MINISTRY OF HEALTH OF UKRAINE

NATIONAL UNIVERSITY OF PHARMACY

APPROVED
Deputy Chairman of the Admissions Committee

_____Inna VLADYMYROVA

«25» April 2025

PROGRAM
of professional test for admission to study according to the educational program «PHARMACY»

(for foreign citizens and stateless persons, who have a basic based on NRQ6 Pharmacy in the specialty 226 "Pharmacy/Pharmacy Industrial Pharmacy" (EPP Pharmacy))

Specialty I8 Pharmacy
(specialization I8.01 Pharmacy)

Areas of knowledge I Health care and social security

Level of higher education - second (master's)

Educational degree - master's degree

Kharkiv, 2025

EXPLANATORY NOTE

The program is designed for foreign citizens and stateless persons who enter on the basis of NRQ6 Pharmacy in specialty 226 "Pharmacy/Pharmacy industrial pharmacy" (EPP Pharmacy) specialty I8. Pharmacy, specialization I8.01.Pharmacy.

The professional entrance test determines the level of basic theoretical knowledge of applicants in the following educational components: pharmaceutical chemistry, pharmacognosy, pharmaceutical technology, pharmacology, organization and economics in pharmacy.

Testing is designed for two astronomical hours

CONTENT

PHARMACEUTICAL CHEMISTRY

1. Fundamentals of pharmaceutical analysis.
2. Pharmaceutical analysis. The nature and character of impurities. General and individual methods for detecting impurities. The value of physical constants as indicators of the relative purity of drugs. Chromatographic methods of detecting impurities. Development of requirements for research on the purity of medicinal substances.
3. Titrimetric and instrumental methods of analysis. The influence of the multifunctional nature of drugs on the choice of quantitative method.
4. Features of the analysis of inorganic drugs. Analysis of drugs that contain elements of group VII of the periodical system of D.I. Mendeleev.
5. Analysis of drugs that contain elements of group VI of the periodical system of D.I. Mendeleev.
6. Analysis of drugs that contain elements of V, IV, III groups of the periodical system of D.I. Mendeleev.
7. Analysis of drugs that contain elements of group II of the periodical system of D.I. Mendeleev.
8. Analysis of drugs that contain elements of groups I, VIII of the periodical system of D.I. Mendeleev.
9. Analysis of drugs, derivatives of carboxylic acids of the aliphatic series and their salts.
10. General provisions and articles of the State Pharmacopoeia on the study of the quality of organic drugs. Determination of physical constants of organic substances to confirm identification and relative purity. The value of physical and physico-chemical methods of analysis in the study of the quality of drugs of organic nature.
11. Analysis of drugs from the group of paraffins and halogenated saturated hydrocarbons of the aliphatic series.
12. Analysis of drugs, derivatives of alcohols, aldehydes and esters of the aliphatic series.

13. Analysis of drugs, derivatives of carboxylic and amino acids of the aliphatic series and their salts.
14. Analysis of drugs, amidated derivatives of carbonic acid.
15. Analysis of drugs, terpenoid derivatives.
16. Analysis of drugs, derivatives of phenols and aromatic amines.
17. Analysis of drugs, derivatives of aromatic acids.
18. Analysis of drugs derived from aromatic amino acids.
19. Analysis of drugs derived from sulfonic acids of the aromatic series.
20. Analysis of drugs derived from five-membered heterocycles.
21. Analysis of drugs derived from six-membered heterocycles.
22. Analysis of drugs derived from pyrimidine.
23. Analysis of drugs derived from condensed heterocycles.
24. Drugs from the group of alkaloids: general characteristics, classification. General methods of identification and quantification.
25. Analysis of drugs and drugs from the group of carbohydrates and glycosides.
26. Medicines from the group of vitamins: general characteristics, classification. Analysis of drugs and drugs from the group of vitamins of aliphatic, alicyclic, aromatic and heterocyclic structure.
27. Analysis of drugs from the group of antibiotics of alicyclic, aromatic and heterocyclic structure and their semi-synthetic analogues.

PHARMACOGNOSY

1. The subject of pharmacognosy. Purpose and tasks of pharmacognosy.
2. Methods of pharmacognostic analysis of MRM. The value of pharmacognosy in the practice of pharmacists.
3. Basics of procurement and standardization of medicinal plant raw materials. Raw material base of medicinal plants. Organization of procurement of certain groups of medicinal plant raw materials.
4. General characteristics of carbohydrates. Medicinal plants and raw materials containing polysaccharides.
5. General characteristics of lipids. Medicinal plants, raw materials and products containing lipids and lipoids.
6. General characteristics of vitamins. Medicinal plants and raw materials containing vitamins and glycosides.
7. General characteristics of phenolic compounds. Medicinal plants and raw materials containing simple phenols and their derivatives.
8. General characteristics of coumarins, chromones. Medicinal plants and raw materials containing coumarins and chromones.

9. Medicinal plants and raw materials containing flavonoids.
10. Medicinal plants and raw materials containing quinones.
11. Medicinal plants and raw materials containing tannins.
12. General characteristics of terpenoids. Analysis of essential oils.
13. Medicinal plants and raw materials containing monoterpenoids.
14. Medicinal plants and raw materials containing sesquiterpenoids.
15. Medicinal plants and raw materials containing aromatic compounds.
16. Medicinal plants and raw materials containing iridoids.
17. Medicinal plants and raw materials containing triterpenoids and saponins.
18. Medicinal plants and raw materials containing cardiac glycosides.
19. General characteristics of alkaloids. Medicinal plants and raw materials containing protoalkaloids.
20. Medicinal plants and raw materials containing typical alkaloids and pseudoalkaloids.
21. Medicinal plant raw materials containing different groups of biologically active substances.
22. Medicinal plants and raw materials used in homeopathy.
23. Medicinal raw material of animal origin

PHARMACEUTICAL TECHNOLOGY

1. Preparation of simple and complex powders with medicinal substances that differ in the prescribed amount, bulk mass and particle structure.
2. Preparation of complex powders with poisonous and potent substances. Trituration.
3. Preparation of complex powders with colored, fragrant and hard-to-grind substances.
4. Preparation of mixtures.
5. Preparation of concentrated solutions.
6. Preparation of internal drops.
7. Preparation of liquid dosage forms by diluting standard pharmacopoeial liquids. Non-aqueous solutions.
8. Solutions of highly molecular compounds. Colloidal solutions.
9. Suspensions.
10. Emulsions.
11. Infusions and decoctions from medicinal plant raw materials and extracts-concentrates.
12. Liniments and homogeneous ointments.
13. Combined ointments.
14. Preparation of suppositories in pharmacies.
15. Solutions for injections.
16. Isotonic and infusion solutions. Solutions for injections with thermolabile substances. Suspensions for injections.
17. Production of suppositories in the conditions of an industrial enterprise.

18. Production of tinctures in the conditions of an industrial enterprise.
19. Production of capsules in the conditions of an industrial enterprise.
20. Production of tablets in the conditions of an industrial enterprise.

PHARMACOLOGY

1. Medicinal prescription. Prescription rules. Functions of the components of the recipe. Methods of analysis of the structure and content of the prescription.
2. The content of pharmacology, its tasks and place among other pharmaceutical disciplines. The main stages of development of pharmacology. Principles of classification of medicines.
3. Dosage of drugs. Classification and determination of doses. Latitude of therapeutic action and therapeutic index (TI).
4. Pharmacodynamics. Factors influencing the pharmacodynamics of drugs. General concepts of pharmacokinetics.
5. Drugs that affect the peripheral nervous system.
6. Means that act mainly on the afferent nerves. Pharmacological characteristics of depressants: local anesthetics, coatings, adsorbents, astringents. Pharmacological characteristics of stimulants: irritants, bitters, preparations containing poisons of bees and snakes.
7. Drugs that affect the efferent nervous system: cholinotropic (cholinomimetics, anticholinesterases, M-cholinoblockers, ganglionic blockers, muscle relaxants) and adrenotropic drugs (adrenomimetics, adrenoblockers and sympatholytics).
8. CNS depressants: general anesthetics, ethyl alcohol, hypnotics, anticonvulsants, antiparkinsonian drugs, neuroleptics, tranquilizers, sedatives.
9. Pharmacological correction of pain: natural and synthetic narcotic analgesics, non-narcotic analgesics.
10. CNS stimulants: antidepressants, psychostimulants, analeptics, nootropic drugs and adaptogens.
11. Hormonal and antihormonal drugs: hormones of the anterior and posterior pituitary gland, thyroid hormones and antithyroid drugs, parathyroid hormone, adrenal cortex hormones, female and male sex hormones. Insulins. Oral hypoglycemic drugs. Prostaglandins.
12. Vitamin preparations: classification and pharmacological characteristics.
13. Drugs that affect metabolism.
14. Drugs that affect hematopoiesis, blood clotting and fibrinolysis.
15. Drugs that affect the function of the cardiovascular system: cardiac glycosides, antiarrhythmics, antianginals, antihypertensives, antiatherosclerotics, angioprotectors and antioxidants.
16. Drugs that affect kidney function. Diuretics.
17. Medicines acting on myometrium.

18. Agents acting on the function of the respiratory system. Respiratory stimulants. Antitussives of central (narcotic and non-narcotic) and peripheral action. Expectorants. Drugs that improve bronchial patency.
19. Drugs that affect the digestive system. Drugs that stimulate or reduce appetite. Emetic, anti-emetic, anti-nausea drugs. H_2-histamine receptor blockers. Antacids. Gastroprotectors. Drugs that regulate the motor function of the gastrointestinal tract. Drugs that affect the function of the pancreas. Cholagogues and hepatoprotective agents. Laxatives and drugs that relieves flatulence. Antidiarrheals.
20. Drugs that affect immunity: immunosuppressants, immunostimulants, antihistamines, antiserotonin, antibradykinin drugs.
21. Antiblastomic medicines.
22. Antidotes. Classification, mechanism of action of drugs and indications for use. Radioprotectors.
23. Antiseptics and disinfectants.
24. Synthetic chemotherapeutic agents.
25. Antibiotics. Antityberculous, antisyphilitic drugs.
26. Agents for the treatment of protozoal infections.
27. Antifungal drugs.
28. Anthelmintics.
29. Antiviral drugs.

ORGANIZATION AND ECONOMY OF PHARMACY

1. Basic principles of the organization of pharmaceutical care and services to the population. National drug policy – goals and directions of implementation.
2. Organization of activities of pharmacies as health care institutions in accordance with the requirements of Good Pharmacy Practice (GRR). Pharmacy –- tasks, functions, classification.
3. Organization of non-prescription dispensing of medicines.
4. Organization of prescription drug dispensing.
5. Organization of the production of medicinal products in the conditions of a pharmacy. The procedure for determining the cost of medicinal products manufactured according to individual prescriptions.
6. Organization of drug quality control in pharmacies.
7. Organization of the work of the pharmacy with stocks of goods.
8. Organization of supply of pharmacy establishments with pharmacy assortment products.
9. Accounting and reporting system for pharmacies.
10. Basics of accounting in pharmacies.
11. Accounting for the receipt of goods and material values in the pharmacy.
12. Expenditure operations on inventory items. Retail and wholesale turnover. Operations on other types of expenditure of goods in a pharmacy.

13. Accounting for movement of other assets (material values).
14. Accounting for cash flows and settlement transactions.
15. Remuneration system for pharmacy workers.
16. Fund of working time and labor and salary indicators, their definition.
17. Inventory of goods and material values in pharmacies.
18. Basics of pharmaceutical economy. Characteristics of the main indicators of the pharmacy.
19. Analysis and planning of the turnover of a pharmacy.
20. Analysis and planning of the arrival of goods in the pharmacy.
21. Analysis of pharmacy income and expenses.
22. Analysis of profit and profitability of a pharmacy.
23. Basics of pricing for medicinal products and medical products.
24. Theoretical foundations of pharmaceutical information.

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EVALUATION CRITERIA

The answer is evaluated on a scale, based on the maximum possible amount – 200 points for 30 test tasks.

Each exam ticket contains 25 closed tests and 5 open tests.

The answer to the closed type test is evaluated:

4-3 points (maximum score) – the task is completed completely and correctly;

2-1 points – the answer is incomplete or contains correct and incorrect answers;

0 points – the task was not started or the task was performed incorrectly.

Open-ended tests (situational problems, computational problems or structural-logical schemes) are evaluated:

20 points – maximum score for a completely and correctly completed task, a clearly and competently written reaction equation, the necessary calculations are given, the correct answer is obtained with an explanation of the sequence of actions;

19-17 points – the task is completed correctly, but minor inaccuracies are assumed, an irrational way of solving the problem is chosen, there are unnecessary calculations;

16-14 points – at least half of the task is completed, while no significant errors are made in writing chemical formulas and equations, calculation formulas;

13-11 points – at least half of the task is completed, while errors are made in writing chemical and calculation formulas, reaction equations, nomenclature, units of measurement of the initial and obtained results;

10-8 points – at least half of the task has been completed, while significant errors have been made that cast doubt on the results obtained, primarily in writing chemical and calculation formulas, reaction equations, nomenclature, units of measurement of starting materials, etc.;

7-5 points – less than half of the task has been completed, while significant errors have been made, ignorance of nomenclature and calculation formulas has been revealed, errors have been made in calculations and conclusions;

4-1 points – the task has not been completed, but it has been started and intermediate calculations have been made;

0 points – if the task has not been started

The maximum number of points that an entrant can receive as a result of a written test is 200 points. Member of the commission Applicants who received 100 points or more according to the results of written testing are allowed to participate in the competition.

The program is considered and approved at the meeting of the Admissions Committee
Protocol № 8 of April, 25, 2025.

Chair of the Subject Commission, professor **Hanna PANFILOVA**

Executive secretary of Admissions Committee, associate professor **Oleg KRYSKIV**