

**MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE**  
**SUMY NATIONAL AGRARIAN UNIVERSITY**  
**FACULTY OF VETERINARY MEDICINE**

Approved by

Head of the admissions committee

*Volodymyr LADYKA*

2024



**PROGRAM**

**of professional entrance examinations for foreigners entering the second year  
(with the standard term of study) for the "Master" degree,  
specialty 211 "Veterinary Medicine"**

RECOMMENDED

Academic Council of the Faculty of Veterinary

Medicine, Protocol No. \_\_\_ dated \_\_\_ 2024

Chairman of the Scientific Council of the FVM

*Oleksandr NECHIPORENKO*  
Oleksandr NECHIPORENKO

Chairman of the professional attestation  
commission

*Oleksandr NECHIPORENKO*  
Oleksandr NECHIPORENKO

Sumy - 2024

Program of professional entrance examinations for foreigners entering the second year (with the standard term of study) of Master's degree, specialty 211 - Veterinary medicine - 2024 – 9 p.

The program was prepared by:

**Nechiporenko O.**, Phd in Vet, Associate Professor, Dean of the Faculty of Veterinary Medicine of Sumy NAU.

**Ulko L.**, Doctor of Veterinary Sciences, Professor, Head of the Department of Therapy, Pharmacology and Clinical Diagnostics

**Stotsky O.**, Phd in Vet, Associate Professor of Surgery

**Rebenko H.**, Phd in Vet, Associated professor Epizootiology and Parasitology Chair

**Sergienko V.**, Executive Secretary of the Admissions Committee

Approved by the Academic Council of the Faculty of Veterinary Medicine

Protocol number \_\_\_ from \_\_\_\_\_ 2024

Chairman of the Faculty \_\_\_\_\_ O.Nechiporenko

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## INTRODUCTION

Modern trends in the training of veterinary medicine doctors provide for graduate education, part of which is the acquisition of a bachelor's degree, and the next one is the acquisition of a "Master's" educational level at the university.

The task of the program is to help prepare on relevant topics for answering the test questions of the professional entrance examination.

The program also contains an explanation of the form of the written professional test and the criteria for evaluating the answers to the test questions.

To the replenishment contest groups of second-year graduates of the " Master " degree from persons who have bachelor's degrees of another specialties .

The purpose of the introduction testing - checking compliance knowledge , abilities and skills entrants software requirements , clarification competences and assessment degree preparedness entrants to obtain the " Master's " OS in the specialty 211 " Veterinary Medicine". Entrant must possess knowledge that provided for the program full general secondary education in chemistry , biology , zoology and genetics. Because educational the " Veterinary Medicine" program provides study parts professional veterinary disciplines , to applicants at the entrance exams trace to demonstrate also knowledge of anatomy , physiology , cytology , histology and embryology .

### 1. List of topics for training in disciplines

#### 1. Chemistry

- 1.1. The main ones chemical concept. Chemical reactions.
- 1.2. The structure of atoms and elements ions.
- 1.3. Periodic law and periodic system of chemicals elements .
- 1.4. Chemical connection. Mixtures substances. Solutions .
- 1.5. general information about non-metallic elements and non-metals .
- 1.6. general information about metal elements and metals.
- 1.7. Oxides . Basics . Acids . Salt . Amphoteric compounds . Connection between classes inorganic compounds .

- 1.8. Theoretical foundations organic chemistry . Alkanes . Alkenes . Alkynes . Aromatic hydrocarbons . Benzene . Alcohols . Phenol. Aldehydes . Carbon acids .
- 1.9. Esther . Fats . Carbohydrates . Amen . Amino acids . Squirrels . Synthetic high molecular weight substances and polymers materials for them based on

## 2. Zoology

- 2.1. Regularities individual development animals. Methods evaluations animals according to exterior and interior and constitution .
- 2.2. Principles and methods selection and selection animals. Genetic parameters selection , methods dilution animals and organization and planning breeding work. Regularities inheritance economically useful signs. Schemes crossing and hybridization in animal husbandry .
- 2.3. Features digestion and metabolism substances in different species and ages groups animals.
- 2.4. The role of nutritional , mineral and biological active substances in the body , their impact on physiological state and performance animals.
- 2.5. Physical , chemical , biological properties and hygienic water requirements . Hygienic feed and feeding requirements for animals. Hygienic control of design and operation livestock premises .
- 2.6. Origin and domestication big horned livestock Biological and economic features big horned livestock. Biological , technological and economic assessment rocks that bred in Ukraine .

## 3. Zoology

- 3.1. Bacteria . General characteristics of bacteria . Meaning in nature and in life a person
- 3.2. Organisms and environment existence Environment existence and its factors . Resettlement plants , fungi , bacteria and their role in ecosystems . Protection of nature
- 3.3. Animals . Animal world ingredient part of nature Variety animals and their classification . The role of animals in life a person Variety animals
- 3.4. The simplest . General characteristics and diversity the simplest - residents fresh water bodies (amoeba, proteus, euglena green, infusoria slipper), seas ( foraminifera and radiolaria ) and soil . Parasitic protozoa ( dysenteric amoeba, malarial plasmodium etc. ). The role of protozoa in ecosystems and their meaning for a person .

- 3.5.** Multicellular . General characteristics and diversity multicellular animals  
Sponge type. General characteristics, role in nature and significance for humans .  
Type Intestinal . General characteristics and diversity intestinal cavity . The role  
of intestinal worms in ecosystems and their importance for humans . Protection of  
sponges and intestinal cavities .
- 3.6.** Worms Type Flatworms : general characteristics, variety . Roundworms :  
general characteristics, variety . The role of ringworms worms in ecosystems .  
Meaning for a person .
- 3.7.** Arthropods . General characteristics of the Arthropoda type . Class Crustaceans  
: general characteristics of the class . Class Arachnids : general characteristics of  
the class . Class Insects : general characteristics of the class . Features  
development Insect behavior . A variety of insects.
- 3.8.** Mollusks . General characteristics, variety molluscs The role of molluscs in  
ecosystems , them meaning for a person .
- 3.9.** Fish . General characteristics of the Chordovy type . Subtypes : Cranial and  
Cranial ( Vertebrate ). General characteristics of the subtype Cranial ( Vertebral ).  
Class Cartilage fish : general characteristics of the class , features processes life  
activities , behavior , diversity cartilaginous fish Role in ecosystems and economy  
value cartilaginous fish Class Bony fish : general characteristics of the class ,  
features processes life activities . Behavior and seasonality phenomena in life fish  
Variety bone fish Role in water ecosystems . Value fish in life a person Rybne  
economy Protection fish
- 3.10.** Reptiles . General characteristics of the class Reptiles . Features processes life  
activities and behavior . Seasonal phenomena in life reptiles Variety reptiles The  
role of reptiles in ecosystems , them meaning for a person . Protection reptiles
- 3.11.** Birds General characteristics of the Birds class . Features life activities birds  
Lynx adaptability to flight and various environment life Variety birds  
Reproduction and development birds Seasonal phenomena in life birds Behavior  
birds : arrangement nests , matrimonial behavior , care for offspring. flights birds  
The role of birds in ecosystems . Their meaning for a person . Protection birds  
Poultry breeding .
- 3.12.** Mammals . General characteristics of the class . Origin and systematization  
class mammals Advantage warm-bloodedness , adaptation to living conditions .  
The structure of the skin , its derivatives , skeleton and internal organs . Features  
of ontogenesis. Value mammals in the world biogeocenosis . Protection mammals

#### 4. Genetics

- 4.1.** The subject of genetics: concepts heredity and variability . Heredity and  
variability . A sign is the main concept in genetics . Classification signs , their

features . Concept heredity. Variability : its classification and characteristics species.

- 4.2. Cytogenetics. The cell is the material basis of heredity . The role of the nucleus and cytoplasm ( her organelle ) in transmission hereditary information . Chemical composition and morphology of chromosomes. Types of chromosomes. Autosomes and sex chromosomes . Dutchness sex chromosomes.
- 4.3. Concept of karyotype and its anomalies . Methods study karyotype and structure kariogram , idiogram . Cytogenetic control in breeding animals. Mitotic cycle. Characteristics of the stages interphase . Distribution genetic material during division, cells mitosis and meiosis. Genetic and biological materiality mitosis and meiosis. Regularities inheritance signs during sex reproduction ( Mendelism ) .
- 4.4. Hybridological analysis . Dominance and recessiveness . The concept of genotype and phenotype. Modern genetic terminology and symbolism . Regularities inheritance qualitative and quantitative signs. Kinds crossing : monohybrid , dihybrid .
- 4.5. Chromosomal theory heredity. The law of coupling inheritance signs. Gender genetics . Types of chromosomal determination gender. The symbols of the designation sex chromosomes, their species differences and genetics features . Homogametic and heterogametic sex. Pathology of sex chromosomes. Balance sheet theory definition gender , chromosomal and physiological gender balance .
- 4.6. Molecular genetics. Models structures of DNA: chemical and spatial . Replication DNA molecules . Features of RNA models ( chemical and spatial structure ) , them functions . Biological the importance of DNA and RNA in the protein synthesis system in the definition signs and properties body. Features changes polypeptides upon completion broadcasting .
- 4.7. Genetic code, his features and significance . Regularities changes hereditary information . Mutational changeability. Concepts of mutations and mutagenesis, them a place in the general schemes modern classification variability .
- 4.8. Immunogenetics is the science of polymorphism specific antigens . The concept of the immune system and factors immunity. Genetic systems of blood and patterns their inheritance. Group system blood in agricultural animals and their nomenclature.

## **2. Form of writing professional test**

The professional test is conducted in the form of a written exam. Exam tickets consist of four theoretical questions in different disciplines and one practical task

(situational task). Thus, each ticket covers five of the above seven disciplines of the basic training of a veterinary medicine doctor.

### 3. Criteria evaluations answers professional test

The maximum number of points scored by a master's degree in the exam for five professional tasks is 200 points.

When evaluating the work, the answer to each theoretical question is evaluated separately at a maximum of 5 points, the situational task at a maximum of 10 points, and then the total number of points is calculated and converted into a 200-point scale.

Evaluation criteria for theoretical questions:

- 5 points - is scored in the case when the content of theoretical questions is deeply and comprehensively disclosed;
- 4 points - is scored in the case when the content of the theoretical questions is mainly revealed, but when explaining some aspects of the question, there is not enough depth and argumentation, and some insignificant inaccuracies and minor errors are allowed;
- 3 points - in general, not bad, but without justification and argumentation, with a significant number of shortcomings;
- 2 points - partially mastered the material, unable to logically explain the content of the question;
- 1 point - poor mastery of the material;
- 0 points - does not know the material or does not have an answer to the question.

Evaluation criteria of the situational task:

- 10 points – awarded when the situational task is completely and successfully completed;
- 9 points – awarded when the task is completely completed, insignificant errors are allowed;
- 8 points - the task is completely completed, but the teaching of some aspects lacks sufficient depth and argumentation;
- 7 points – generally correct performance of the task, reasoned answers, but with a small number of significant errors;
- 6 points - not bad, but without thorough analysis and argumentation, with a significant number of shortcomings. Performance meets minimum criteria;
- 5 points – approaches the solution of the situational task superficially, without justification;
- 3-4 points – does not show medical thinking when solving a situational task;
- 1-2 points – attempts were made to solve the situational task;
- 0 points – there are no attempts to perform the situational task.

Amount of whites for	Competition score	Amount of whites for	Competition score	Amount of whites for	Competition score
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answers		answers		answers	
30	200	20	133	10	67
29	193	19	127	9	60
28	187	18	120	8	53
27	180	17	113	7	47
26	173	16	107	6	40
25	167	15	100	5	33
24	160	14	93	4	27
23	153	13	87	3	20
22	147	12	80	2	13
21	140	11	73	1	7

Mistakes include incorrect interpretation of concepts and terms, incomplete or insufficiently substantiated answers, incorrectly solved problems, and given examples that reveal a wrong understanding of the topic of the question. Disadvantages may be the inability of an applicant for a master's degree to compare, analyze, and justify.

Entrants who scored at least 100 points on the entrance exam are allowed to participate in the competition.