MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

SUMY NATIONAL AGRARIAN UNIVERSITY

Department of Anatomy, Normal and Pathological Physiology

«APPROVED»
Head of the Department of Anatomy, normal Pathophysiology, Dr. vet sciences, prof.

_____ ***(Kambur M.D.)***

"25" May 2020

SYLLABUS

PN.01 ANATOMY OF DOMESTIC ANIMALS (Vet.)

Specialty - 211- Veterinary Medicine

Faculty of Veterinary Medicine

Educational program "Veterinary Medicine"

2020-2021 academic year

The work program of the anatomy of domestic animals (vet.) for students in the **Specialty - 211- Veterinary Medicine**.

Vendor:

Dr. vet sciences, Prof. Kambur M.D. _____

HP wet. BC. Assoc. Livoshchenko Y.M._____

The work program reviewed by the department of anatomy, normal and pathological physiology

Minutes from the № 17 from "25" in May 2020

Head of the Department of Anatomy, normal Pathophysiology, Dr. vet sciences, prof. _____ (Kambur MD)

Agreed:

Guarantor of the educational program _____(D. Vet. S., Prof. Ulko LG)

Dean of the Faculty veterinary Medicine _____ (HP wet. BC. Assoc. Nechiporenko O.L.)

Methodist of the Department of Education Quality, licensing and accreditation _____ (N. Baranik)

Registered in the electronic database: Date: 03.07. 2020.

1. **Specification of educational Discipline**

<table>
<tr><td rowspan="2">Name of indicators</td><td rowspan="2">Areas of expertise, training direction, education and qualification level</td><td colspan="3">Characterization of discipline</td></tr>
<tr><td colspan="3">full-time education</td></tr>
<tr><td rowspan="2">Credits – 11</td><td rowspan="2">Areas of expertise:
21 «Veterinary Medicine»</td><td colspan="3" rowspan="2">Normative.</td></tr>
<tr><td rowspan="11">Direction of training:

Specialty - 211- Veterinary Medicine</td></tr>
<tr><td>Module – 9</td><td colspan="3">Yea</td></tr>
<tr><td>Module content: 10</td><td>2019-2020</td><td>2019-2020</td><td>2020-2021</td></tr>
<tr><td rowspan="4">General amount of hours - 330</td><td colspan="3">Course</td></tr>
<tr><td>1</td><td>1</td><td>2</td></tr>
<tr><td colspan="3">Semester</td></tr>
<tr><td>1</td><td>2</td><td>3</td></tr>
<tr><td rowspan="6">A week's hours for the daily form of studies: audience – 4/5/2
independent work of student – 4/5/2</td><td rowspan="6">Educational qualification:
Master</td><td colspan="3">Lectures</td></tr>
<tr><td>30 hours</td><td>16 hours</td><td>16 hours</td></tr>
<tr><td colspan="3">Laboratory and practical</td></tr>
<tr><td>30 hours</td><td>60 hours</td><td>16 hours</td></tr>
<tr><td colspan="3">Independent work</td></tr>
<tr><td>60 hours</td><td>74 hours</td><td>28 hours</td></tr>
<tr><td colspan="3">Type of control:</td></tr>
<tr><td>credit</td><td>credit</td><td>Examina-tion</td></tr>
<tr><td colspan="3">Computer testing, tests, oral interviews using native preparations</td></tr>
</table>

Note: Correlation of amount of o'clock of audience employments makes to independent and work (%):
for the daily form of studies - 51/49 (168/162)

The aims and objectives of the discipline

***Aims*:** The course examines the structure of the body of domestic animals in close connection with its functions and development. Knowledge of the subject form the basis for the study of physiology, histology, obstetrics, clinical diagnosis, therapy, surgery, veterinary and sanitary examination and other parts of Veterinary Medicine.

Objective: the study of the anatomy of domestic animals has the following objectives:

1. Examine the structure of the body of domestic animals in the species and age aspects of its development and the relationship with the environment.
2. Determine the location and interconnection of one another, to give a correct notion of the function of various organs, systems and functioning of the organism as a whole.
3. Capture skills preparation for learning the relationship and relative positions of different organs - muscles, joints, blood vessels, nerves, lymph nodes, etc.

A study of the discipline the student must:

Know:

Module content 1:

- The concept of anatomy as a science. The structure of the bone as the body. Types of bones. General characteristics of the skeleton. Axial skeleton. The structure of the bones of the spinal column. Features of the structure of the vertebral trunk and their specific differences.

Module content 2:

- The skeleton of the limbs. General of the structure, development zones and parts of skeletons of free limb in the way of change in mode of travel from the stop to the fingers - and phalanx-move. Structure and meaning in limb support, locomotion as open kinematic chains.

Module content 3:

- The skeleton of the head (skull). General characteristics of mammalian skeletal head and its functional role, environmental and historical conditioning. Species and age characteristics of animal skull. External and internal structure of the skull. The structure of the mandible and hyoid bone. Specific features.

Module content 4:

- General Syndesmology. Morph-functional characteristics of the compound bone (bone connection types) and their classification. The structure of the axial skeleton and joints of the skeleton of the free extremities.

General characteristics of skin and its derivatives. The skin its structure. The structure of the mammary glands, hoof trimming, the flesh of their species and age characteristics due to environmental and loading conditions.

Module content 5:

- General of the structure and meaning of the skeletal muscles. The structure of both muscle body. Patterns of distribution of somatic muscles in the torso, head

and limbs in relation to the skeleton. Features of the structure and placement of the muscles of the trunk, neck, chewing and facial muscles. General of the structure, development and deployment of limbs. Fascia, blocks, sezamoid bone, synovial bags, tendon and synovial sheath and their structure and their role in statics and locomotion.

Module content 6:

- The concept of digestion unit and its division into departments. Separation of cavities on the site. The value of the unit of digestion in the development and functioning of the organism. Anatomical composition of the digestive system and the value of its parts. General description of the structure of the digestive system of specific features and topography.
- Anatomical structure of common structural patterns of the respiratory system. Species and age characteristics of the respiratory system. Morphological similarities and functional differences of urination and reproduction. Topography, age and specific features of the urinary system.

Module content 7:

- General features of the structure, development and relationships integrating systems. The circulatory system. Heart: structure, meaning, topography, age and specific features. Basic laws accommodation vessels. Blood circulation in the fetus. The arteries of the greater circulation.
- Circulation of individual organs. The veins of the systemic circulation. The lymphatic system. General morph - functional characteristics and anatomical structure of the system and its development. General principles of location of lymph nodes, blood vessels, ducts. The body's immune and blood. Anatomical structure, morph-functional characteristics and basic data on onto- and phylogeny of the blood. Species and age characteristics of the structure, topography, basic data on onto- and phylogeny of the endocrine glands.

Module content 8:

- Anatomical structure and morph-functional characteristics of the nervous system. Filo and ontogeny of the nervous system of division into departments. Principles of neural structure and feedback. Reflex and reflex arc. Central nervous system. Morph-functional characteristics of the spinal cord and its relationship with the brain and periphery. Shells and shell space below. Structure and development of the brain. Pathways of the spinal cord and brain.
- Formation of the spinal nerves, patterns of structure, course and branching. Cranial nerves. The autonomic nervous system and its morph-functional characteristics and separation. Anatomical structure and morph-functional characteristics of the senses and their classification. How the senses with the centers of the brain and spinal cord. Morph-functional characteristics of the organs and systems of different types of poultry and their specific features.

Module content 9:

- Anatomical structure and morph-functional characteristics of the senses and their classification. Filo and ontogeny of the senses. How the senses with the centers of the brain and spinal cord. Features of the structure of their systems and devices and poultry;

Students should be able to:

Module content 1:

- Find all areas and areas of the body in animals find in the preparation of the bones of the axial skeleton, bones reveal specific features and describe them.

Module content 2:

- Find in the preparation of the bones of the skeleton free, to identify specific features of bone and describe them.

Module content 3:

- Find the skull in preparation and their components, to identify specific features of bone and describe them.

Module content 4:

- Find the link to the sample components of axial and peripheral skeleton, bones reveal specific features and describe them.
- Find the skin layers of the skin and derived, identify species and age characteristics as skin and its derivatives.

Module content 5:

- To find muscle preparation, identify specific features to find the point of fixing the muscles and their functions.

Module content 6:

- To find the body parts of the apparatus digestive organs and their components, to identify specific features of topography to know.
- To find the body parts of the apparatus of respiration and urinary system, their bodies and components, to identify specific features of topography to know.

Module content 7:

- Find all the major vessels and branches that branch off from them. To find the components of the heart in preparation.
- Find all the major lymph vessels and nodes. To know the structure of the blood and organs of the endocrine system.

Module content 8:

- Find spinal, brain on drugs and their components, to identify specific features.
- Find on drug and animal nerves and their branches, allow their topographical features.

Module content 9:

- To know the structure of the analyzers. Finding ingredients for the preparation of the senses to detect their specific features. To determine the species identity of some of poultry, to determine the location of individual organs in different parts of the body of various species of birds.

The program of discipline

Official approved by the Academic Council SNAU Protocol № 11 dated July 2, 2016 yea.

1 course, 1 semester.

Module content 1. AXIAL SKELETON

Theme 1: **Biomorphological of the structure and development of the organism. Osteology. The structure of the axial skeleton.**

The concept of anatomy as a science. Place anatomy among biological and veterinary sciences. Milestones anatomy. Value anatomy of domestic animals in veterinary training. The history of anatomy as a science.

The body as a biological entity. The main manifestations of life. Structural elements of the animal body. Bodies of systems and devices. Major of the structure, operation and of the animal body; general principles of body structure of animals. the concept of onto - and phylogeny. the concept of the rule and its variants deviations (anomalies) in the structure and development of the animal body and its systems. Modern methods of research in anatomy. international anatomical nomenclature.

Objects and methods used in the study of the anatomy of domestic animals. anatomical planes and directions; parts and areas of the body of the animal. Skeletal structure of the division into sections. Bone as an organ (bone and cartilage, bone marrow, periosteum, endosteum) and its development. Types of bones in shape, structure, function and position. General characteristics of the skeleton structure of its and division into departments.

The spinal column and thoracic cage. Features spine and chest, their species and age differences. General of the structure and of the axial skeleton, its division into departments. The structure of complete bone segment and functional role of its elements. The phenomenon of reduction of bone.

Module content 2. PERIPHERAL SKELETON

Theme 2: The skeleton of the limbs.

Skeletal limbs of general characteristics. Girdle and parts of the free extremities. Origin foot-similar limbs, their modification due to the way the movement, life support type and (brake, finger-i phalanx-move). Species and age characteristics of the thoracic skeleton and pelvic limbs pets. Blood supply and innervation of bone.

Module content *3. SKELETON OF THE HEAD*.

***Theme* 3: Skeleton of the head.**

General description of the skeleton of the head and its division into departments. Paranasal sinuses and channels. Species, age and sex structure features of the skull bones.

Specific features of the skeleton head. Production of the hyoid bone. Ontogenesis and phylogeny skeleton head.

I course, II semester

Content module 4. **SYNDESMOLOGY. DERMATOLOGY.**

Theme 4: **Syndesmology.**

General characteristics of the joints of the bones. They phylo- and ontogenesis. General characteristics of the joints of the bones. Classification of joints Biomechanics of joints. Continuous connection of bones. Intermittent (synovial) compound bone. The development of bone joints.

The structure of the joints, their characteristics and classification. Value movements in the formation of joint and biomechanical characteristics of ligaments. Age-specific features and connectivity bones. Blood supply and innervation of the joints.

***Theme* 5: Dermatology.**

Morph-functional characteristic skin and its derivatives. The skin and its structure. The structure of the mammary glands, hoof trimming, pulp and other derivatives of the skin, their species and age characteristics of animals.

Blood supply and innervation of the skin and its derivatives. Philo-i ontogeny of the skin and its derivatives; Factors influencing the features of their structure i.

Derived skin. Types of hair, its structure and patterns of growth. Classification and structure of the glands of the skin. The structure of the breast. The structure of the hoof, hoof, the flesh of their species and age characteristics.

Module content *5.* MYOLOGY.

Theme 6: **Myology**

General characteristics of skeletal muscle. The relationship of the musculoskeletal system to other systems of the body. The muscles of your body as the nervous system. The structure of both muscle body. Types of muscles. Physical properties and chemical composition of muscles. Classification of muscles. *Auxiliaries of muscle*: fascia blocks sezamoid bone, synovial handbags, Tendon and synovial sheath and their structure. Fylo - and ontogeny muscles. Blood supply and innervation of muscles. *The muscles of the head,* torso and tail. General of the structure and location, species and age characteristics of the muscles of the head, spine, chest and abdominal walls. The muscles of the tail.

The muscles of the limbs. General morphological structural patterns of placement and limbs. Static unit extremities. The role of muscle in statics and dynamics animals. Species and age-related features of the muscles.

Module content *6.* SPLANCHNOLOGY.

***Theme* 7: Digestion Apparatus.**

Overview of the internal organs. The value of the internal organs in the development of organism i. Sharing in the structure and of the internal organs in relation to their function. Tubular and parenchymal organs. Overall, their development. Serous membranes and their derivatives. The division into sections and cavities site. The relationship of the internal organs of the body's other systems and environment. Blood supply and innervation of internal organs.

Anatomical composition of the digestive system; its division into departments, their value and location. Morphological characteristics of the functional structure of and i of digestive organs in onto-i phylogeny, species and age characteristics, the relationship with the conditions of feeding and the environment. *Home gut.* Structure, the development of the main features and gut. Vestibule of mouth organs own mouth, pharynx, and their importance in digestion; species and age characteristics *Foregut.* Development, structure and meaning of esophagus stomach and in single-chamber and multi-domestic animals, their topography. Classification stomachs. Structure functions and scar-net-book furrow. Specific features of the structure of the esophagus stomach and in domestic mammals. *Midgut.* Anatomical structure of the small intestine, its structure and developed. and glands associated shelving digestive glands of the small intestine, their structure, topography and features. *Hindgut.* Anatomical composition, structure, topography and development of the hindgut, age and specific features of the structure of domestic mammals.

***Theme* 8: Respiratory system.**

Breathing apparatus. Anatomical composition of the structure and of the respiratory system. related to their function. Specific features of the structure and age and placement of the respiratory system, the factors that cause them. Onto- and phylogenies respiratory, their relationship with the development of blood and other body systems environment.

***Theme* 9: Urogenital apparatus.**

Anatomical composition and characteristic urinary system, phylogenies and ontogenesis. The value of the urinary system to ensure functioning of the body and save the species. Development of the urinary system and their features. Anatomical composition of the urinary organs. Classification kidneys and available topography of the urinary organs in domestic mammals. Characteristics of the reproductive organs of male and female, structural features; and development topography. Species and age differences in structure and enlisted and genitals of males females. After learning aids digestive, respiratory and urogenital conduct autopsies different kinds of pets with demonstration of body cavities (mouth, nose, chest, abdominal, pelvic), serous membranes and their derivatives.

II course, III semester

Module content 7. Angiology.

Theme 10: **Structure of the heart. Blood circulation of the fetus and adult animal**

The structure of the heart. Topography, structure, blood supply, age and specific features of heart animals. Structure artery, veins and capillaries and their relationship. Basic laws of structure, speed, branching vessels large and small circulation. The concept of the collaterals, anastomoses collectors. **The arteries and veins of systemic circulation.**

Theme 11: **Lymphatic system.** Major of the structure and development of the vascular system and relationship with other systems of the body. Anatomical composition, morphological characteristics and functional circulatory system, its importance, species and age characteristics. Basic information about onto- and phylogeny.

Lymphatic system. The body's immune and blood. Endocrine glands. Morphological composition and functional characteristics of the lymphatic system. General principles of and location of lymph nodes, blood vessels, ducts and yix relationship with the venous system. Innervation of the circulatory and lymph.

Morphological characteristics of the data onto-and phylogeny of the blood and lymphoid organs (spleen, red bone marrow, lymph nodes, tonsils, lymphoid organs, thymus, etc.). they structure and topography, species and age characteristics.

Morphological characteristics of the endocrine glands and their classification by origin and function onto-and phylogenies. Specific features of the structure and age and topography endocrine glands (thyroid, parathyroid, adrenal, pituitary, pineal, and others.).

Module content 8. CENTRAL NERVOUS SYSTEM

Theme 12. Head of the nervous system

(spinal cord and the brain).

The division of the central and peripheral parts of their relationship. The principle of neural structure and feedback. Philo-i ontogeny of the nervous system.

The anatomical structure of the spinal cord and its membranes. How the spinal cord with the main and periphery. The structure of the main lobe development i. Shells brain. subshell spaces and their relationship. The functional role of the brain. Conductor paths spinal and brain. Blood supply of the brain.

Module content 9. PERIPHERAL NERVOUS SYSTEM

Theme 13: **Peripheral nervous system**.

General characteristics of the peripheral nervous system. Of the structure, course and branching of the spinal nerves. Formation of the spinal nerves.

Of the structure, formation of branching and cranial spinal nerves. Sharing in the structure of branching and distribution somatic, sympathetic and parasympathetic nervous system.

Theme 14: Peripheral Autonomic Nervous System.

The autonomic nervous system and its parasympathetic part and pretty functional and morphological features of the autonomic nervous system. Interaction divisions of the autonomic nervous system. The structure of the sympathetic nervous system. The structure of the parasympathetic nervous system.

Module content 10. ANALYZERS. AVIAN ANATOMY.

Topic 15: Sense organs

Classification and characterization of the senses. Filo and ontogeny senses. species and age features of their structure. How the senses with the centers of the brain and spinal cord. The structure of the organ of vision. The structure of the vestibulocochlear organs.

Topic 16: Avian anatomy.

Classification of birds. Features of the structure and functional loading of the skeleton of birds. Features of the structure and operation of the visceral systems.

Features of skin and muscular system of birds. Features of the structure and functioning of the digestive, respiratory and genitourinary systems of birds.

4. Structure of educational discipline

Names of the semantic modules and themes	Number of hours					
	daily form					
	Total	including				
		l	p	lab	ind	Ind. work
1	2	3	4	5	6	7
I year and I semester						
Module 1. AXIAL SKELETON						
Module content 1. Axial skeleton.						
Theme 1. Entry. Biomorphological conformities to law of structure to development of organism. Structure axial a skeleton.	**40**	8		12		20
Together after the module content 1	**40**	**8**		**12**		**20**
All the hours for the module 1	**40**	**8**		**12**		**20**
Module 2. PERIPHERAL SKELETON						
Module content 2. *PERIPHERAL SKELETON*						
Theme 2. Skeleton of the limbs..	**34**	4		**10**		**20**
Together after the semantic module 2	**34**	**4**		**10**		**20**
All the hours for the module 2	**34**	**4**		**10**		**20**
Module 3 SKELETON OF THE HEAD						
Module content 3. SKELETON OF THE HEAD.						
Theme 3. Structure of skull.	**32**	4		8		20
Together after the semantic module 3	**32**	**4**		**8**		**20**
All the hours for the module 3	**32**	**4**		**8**		**20**
Module 4. SYNDESMOLOGY. DERMATOLOGY.						
Module content 4. SINDESMOLOGIY. DERMATOLOGY						
Theme 4. Syndesmology.	4	4				
Theme 5. Dermatology.	6	6				
Together after the semantic module 4	**10**	**10**				
All the hours for the module 4	**10**	**10**				
Module 5. MYOLOGY						
Module content 5. Myology.						
Theme 6. Myology.	4	4				
Together after the semantic module 5	**4**	**4**				
All the hours for the module 4	**4**	**4**				
ALL HOURS AFTER 1 SEMESTR	**120**	**30**		**30**		**60**

I year II semester						
Module 4. SINDESMOLOGIYA. DERMATOLOGY.						
Module content 4. SINDESMOLOGIYA. DERMATOLOGY						
Theme 4. Syndesmology.	**24**			4		20
Theme 5. Dermatology.	24			4		20
Together after the semantic module 4	48			**8**		40
All the hours for the module 4	48			**8**		40
Module 5. MYOLOGY						**32**
Module content 5. Myology.						**32**
Theme 6. **Myology.**	**40**			20		20
Together after the semantic module 6	**40**			**20**		20
All the hours for the module 5.	**40**			**20**		20
Module 6. SPLANCHNOLOGY.						
Module content 6. Splanchnology.						
Theme 7. **The apparatus of digestion**	**22**	8		16		6
Theme 8. **Respiratory system.**	**6**	2		4		2
Theme 9. **Urogenital apparatus.**	**16**	4		12		6
Together after the semantic module 6.	**44**	14		**32**		14
All the hours for the module 6.	**44**	14		**32**		14
MODULE 7. *ANGIOLOGY.*						
Module content 7. Angiology.						
Theme 10. Structure of heart Blood circulation in the fetus and adult animals.	**2**	2				
Together after the semantic module 7.	**2**	2				
All the hours for the module. 7.	**2**	2				
ALL HOURS AFTER 2 SEMESTR	**90**	**16**		**60**		**74**

II year III semester						
MODULE 7. ANGIOLOGY.						
Module content 7. Angiology.						
Theme 10. Structure of heart. Blood circulation in the fetus and adult animals.	**4**			2		2
Theme 11. Vascular big blood circulation**.**	**6**	**2**		2		2
Theme 12. Lymphatic system. The bodies immune and hematopoiesis. Endocrine glands.	**12**	**2**		2		8
Together after the semantic module 7	**26**	8		6		12
All the hours for the module 7.	**26**	8		6		12
Module 8. CENTRAL NERVOUS SYSTEM						
Module content 8. Central Nervous System						
Theme 13. Central department of the nervous system.	**8**	4		2		2
Together after the semantic module 8	**8**	**4**		**2**		**2**
All the hours for the module 8.	**8**	**4**		**2**		**2**
Module content 9. Peripheral nervous system.						
Theme 14. Cranial and spinal nerves.	**6**	2		2		2
Theme 15. Vegetative nervous system.	**4**	2		2		
Together after the semantic module 9	**8**	4		4		2
All the hours for the module 9.	**8**	**4**		**4**		**2**
Module 10. ESTHESIOLOGY. AVIAN ANATOMY.						
Module content 16. Analysers. Avian anatomy						
Theme 16. Sense-organs.	**8**	2		2		4
Theme 17. Avian anatomy.	**12**	2		2		8
Together after the semantic module 10	**18**	2		4		12
All the hours for the module 10.	**18**	2		4		12
All the hours for 3 semesters	**60**	**16**		**16**		**28**
All the hours in track	**330**	**62**		**106**		**162**

5. Themes and plan of lecture employments.
I year I semester

№	Name of theme	Amount of hours
1	**Topic 1: Introduction to the anatomy of domestic animals** 1. The concept of anatomy as a science. 2. The place of anatomy among biological and veterinary disciplines. 3. The importance of the anatomy of domestic animals in the training of veterinary medicine. 4. Types of anatomy. 5. International anatomical nomenclature. 6. Modern methods of scientific research in anatomy.	2
2	**Theme 2: Biomorphological of the structure and development of the organism.** 1. The organism as a biological whole. 2. Structural elements of the animal organism. 3. Organs, systems and apparatus of organs. 4. Basic principles of animal body structure.	2
3	**Theme 3: Osteology. General characteristics of the skeleton.** 1. The structure of the skeleton and division into sections. 2. General characteristics of the skeleton, its structure i division into departments. 3. Spine difficult cage. 4. Features of the spine and chest.	2
4	**Theme 4: Structure axial a skeleton.** 1. General patterns of structure and development of the axial skeleton. 2. Division of the axial skeleton into sections. 3. The structure of the complete bone segment and the functional role of its elements.	2
5	Topic 5: **Characteristics of the musculoskeletal system.** 1. General laws of structure, development of skeletons of belts and links of free extremities on a way of change of a way of movement from a stop - to a finger - and phalanx walking. 2. The phenomenon of bone reduction. 3. The value of the thoracic and pelvic limbs in the support, locomotion as open kinematic chains.	2
6	**Topic 6: Skeleton of the extremities** **1.** The value of the thoracic and pelvic limbs in the support, locomotion as open kinematic chains. 2. Comparative anatomy of the extremities. 3. General patterns of bone structure of the extremities..	2
7	**Theme 7: Structure of skull.** 1. General description of the skeleton of the head and its division into departments. 2. Functions of the skull.	2
8	**Theme 8: Structure of skull.** 1. Distribution of the skull to departments. 2. Paranasal sinuses and channels.	2
9	**Theme 9: Syndesmology.** 1. Overview of bone joints. 2. Types of connections bones. 3. Structure of joints.	2
10	**Theme 10: Syndesmology.** 1. Characterization and classification of joints. 2. Meaning movements in the formation of joint and biomechanical characteristics of	2

	ligaments.	
11	**Theme 11: Structure of skin.** 1. General characteristics of skin and its derivatives. 2. Onto- and phylogenesis of a skin cover and their derivatives. 3. Structure of the skin.	2
12	**Theme 12: Derivative skins.** 1. Types of hair, its structure and patterns of growth. 2. Classification and structure of the glands of the skin.	2
13	**Theme 13: Derivative skins.** 1. The structure of the mammary glands. 2. The structure of hooves, hooves, crumbs and other skin derivatives. 3. Skin derivatives, their species and age characteristics in domestic animals.	2
14	**Theme 14: General description of the skeletal muscles.** 1. Overview of skeletal muscles. 2. The relationship of the musculoskeletal system with other systems of the body. 3. Muscle as a working body of the nervous system. The structure of body muscle. 4. Classification muscles. Types of muscles.	
15	**Theme 15: General description of the skeletal muscles.** 1. Physical properties and chemical composition of muscles. 2. Factors that influence the development, form, structure and nutritional qualities muscle. 3. The role of muscle in statics and dynamics animals. 4. Phylo- and ontogeny muscles.	2
	Together for 1 semester	**30**

I year II semester

№	Name of theme	Amount of hours
1.	**Theme 1: Overview of the internal organs. Home gut.** 1. Tubular and parenchymal organs. 2. Body cavities. Separation cavities in sections and plot. 3. Anatomical composition of the digestive system. 4. Structure, the function of the main features and gut. Vestibule of mouth, the bodies own mouth, pharynx, their importance in digestion; species and age characteristics	2
2.	**Theme 2: Front bowel.** 1. General description of the foregut. 2. Structure and meaning of esophagus stomach in domestic mammals. 3. Classification stomachs. 4. Departments in poly ventricle	2
3.	**Theme 3: Midgut.** 1. Anatomic composition of thin bowel, its structure and development. 2. Functions of thin department of intestine. 3. Stagnant and shelving digestive glands of the small intestine, their structure. 4. Topography and features in domestic mammals.	2
4.	**Theme 4: Hindgut.** 1. Anatomic composition, structure, topography and development of organs of back bowel. 2. Distributing of thick department of intestine. 3. Specific features of thick department of intestine. 4. Topography of thick department of intestine.	2
5.	**Theme 5: Respiratory system.**	2

	1. Anatomical composition of the structure of the respiratory system, related to their function. 2. Specific features of the structure of the respiratory system.	
6.	**Theme 6: Urinary organs.** 1. Anatomical structure and characteristics of the urinary system. 2. Classification and structure of kidney. 3. Development of urinary system and their features.	2
7	**Theme 7: Genitals.** 1. Characteristics of the reproductive organs of male and female. 2. Structure features, development and topography. 3. Species and age differences in structure and enlisted genitals of males and females.	2
8	**Theme 8: Heart. Circulation of blood in a fetus and adult animals.** 1. Topography of heart, him specific features 2. Structure of the heart and its significance. 3. Arteries of large and small circle of circulation of blood. 4. Circle of gate of circulation of blood 5. Circulation of the fetus.	2
	Together for 2 semester	16

II year III semester

№	Name of theme	Amount of hours
1	**Theme 1: Vascular system of large circle of circulation of blood.** 1. Structure of arteries, veins and capillaries, and them relationship. 2. Basic conformities to law of structure, motion, branching of vessels of large and small circles of circulation of blood 3. Notion of collateral, anastomoses. 4. Veins of large and small circle of circulation of blood.	2
2	**Theme 2. Lymphatic system. The body's immune and blood. Endocrine glands.** 1. Morphological structure and functional characteristics of the lymphatic system. 2. General principles of location of lymph nodes, blood vessels, ducts and their relationship with the venous system. 3. Structure and Topography the body's immune and blood. 4. Morphological characteristics of the endocrine glands.	2
3	**Theme 3: General characteristics and value nervous system.** 1. Biological significance of the nervous system. 2. Separation of the central and peripheral parts and their relationship. 3. Principle neural structure is feedback.	2
4	**Theme 4: Central nervous system.** 1. Anatomical structure of the spinal cord and its membranes. 2. Communications of the spinal cord with the main and periphery. 3. Structure in developing brain. 4. Shells brain, subshell spaces and their relationship.	2
5	**Theme 5: Cranial and spinal nerves.** 1. General characteristics of the peripheral nervous system. 2. Regularities of structure, motions and branching of spinal nerves. 3. Formation of the spinal nerves.	2
6	**Theme 6. The autonomic nervous system.** **1**. Autonomic nervous system, it parasimpatichna and sympathetic parts. 2. Functional and morphological features of the autonomic nervous system. 3. Structure of the sympathetic nervous system. 4. Structure of the parasympathetic nervous system.	2

7	**Theme 7: Sense-organs.** 1. Classification and description of sense-organs. 2. Communications of sense-organs with centers head and spinal brain 3. Structure of the eye. 4. Structure of the vestibulo-cochlear organ.	2
8	**Theme 8: Avian anatomy.** 1. Classification of birds. 2. Features of the structure and functional loading of the skeleton of birds. 3. Features of the structure and operation of the visceral systems.	2
Together for III semester		**16**
Total for year		**62**

6. Themes of laboratory employments

I year and I semester

№ з/п	Name of theme	Amount of hours
	Module 1. AXIAL SKELETON	
1	Theme 1: The study of the general characteristics of the spinal column. The structure of the lumbar vertebrae	2
2	Theme 2: Learning the structure of the thoracic vertebrae.	2
3	Theme 3: Features of the structure of typical cervical vertebrae.	2
4	Theme 4: Features of structure of atlas and axis.	2
5	Theme 5: Exploring the structure of the sacral and caudal parts.	2
6	Theme 6: Learning the structure of ribs, costal cartilage, sternum and thorax.	2
	Module 2. PERIPHERAL SKELETON (Appendicular skeleton)	
7	Theme 7: Structure of the scapula.	2
8	Theme 8: Exploring the structure of the pelvis.	2
9	Theme 9: Exploring the structure of stylopodium.	2
10	Theme 10: Exploring the bone structure zeugopodium.	
11	Theme 11: Exploring the structure of autopodium.	2
	Module 3 SKELETON OF THE HEAD	2
12	Theme 12: Exploring the bone composition of the skull.	2
13	Theme 13: Exploring the external structure bones of the skull.	2
14	Theme 14: Exploring the internal structure of the skull.	2
15	Theme 15 Exploring the structure of the mandible bone and the hyoid bone.	2
	Together for 1 semester	**30**

I year and II semester

№	Name of theme	Amount of hours
	Module 4. SYNDESMOLOGY. DERMATOLOGY.	2
1	Theme 1: Syndesmology.	2
2	Theme 2: Syndesmology.	2
3	Theme 3: Dermatology	2
4	Theme 4: Dermatology	2
	Module 5. MYOLOGY	
5	Theme 5: Exploring the muscles of the shoulder girdle.	2
6	Theme 6: Muscles of the thorax and abdominal walls.	2

7	Theme 7: Study of dorsal muscles of the spinal column.	2
8	Theme 8: Study of ventral muscles of the spinal column	2
9	Theme 9: Study of ventral muscles of neck.	2
10	Theme 10: Muscles of the head.	2
11	Theme 11: Exploring the muscles of the Thoracic Limb	2
12	Theme 12: Exploring the muscles of the Thoracic Limb	2
13	Theme 13: Exploring the muscles of the Pelvic Limb	2
14	Theme 14: Exploring the muscles of the Pelvic Limb	2
	Module 6. SPLANCHNOLOGY.	
15	Theme 15: Exploring the structure of the mouth and oral cavity.	2
16	Theme 16: Exploring the structural features of teeth.	2
17	Theme 17: Study of structure of gullet and stomach.	2
18	Theme 18: Study of the structure of the multichambered stomach	2
19	Theme 19: Exploring the structure of the small intestine	2
20	Theme 20: Exploring the structure of the small intestine's glands.	2
21	Theme 21: Exploring the large intestine.	2
22	Theme 22: Exploring the large intestine.	2
23	Theme: 23: Exploring the Respiratory System.	2
24	Theme: 24: Exploring the Respiratory System.	2
25	Theme 25: Study of the structure of the urinary system	2
26	Theme 26: Study of the structure of the urinary system.	2
27	Theme 27: Studying the structure of the males genitalia.	2
28	Theme 28: Studying the structure of the males genitalia.	2
29	Theme: 29: Exploring the structure of the female genitalia.	2
30	Theme: 30: Exploring the structure of the female genitalia.	2
	Together for 2 semester	60

II year and III semester

№	Name of theme	Amount of hours
	Module 7. *ANGIOLOGY*.	
1	Theme 1: The structure of the heart. Exploring the aortic arch.	2
2	Theme 2: Exploring the subclavian artery, the thoracic and abdominal aorta. Exploring the external and internal iliac arteries.	2
3	Theme 3 Exploring common carotid artery. Exploring the vein of the animalю Exploring the lymphatic system. The body's immune and hematopoiesis. Endocrine glands.	2
	Module 8. NERVOUS SYSTEM	
4	Theme 4: Study of the spinal cord. Distribution brain for parts.	2
5	Theme 5: Exploring the cervical and thoracic spinal nerves. Brachial plexus. Exploring the lumbar and the sacral nerves.	2
6	Theme 6. Exploring the cranial nerves. Exploring the autonomic nervous system	2
	Module 9. ESTHESIOLOGY. AVIAN ANATOMY.	2
7	Theme 7: Exploring the visual analyzer, hearing and equilibrium	
8	Theme 8: Avian anatomy.	2
	Together for 3 semester	**16**
	Total for year	**76**

9. Independent work

№	Name of theme	Amount

		of hours
I year and semester		
1	Topic 1: The main stages of anatomy. 1. Anatomy in ancient times. 2. Anatomy of the Middle Ages. 3. History of anatomy in modern times.	4
2	Topic 2: The concept of onto- and phylogeny. 1. The concept of ontogenesis. 2. The concept of phylogeny.	4
3	Topic 3: Basic principles of structure and development of organisms. 1. Basic principles of structure of organisms. 2. Basic principles of development of organisms.	4
4	Topic 4: Bone as an organ (bone and cartilage tissue, bone marrow, periosteum, endosteum), its development. 1. The structure of bone as an organ (bone and cartilage tissue, bone marrow, periosteum, endosteum). 2. Bone development.	4
5	Topic 5: Types of bones in shape, structure, function and position. 1. Types of bones in shape. 2. Types of bones by structure 3. Types of bones by function. 4. Types of bones by position.	4
6	Topic 6: Bone composition of the skeleton. 1. Bone composition of the axial skeleton. 2. Bone composition of the skeleton of the head. 3. Bone composition of the peripheral skeleton.	6
7	Topic 7: Preparation of the drug and determination of species features of the structure of the vertebrae of the axial skeleton of domestic animals. 1. Preparation of a preparation of vertebrae of an axial skeleton of domestic animals. 2. Determining the species characteristics of the vertebrae of the axial skeleton of domestic animals	4
8	Topic 8: Development of the limbs. 1. Features of the development of the limbs. 2. Basic principles of development of the limbs.	4
9	Topic 9: Species features of the foot and hand 1. Species features of the foot. 2. Species features of the cyst	4
10	Topic 10. Manufacture of the drug and determination of species characteristics of the peripheral skeleton of domestic animals. 1. Features of the preparation of the preparation of the peripheral skeleton of domestic animals. 2. Determination of species features of the peripheral skeleton of domestic animals	4
11	Topic 11: Specific features of the skeleton of the head. 1. Species features of the skeleton of the horse's head. 2. Species features of the skeleton of the head of ruminants. 3. Species features of the skeleton of the pig's head. 4. Species features of the skeleton of the head of predators.	4
12	Topic 12: Making the hyoid bone. 1. Types of sublingual bone making.	10

	2. Features of making the hyoid bone.	
13	Topic 13: Onto- and phylogeny of the skeleton of the head. 1. Ontogenesis of the skeleton of the head. 2. Phylogeny of the skeleton of the head.	4
	Together for 1 semester	**60**

	I year II semester	
1	**Topic 1:** Preparation and study of connections. 1. Safety during dissection. 2. Features of connection preparation. 3. Features of the study of connections.	20
2	**Topic 2:** Study and manufacture of skin preparations and its derivatives. 1. Study and manufacture of skin preparations. 2. Study of skin derivatives on a live animal.	20
3	**Topic 3:** Auxiliary muscles. Static apparatus of the extremities. Muscle examination and preparation. 1. Auxiliary organs of muscles: fascia, blocks, sesamoid bones, synovial sacs, tendon and synovial vaginas and their structure. 2. Static apparatus of the extremities. 3. The role of muscles in the statics and dynamics of the animal. 4. Features of the study and preparation of muscles.	20
4	**Topic 4**: Autopsy. Serous membranes and their derivatives. 1. Safety at autopsy. 2. Dissection and determination of serous membranes and their derivatives. 3. Autopsy and determination of derivatives of serous membranes	14
	Together for 2 semester	**74**
	II курс, III семестр	
1	Topic 1: Autopsy. Preparation of the heart. and arteries. Features of branching of the main veins of the great circle of blood circulation. 1. Rules of autopsy. 2. Preparation of the heart. and arteries. 3. Dissection of arteries. 4. Features of branching of the main veins of the great circle of blood circulation.	4
2	Topic 2: Superficial and deep lymphatic centers. 1. Study of superficial lymphatic centers. 2. Study of deep lymphatic centers.	4
3	Topic 3: Structure and species features of the structure of immunogenesis and hematopoiesis. 1. Structure and species features of immunogenesis organs. 2. Structure and species features of hematopoietic organs.	4
4	Topic 4: Manufacture of drugs of the central and peripheral nervous system. 1. Features of manufacturing drugs of the central nervous system. 2. Features of manufacturing drugs of the peripheral nervous system.	4
5	Topic 5: Manufacture of sensory drugs. 1. Manufacture of eye preparations. 2. Manufacture of ear preparations.	4
6	Topic 6: Features of the skin and muscular system of birds. 1. Features of poultry skin. 2. Features of the muscular system of birds.	4

7	Topic 7: Features of the structure and functioning of the digestive, respiratory and urogenital systems of birds 1. Features of the structure and functioning of the digestive and avian systems. 2. Features of the structure and functioning of the respiratory systems of birds. 3. Features of the structure and functioning of the urogenital systems of birds	4
	Разом за III семестр	**28**
	РАЗОМ	**162**

11. Teaching Methods

1. Teaching methods for knowledge:

1.1. Verbal: narrative, explanation, discussion (heuristic and reproductive), lecture, instruction, work with the book (read, transfer, discharge, scheduling, reviewing, summarizing, making tables, graphs, track summaries, etc.).

1.2. Visual: demonstration, illustration, observation.

1.3. Practical: production of native medicines, practical work, production practices.

2. Methods for studying the nature of the logic of knowledge.

2.1.Analitychnyy.

2.2. Synthesis.

2.3. Inductive method.

2.4. Deductive method.

3. Methods for studying the nature and level of independent mental activity of students.

3.1. Problematic.

3.2. Partly retrieval.

3.3. Exploratory

3.4. Reproductive.

3.5. Explanatory demonstration

4. Active learning methods - brainstorming, contests, debates, round table discussions, business games, talk shows, training, use of problem situations, tours, employment in manufacturing, group study, self-assessment of knowledge, simulation training methods (built to simulate future professional activity), the use of educational tests and controlling the use of basic lectures.

5. Interactive learning technologies using multimedia technology, interactive whiteboards and spreadsheets, case-study (method of analyzing specific situations), learning dialogue, cooperation of students.

12. Methods of control

1. Rating control a 100-point scale assessment ECTS
2. Conducting interim control during the semester (interim certification)
3. Polikryterialna current assessment of students:
- The level of knowledge demonstrated in laboratory studies;
- Activity during the discussion of issues brought to the class;
- Results of laboratory work and protection;
- Rapid test during classroom lessons;
- Self study topics in general or specific issues;
- Writing essays;
- Test results;
- Writing assignments during the tests;
- Production situation.
4. Direct consideration in the final evaluation of student performance specific individual tasks:

- Research work;
- Teaching and research work;
- Training and practical study of the presentation of the results and so on.

13. The distribution of points that students receive

I year and I semester

Current testing and independent work				for modules and IWS	Attestation	Sum
Module content 1 – 25 points	**Module content 2– 20 points**	**Module content 3 – 20 points**	***I W S***			
T1	T2	T3	15	85	15	100
25	25	20				

I курс, II семестр

Current testing and independent work							for modules and IWS	Attestation	Sum
Module content 4 – 10 points		**Module content 5– 20 points**	**Module content 6 – 40 points**			***I W S***			
T4	T5	T6	T7	T8	T9	15	85	15	100
5	*5*	20	20	5	15				

II курс III семестр

Current testing and independent work								for modules and IWS	Attestation	Final test-ing	Sum
Module content 7 – 15 points			**Module content 8 - 5 points**	**Module content 9 – 10 points**		**Module content 10 - 10 points**	***I W S***				
T10	T11	T12	T13	T14	T15	T16					
5	*5*	*5*	*5*	*5*	*5*	*10*	15	55 **(40+15)**	15	30	***100***

Grading scale: national and ECTS

Total points for all kinds of learning activities	**Evaluation of ECTS**	**Evaluation on the national scale**	
		for examination, course project (work) practices	**for credit**
90 – 100	**A**	perfectly	Accepted
82-89	**B**	good	
75-81	**C**		
69-74	**D**	satisfactorily	
60-68	**E**		
35-59	**FX**	with the possibility of unsatisfactory re-assembly	not reckoned with the possibility of re-drafting
1-34	**F**	unsatisfactory with mandatory re-learning courses	not reckoned with the obligatory re-learning courses

Methodologies.

1. Анатомія свійських тварин: остеологія. Анатомічний українсько-латинсько-англійсько-російський словник-довідник для студентів І-ІІ курсів факультету ветеринарна медицина щодо проведення лекцій, лабораторно-практичних занять, навчальної практики (як у

аудиторії так і на віварії) та самостійного вивчення скелету свійських тварин (основний і скорочений термін) денної форми навчання / [Камбур М.Д., Замазій А.А., Лівощенко Є.М. та ін.] Суми 2014 рік, 45 с. - (анатомія свійських тварин).
2. Ангіологія: [анатомічний українсько-латинськико-англійський словник-довідник] / [Камбур М.Д., Замазій А.А., Лівощенко Є.М. та ін.]. – Суми: СНАУ, 2008. – 45 с. - (анатомія свійських тварин).

Suggested Reading

1. Anatomy of Domestic Animals: Systemic & Regional Approach / [by Chris Pasquini (Author)., Tom Spurgeon (Author)., Susan Pasquini (Author)]- Sudz Publishing (August 2001) – 23 p.
2. Color Atlas of Small Animal Anatomy: / [The Essentials., Thomas O., McCracken., Robert A. Kainer] – New York, Dover Publications, 2005 – 243 p.
3. Color Atlas of Large Animal Applied Anatomy: By Hillary Clayton and Peter Flood
1st Edition / [Hilary M., Clayton, Peter F., Flood, with David Mandeville., Charles Farrow] – 2006 – 123 p.
4. Horse Anatomy: A Coloring Atlas / [Thomas O., McCracken, Robert A.. Kainer, Thomas O., MS McCracken, Robert A., DVM Kainer] – 2000 –185 p.
5. John McLelland / A Colour Atlas of Avian Anatomy / John McLelland - Printed bv BPCC Hazell Books Ltd. Avlesburv. England. – 1990 – 144 p.

16. Informational resources:

1. Library and reading room SNAU.
2. Reading room and library FVM
3. Dorm Reading Room № 2.
4. Moodle.
5. Internet.

http://www.vetcvas.com/2015/08/nutrition-and-disease-management-for.html
http://goraknig.org/estestvennye_nauki/?kniga=MTg2Mjc1Mg__
http://ebookee.org/Color-Atlas-of-Small-Animal-Anatomy-The-Essentials_4618091.html
http://www.meduweb.com/forums/193-anatomy-books
http://www.vetcvas.com/2012/06/anatomy-of-domestic-animals.html
http://pdfdownloadonline.com/veterinary-anatomy-coloring-book-2e-by-saunders/