
22. Syringes for injections. Classification of syringes.
23. Injection and puncture-biopsy needles. Technical requirements. Packaging, labeling, transportation and storage. Methods of determining quality. Sterilization. Cases for sterile storage of syringes and injection needles.
24. Transfusion, injection and suction equipment. Product types and purpose of medical equipment. Assortment and technical requirements. Methods of disinfection of parts of medical equipment that come into contact with the patient. Care of devices and their storage.
25. Instruments and equipment for traumatology. Classification by purpose of equipment used in traumatology and technical requirements for it. Product analysis. Storage.
26. Concepts of disinfection, sterilization and pre-sterilization treatment. Disinfection and sterilization methods used in pharmacy and medicine. Sterilization equipment.
27. Disinfectants. Assortment. Form of release. Packaging, labeling, transportation and storage of disinfectants.
28. Dressing materials and their purpose. Ready-made dressings. Packaging, labeling, transportation and storage of dressings. Sterilization.
29. Mineral waters. Cosmetics. Chemical reagents and their classification. Classification. Requirements for mineral waters. Packaging, labeling, transportation and storage of mineral waters. Special food products.
30. Devices and tables for testing visual acuity. Devices for determining eye refraction, for testing visual functions, for examining and testing the eye.
31.. Eyeglass lenses: purpose, classification. Technical requirements for eyeglass lenses, marking, packaging, transportation, storage. Methods for determining the type, sign and optical power of a lens
32. Prescriptions for glasses. Selection of glasses. Latin words used when writing a prescription for glasses.
33 Medical oxygen. Nitrous oxide. Requirements for the quality of medical oxygen. Medical oxygen

passport. Oxygen cylinders and oxygen pillows (assortment, marking, technical requirements, storage). Acceptance of oxygen cylinders and their return to the supplier.
34. Classification of drugs depending on storage conditions, pharmacological action, physicochemical properties, methods of application, shelf life, method of production, aggregate state, types and methods of packaging and organoleptic quality indicators, requirements for the quality of dosage forms.
35. Packaging and its functional purpose. Classification of drug packaging, properties of packaging, labeling and transportation of drugs.
36. The concept of "container" and "packaging". Classification of containers. Marking. Storage of containers.
37. Classification of sealing devices by specificity, design features, fastening methods, materials, production methods. Requirements for sealing devices. Storage.
38. Acceptance and release of goods, quality assessment, organization of storage and transportation. The process of movement of goods in the pharmacy network and commodity operations related to it. The procedure for drawing up contracts with suppliers of medical and pharmaceutical goods. Acceptance of goods to the pharmacy warehouse by quantity and quality. Release of goods from pharmacy warehouses.
39. The main factors affecting the quality of pharmaceutical products. Requirements for drugs and their storage. Quality control, stability and shelf life of drugs.
40. Product types, assortment of diagnostic devices and apparatus. Classification of diagnostic devices by purpose.
41. Classification, product types, assortment of instruments for examination, endoscopy and introscopy.
42.Dental equipment. Products for therapeutic dentistry. Instruments for surgical dentistry. Products for orthopedic dentistry and prosthetic dentistry.
43. Classification of steam sterilizers: by design, heating method, control. Installations for radiation sterilization of medical instruments, suture material and pharmaceuticals with an electron accelerator and gamma rays.
44.Oral care products. Toothbrushes, toothpastes, mouthwashes and irrigators.
Pharmaceutical care for the dispensing of oral care products.
45.Cosmetics. Classification of cosmetic products. General requirements for cosmetic products.
Packaging, labeling and storage of cosmetic products.
46. General characteristics of natural and synthetic polymers and plastics based on them (definition, composition).Classification of plastics by purpose and composition. Information on the technology of their manufacture.
47.Product types, assortment of tools and equipment used when working with plaster. Tools for skeletal traction. Tools used in osteosynthesis.
48. Product analysis of inspection, endoscopy and introscopic devices.
49.Sterilization equipment (steam sterilizer, air sterilizer, gas sterilizer, sterilization boxes, etc.).
50. Protection of the pharmaceutical market from counterfeit, substandard medicines and medical devices.

12. RECOMMENDED LITERATURE

Main literature:

1. Pharmaceutical and medical commodity science: lecture texts for students of the Faculty of Pharmacy of full-time, part-time and distance learning / L. M. Unguryan, O. A. Stepanova, and others; ed. L. M. Unguryan // – Odesa: ONMeDU, 2020- 216 p.- Ukrainian.
2. Pharmaceutical and medical commodity science: a teaching and methodological manual for students of the Faculty of Pharmacy of full-time, part-time and distance learning / L. M. Unguryan, O. I. Belyaeva, O. A. Stepanova, Kh. Yu. Voloshchuk. ed. L. M. Unguryan // – Odesa: ONMeDU, 2025. - 162 p. - Ukrainian language.

3. Pharmaceutical and medical commodity science: an atlas for students of the Faculty of Pharmacy of full-time, part-time and distance learning / L. M. Unguryan, O. A. Stepanova, and others; ed. L. M. Unguryan // – Odesa: ONMeDU, 2020- 30 p.- Ukrainian.
4. Medical and pharmaceutical commodity science: a textbook for students of higher educational institutions / I.I. Baranova, S.M. Kovalenko, D.V. Semeniv and others. - Kharkiv: National University of Physics and Technology: Golden Pages, 2017. - 320 p.
5. Medical and pharmaceutical commodity science: a textbook for students of higher educational institutions / I.I. Baranova, S.M. Kovalenko, Y.O. Bespala, T.V. Dyudyun, S.O. Mamedova. – Kh.: NPhU: Original, 2016- 304 p.
6. Commodity science at a pharmaceutical enterprise; a teaching aid for applicants for higher education of the second (master's) level in the specialty "Pharmacy" / I.I. Baranova, S.M. Kovalenko, S.V. Breusova and others. -Kharkiv: National University of Pharmacy, 2018.-160 p.
7. Gromovyk B. P. Practical course on medical and pharmaceutical commodity science. Part 2. Pharmaceutical commodity science: a textbook for teachers / B.P. Gromovyk, N.B. Yarko, I.Ya. Gorodetska. - Lviv: Prostir M, 2018. -139 p.
8. Medical and pharmaceutical commodity science: teaching manual. / O.B. Kalushka, T.A. Groshovyi, A.V. Znayevska, M.B. Demchuk. - Ternopil: TSMU, 2017. - 484 p.
9. Fundamentals of medical and pharmaceutical commodity science: Teaching and methodical manual for higher medical (pharmaceutical) institutions. Approved by the Ministry of Health / O.G. Moroz, Zh.V. Osinska and others. — K., 2018. — 68 p.
10. Fundamentals of pharmaceutical law. Album of schemes: a teaching aid for students of higher educational institutions / O.O. Grin. -Uzhgorod: Publishing house of FOP Sabov A.M., 2020. - 211 p.
11. Medical and pharmaceutical commodity science: methodological recommendations for independent work / I. I. Baranova, S. V. Breusova, S. M. Kovalenko and others. – Kh.: National University of Physics, 2017. – 140 p.

Additional literature:

12. State Pharmacopoeia of Ukraine / State Enterprise “Ukrainian Scientific Pharmacopoeial Center for the Quality of Medicinal Products”. — 2nd ed. — Supplement 2. — Kharkiv: State Enterprise “Ukrainian Scientific Pharmacopoeial Center for the Quality of Medicinal Products”, 2018. — 336 p.
13. Organization of the activities of pharmacies to provide the population and healthcare institutions with medicines and pharmacy products Part 1: Textbook for full-time students / L.M. Unguryan, O.I. Belyaeva, M.S. Obrazenko and others. // Ed. L.M. Unguryan. – Odesa: Odessa National Medical University, 2020. - 92 p. Language: Ukrainian.
14. DSTU, TU, FS, TFS for medical devices.
15.

13. ELECTRONIC INFORMATION RESOURCES

1. Legislation of Ukraine [Electronic resource]. - Access mode: https://zakon.rada.gov.ua/laws/show/
2. Ministry of Health of Ukraine [Electronic resource]. - Access mode: https://moz.gov.ua/
3. State Service of Ukraine for Medicines and Drug Control (State Service of Ukraine for Medicines and Drug Control)https://www.dls.gov.ua/
4. State Expert Center of the Ministry of Health of Ukrainehttps://www.dec.gov.ua/
5. State drug formularyhttps://www.dec.gov.ua/materials/chinnij-vipusk-derzhavnogo-formulyara-likarskih-zasobiv/?role=ua
6. State Register of Medicinal Products of Ukraine. [Electronic resource]. – Access mode:http://www.drlz.com.ua/ibp/ddsite.nsf/all/shlist?opendocument

7. Compendium online. [Electronic resource]. – Access mode: https://compendium.com.ua/uk/
8. Weekly "Pharmacy" [Electronic resource]. – Access mode: https://www.apteka.ua/
9. Drug search database [Electronic resource]. – Access mode:https://tabletki.ua/
10. Drug search database [Electronic resource]. – Access mode: https://likicontrol.com.ua/
11. Rx.ua —drug equivalence guide[Electronic resource]. – Access mode:https://rx.ua/
12. Harmonized System (HS) Codes https://www.trade.gov/harmonized-system-hs-codes https://eltident.com/wp-content/uploads/2016/12/41_suturmanual-5.pdf
13. ISO 7000:1989, Graphical symbols for use on equipment — Index and synopsis.
14. European Pharmacopoeia. https://www.edqm.eu/en/european-pharmacopoeia-ph-eur-10th-edition
15. U.S. Food and Drug Administration. https://www.fda.gov/
16. World Health Organization (WHO) i https://www.who.int/
17. European Medicines Agency (EMA) https://www.ema.europa.eu/en
18. European Directorate for the Quality of Medicines and HealthCare (EDQM), https://www.edqm.eu/
19. ISO 13485:2003 Medical devices – Quality management systems [Electronic resource]: 15. Requirements for regulatory purposes. – Retrieved from: http://www.iso.org/iso/catalogue_detail?csnumber=36786. (Reference date of 10.12.2017).