Fe Federal State Autonomous Educational Institution of Higher Education

PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
RUDN University

Agrarian and Technological Institute
educational division (faculty/institute/academy) as higher education programme developer

COURSE SYLLABUS

Applied animal anatomy
course title

Recommended by the Didactic Council for the Education Field of:

36.05.01 Veterinary
field of studies / speciality code and title

The course instruction is implemented within the professional education programme of higher education:

Veterinary

higher education programme profile/specialisation title

2024

1. COURSE GOAL(s)

The goal of the course "**Applied animal anatomy**" is the formation of professional knowledge and skills for the student to use morphological knowledge about a functioning, developing and adapting organism in practice. This is necessary for the veterinarian to correctly apply his knowledge during the appointment and treatment of animals.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course "**Applied animal anatomy**" is aimed at creating the following competencies (parts of competencies) for students:

Table 2.1. List of competences that students acquire through the course study

Competence code	**Competence descriptor**	**Competence formation indicators** (within this course)
GPC-1	Able to determine the biological status and normative clinical indicators of animal organs and systems	GPC-1.1 Knows the structure and functions of the main animal body systems, taking into account species-specific features
PC-5	Ability and readiness to plan and conduct necessary instrumental diagnostics of the patient's condition	PC-5.4 Interprets the results of the diagnosis and uses them to solve the problem.

3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course "**Animal Anatomy**" refers to the core part of block B1 of the Educational Program of Higher Education.

Within the higher education programme students also master other (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the course study.

Table 3.1. The list of the higher education programme components/disciplines that contribute to the achievement of the expected learning outcomes as the course study results

Competence code	**Competence descriptor**	**Previous courses/modules, internships***	**Subsequent courses/modules, internships***
GPC-1	Able to determine the biological status and normative clinical		Physiology and ethology of animals Study practice

	indicators of animal organs and systems		Clinical internship Industrial practice Academic research practice with the preparation of a scientific qualification project Preparation for and passing the state exam
PC-5	Ability and readiness to plan and conduct necessary instrumental diagnostics of the patient's condition		Instrumental diagnostic methods Anesthesiology, resuscitation and intensive care Dermatology Cardiology Endocrinology Nephrology Reconstructive surgery Veterinary ophthalmology Animal Dentistry Clinical internship Industrial practice Academic research practice with the preparation of a scientific qualification project Preparation for and passing the state exam

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course "**Applied animal anatomy**" is 0 credits.

*Table 4.1. Types of academic activities during the periods of higher education programme mastering (**full-time training**)**

Type of academic activities	Total academic hours	Semesters/training modules			
		1	2	3	-
Contact academic hours	-	-	-	-	-
Including					

Lectures		17	-	17	-	-
Lab work		34	17	17	-	-
Seminars (workshops/tutorials)		-	-	-	-	-
Self-study		-	-	-	-	-
Evaluation and assessment (exam/pass/fail grading)		-	-	-	-	-
Course workload	academic hours	**51**	**17**	**34**	-	-
	credits	-	-	-	-	-

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
Module 1. Introduction	Topic 1.1. Course is a system of knowledge about the internal and external structure of the body.	Lectures, Lab work.
Module 2. Bone system or skeleton (osteology)	Topic 2.1. Characteristics of the skeleton, the principles of its division into departments. The role of the skeleton in the vital activity of the body.	Lectures, Lab work.
	Topic 2.2. Axial skeleton.	Lectures, Lab work.
	Topic 2.3. The skeleton of the head. - The facial part of the skull. - The cerebral part of the skull.	Lectures, Lab work.
	Topic 2.4. Musculoskeletal system. - Thoracic limbs and their girdle. - Pelvic limbs and their girdle.	Lectures, Lab work.
	Topic 2.5. Bone connection (arthrosyndesmology) - Morphofunctional characteristics of bone junctions, their classification and morphogenesis.	Lectures, Lab work.
Module 3. Muscular system (myology)	Topic 3.1. Muscle as an organ, morphogenesis of the muscular system.	Lectures, Lab work.
	Topic 3.2. Classification of muscles. - By origin, form, internal architectonics, function, topographical feature.	Lectures, Lab work.
	Topic 3.3. Muscles of the axial skeleton.	Lectures, Lab work.

	- Filo- and ontogenesis of the muscles of the axial department. Muscles and fascia of the neck, trunk and tail.	
	Topic 3.4. Muscles of the shoulder girdle and spinal column. - Dorsal muscles of the shoulder girdle and vertebral column. Ventral muscles of the neck, lower back, tail.	Lectures, Lab work.
	Topic 3.5. Chest muscles. - Inhaler muscles, exhalator muscles and diaphragm.	Lectures, Lab work.
	Topic 3.6. Abdominal wall muscles.	Lectures, Lab work.
	Topic 3.7. Head muscles. - Philo- and ontogenesis. Facial and masticatory muscles. Muscles of the sublingual apparatus.	Lectures, Lab work.
	Topic 3.8. Limb muscles. - Philo and ontogenesis.	Lectures, Lab work.
	Topic 3.9. Muscles of the thoracic limb. The muscles of the shoulder joint, elbow joint, wrist joint, finger joints and short finger muscles.	Lectures, Lab work.
	Topic 3.10. Pelvic limb muscles. - The muscles of the hip joint, knee joint and the metatarsal joint.	Lectures, Lab work.
	Topic 3.11. Muscles of the finger joints.	Lectures, Lab work.
Module 4. General (skin) cover.	Topic 4.1. General morphofunctional characteristics of the skin and its derivatives.	Lectures, Lab work.
Module 5. Nervous system (neurology).	Topic 5.1. Morphofunctional characteristics, anatomical composition and structural elements, the principle of the nervous system.	Lectures, Lab work.
	Topic 5.2. The central part of the nervous system. - Structure and development of the central nervous system. The structure of the spinal cord and brain, functional characteristics. Conductor apparatus	Lectures, Lab work.
	Topic 5.3. Peripheral part of the nervous system. Morphofunctional characteristics of cranial and spinal nerves. General and species-specific signs of structure, branching and location.	Lectures, Lab work.

	Topic 5.4. The autonomic part of the nervous system. - Anatomical, functional and topographic characteristics. Regularities of the structure, formation and distribution of sympathetic, para- and metasympathetic nervous structures.	Lectures, Lab work.
Module 6. Analyzers.	Topic 6.1. Classification, anatomical structure and morphofunctional characteristics of analyzers. The study of the phylogeny and ontogenesis of analyzers. General data on intero-, proprio- and exteroreceptors.	Lectures, Lab work.
Module 7. The endocrine system.	Topic 7.1. Morphofunctional characteristics and anatomical composition of the endocrine apparatus. Morphogenetic, topographic and functional characteristics of the glands of internal and mixed secretion. Specific and age-related features of the structure and location of the glands.	Lectures, Lab work.
Module 8. Cardiovascular system.	Topic 8.1. Anatomical composition, morphogenesis and structural and functional characteristics of the cardiovascular system and its relationship with other body systems.	Lectures, Lab work.
	Topic 8.2. Circulatory system. - Structure, development, species and age characteristics. Specific features, basic patterns of the structure, branching and location of blood vessels. Circulatory circles.	Lectures, Lab work.
	Topic 8.3. Lymphatic system. - General morphofunctional characteristics and anatomical composition of the system. Its development. General patterns and specific features of the location of the lymphatic system.	Lectures, Lab work.
	Topic 8.4. organs of hemo- and immunopoiesis. Morphofunctional characteristics, anatomical composition and classification of organs. The structure, location and specific features of hematopoietic organs and organs of the immune system.	Lectures, Lab work.

Module 9. Splanchnology.	Topic 9.1. Morphofunctional characteristics of internal organs, their classification, features of structure and development. Body cavities, their development, serous integuments and their derivatives. The relationship of internal organs with other body systems and the external environment.	Lectures, Lab work.
	Topic 9.2. Digestive system. - Anatomical composition of the apparatus, division into departments, classification of glands. Species and age features. Anatomical and topographic features of the digestive apparatus in the X-ray image.	Lectures, Lab work.
	Topic 9.2.1. Head department (oral cavity and pharynx). - Specific and functional features of the structure of the organs of the vestibule of the mouth. Glandular apparatus of the head intestine.	Lectures, Lab work.
	Topic 9.2.2. Anterior section (esophageal-gastric) - Structure, topography, species and age features. Morphogenesis of the stomach and omentum. Classification of stomachs. Structure and functions of the mesh gutter in ruminants.	Lectures, Lab work.
	Topic 9.2.3. Middle section (small intestine) - Structure, topography, species and age features. Morphogenesis of the stomach and omentum. Classification of stomachs. Structure and functions of the mesh gutter in ruminants.	Lectures, Lab work.
	Topic 9.2.4. Posterior section (large intestine). - Anatomical and topographic characteristics of the structure, morphogenesis, species and age features, functional purpose.	Lectures, Lab work.
	Topic 9.3. Breathing apparatus. - General structure, morphogenesis of respiratory organs in connection with other body systems and the external environment. Anatomical features of the respiratory organs in the X-ray image.	Lectures, Lab work.

	Topic 9.4. The urinary apparatus. - Morphogenetic relationship and functional difference of organs of urination and reproduction. Morphofunctional characteristics of the device. X-ray-anatomy of the genitourinary apparatus.	Lectures, Lab work.
	Topic 9.4.1. Urinary organs. - Anatomical composition of the urinary system, the structure of the kidneys and urinary tract, their connection with other body systems. Species, age and topographical features of urinary organs.	Lectures, Lab work.
	Topic 9.4.2. Organs of reproduction. - Anatomical composition and structure of reproductive organs. Species, age and topographical features of the genitals and the causes of their appearance.	Lectures, Lab work.
Module 10. Features of the anatomy of domestic birds.	Topic 10.1. Analysis of the structure of organs and systems of various types of domestic birds related to flight, nutrition and industrial maintenance.	Lectures, Lab work.

6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom equipment and technology support requirements

Type of academic activities	**Classroom equipment**	**Specialised educational / laboratory equipment, software, and materials for course study** (if necessary)
Lecture	An auditorium for conducting lecture-type classes, equipped with a set of specialized furniture; a board (screen) and technical means of multimedia presentations.	- *Anatomical preparations.* - *Wet anatomical preparations.* - *Anatomical models.*
Laboratory	An auditorium for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment.	- *Anatomical preparations.* - *Wet anatomical preparations.* - *Anatomical models.*

Self-studies	An auditorium for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to an electronic information and educational environment.	-

7. RESOURCES RECOMMENDED FOR COURSE STUDIES

Main readings:

1. Akaevsky A.I., Yudichev Yu.Yu., Seleznev S.B. ANATOMY OF DOMESTIC ANIMALS - 6th ed. - Moscow: Aquarium-Print, 2020. - 638 p.
2. Maksimov V.I., Slesarenko N.A., Seleznev S.B., Vetoshkina G.A. ANATOMY AND PHYSIOLOGY OF DOMESTIC ANIMALS. - 2nd ed. - Moscow: Gryph UMO SPO, 2020. – 600 p.

Additional Readings:

1. Zelenevsky N.V. International veterinary anatomical nomenclature in Latin and Russian. Nomnia Anatomica Veterinaria: textbook – St. Petersburg: Lan, 2013 – 400p. – http://e.lanbook.com/books/element.php?pl1_id=5706
2. Popesco P. Atlas of the anatomy of domestic animals. - In 3 t. M.: design of YOYO Media, digitization , 2013. - Vol.1. -210 p. t.2. -183. T.3. – 196.
3. Slesarenko N.A., Seleznev S.B., Vetoshkina G.A. Introduction to animal pathology: integrating systems. Practical guide.-Moscow:LLC "ArtServisLtd", 2019.-268 p.
4. Seleznev S.B., Vetoshkina G.A., Krotova E.A. Anatomy of domestic animals: osteoarthrosyndesmology.-Moscow:OOO ArtServisLtd, 2017.-66 p.
5. Seleznev S.B., Vetoshkina G.A., Krotova E.A. Myology of domestic animals.-Moscow:PFUR, 2020.-28 p.

Internet sources

1. Electronic libraries (EL) of RUDN University and other institutions, to which university students have access on the basis of concluded agreements:
- RUDN Electronic Library System (RUDN ELS) http://lib.rudn.ru/MegaPro/Web
- EL "University Library Online" http://www.biblioclub.ru
- EL "Yurayt" http://www.biblio-online.ru
- EL "Student Consultant" www.studentlibrary.ru
- EL "Lan" http://e.lanbook.com/
- EL "Trinity Bridge"

2.*Databases and search engines:*

- electronic foundation of legal and normative-technical documentation http://docs.cntd.ru/
- Yandex search engine https:// www .yandex.ru/

- Google search engine https://www.google.ru/
- Scopus abstract database http://www.elsevierscience.ru/products/scopus/

*Training toolkit for self- studies to master the course *:*

1. 1. The set of lectures on the course "**Applied animal anatomy**".
2. Laboratory workshop on the course "**Applied animal anatomy**".

* The training toolkit for self- studies to master the course is placed on the course page in the university telecommunication training and information system under the set procedure.

8. ASSESSMENT TOOLKIT AND GRADING SYSTEM* FOR EVALUATION OF STUDENTS' COMPETENCES LEVEL UPON COURSE COMPLETION

The assessment toolkit and the grading system* to evaluate the competences formation level (competences in part) upon the course study completion are specified in the Appendix to the course syllabus.

* The assessment toolkit and the grading system are formed on the basis of the requirements of the relevant local normative act of RUDN University (regulations / order).

DEVELOPERS:

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