

**PEOPLES ' FRIENDSHIP UNIVERSITY OF RUSSIA**  
**AGRICULTURAL AND TECHNOLOGICAL INSTITUTE**  
**DEPARTMENT OF VETERINARY MEDICINE**

APPROVING IT

Director of the Department of Veterinary Medicine,  
Doctor of Veterinary Sciences, Professor

Vatnikov Yu. A.

«\_\_\_\_\_» \_\_\_\_\_ 2021

**ANNOTATED PROGRAMS**  
**ACADEMIC DISCIPLINES**

**Educational program**

**SPECIALTY 36.05.01 VETERINARY MEDICINE**

**Qualification: Veterinarian**

MOSCOW 2021

## Оглавление

1.	<b>Foreign language</b> .....	5
2.	<b>History</b> .....	6
3.	<b>Philosophy</b> .....	11
4.	<b>Legal studies</b> .....	13
5.	<b>Latin language</b> .....	15
6.	<b>Biological Physics</b> .....	17
7.	<b>Inorganic and Analytical Chemistry</b> .....	18
8.	<b>Organic Chemistry</b> .....	19
9.	<b>Physical and colloidal Chemistry</b> .....	21
10.	<b>Biological Chemistry</b> .....	23
11.	<b>Computer science</b> .....	25
12.	<b>Biology with the basics of ecology</b> .....	27
13.	<b>Animal anatomy</b> .....	29
14.	<b>Cytology, Histology and Embryology</b> .....	31
15.	<b>Animal physiology and ethology</b> .....	33
16.	<b>Pathological physiology</b> .....	35
17.	<b>Veterinary microbiology and mycology</b> .....	37
18.	<b>Virology and biotechnology</b> .....	38
19.	<b>Veterinary pharmacology</b> .....	39
20.	<b>Veterinary genetics</b> .....	40
21.	<b>Breeding with the basics of private zootechnics</b> .....	42
22.	<b>Feeding animals with the basics of feed production</b> .....	43
23.	<b>Animal hygiene</b> .....	45
24.	<b>Veterinary radiobiology</b> .....	46
25.	<b>Life safety</b> .....	48
26.	<b>Clinical diagnosis</b> .....	50
27.	<b>Internal non-infectious diseases</b> .....	52
28.	<b>Operative surgery with topographic anatomy</b> .....	54
29.	<b>General and private surgery</b> .....	56
30.	<b>Obstetrics, Gynecology and Andrology</b> .....	58
31.	<b>Parasitology and invasive diseases</b> .....	59
32.	<b>Epizootology and infectious diseases</b> .....	60
33.	<b>Pathological anatomy and forensic veterinary examination</b> .....	62
34.	<b>Veterinary and sanitary expertise</b> .....	64
35.	<b>Organization of veterinary business</b> .....	65

36.	<b>Physical Culture</b> .....	66
37.	<b>Foreign language for special purposes</b> .....	68
38.	<b>Fundamentals of rhetoric and communication</b> .....	70
39.	<b>Fundamentals of Economics and management</b> .....	72
40.	<b>Mathematics</b> .....	74
41.	<b>General and veterinary ecology</b> .....	75
42.	<b>Introduction to the specialty</b> .....	76
43.	<b>Veterinary deontology</b> .....	78
44.	<b>Economics and organization of agricultural production</b> .....	80
45.	<b>A foreign language. Professional communications</b> .....	81
46.	<b>Veterinary sanitation</b> .....	83
47.	<b>Forensic veterinary medicine and animal autopsy</b> .....	84
48.	<b>Technology of processing livestock products</b> .....	85
49.	<b>Toxicology Department</b> .....	86
50.	<b>Immunology</b> .....	88
51.	<b>Instrumental diagnostic methods</b> .....	89
52.	<b>A foreign language. Translation of special texts</b> .....	90
53.	<b>Communication workshop</b> .....	91
54.	<b>Biometrics in veterinary medicine</b> .....	92
55.	<b>Career Management</b> .....	93
56.	<b>Fundamentals of social and legal knowledge</b> .....	94
57.	<b>Medicinal and poisonous plants</b> .....	95
58.	<b>Forage plants</b> .....	96
59.	<b>Fundamentals of intellectual work</b> .....	97
60.	<b>Diseases of productive animals</b> .....	98
61.	<b>Diseases of horses</b> .....	100
62.	<b>Diseases of small domestic animals</b> .....	101
63.	<b>Diseases of small pets</b> .....	102
64.	<b>Zoopsychology</b> .....	104
65.	<b>Personality psychology and professional self-determination</b> .....	105
66.	<b>Diseases of bees and fish</b> .....	106
67.	<b>Space technologies at the service of the agro-industrial complex</b> .....	107
68.	<b>Organization of state veterinary supervision</b> .....	108
69.	<b>Veterinary and industrial laboratories with basic design principles</b> .....	109
70.	<b>Anaesthesiology, resuscitation and intensive care</b> .....	110
72.	<b>Reconstructive surgery</b> .....	113
73.	<b>Dentistry</b> .....	114
74.	<b>Ophthalmology</b> .....	115

75.	<b>Laboratory diagnostics of infectious and invasive diseases.....</b>	<b>116</b>
76.	<b>Clinical laboratory diagnostics .....</b>	<b>117</b>

## 1. Foreign language

<b>Name of the discipline</b>	<b>Foreign language</b>
<b>Scope of the discipline</b>	<b>10 CREDITS (360 hours)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Foreign language	<p>Grammar</p> <p>Repetition the system times English verbs Present, Past, Future (Simple, Continuous, Perfect, Perfect Continuous). Passive voice input. Modal verbs. Non-personal verb forms. Subordinate clauses of time and conditions, relative subordinate clauses. Direct and indirect speech. Time matching.</p> <p>Word compatibility:</p> <p>Free phrases, morpho-syntactically and lexically-phraseological related phrases, idiomatic expressions.</p> <p>Comparison of “non-idiomatic ” (free) word combinations and more idiomatic ways of expressing thoughts.</p>
Foreign language (advanced level)	<p>Vocabulary and phraseology</p> <p>Fixing the most commonly used vocabulary related to the common language and reflecting a wide and narrow specialization. Expanding the vocabulary through lexical units that form the basis of the register of scientific speech. Familiarization with industry dictionaries and reference books. Stable phrases that are most often found in scientific speech. Word compatibility: free word combinations, morpho-syntactically and lexically-phraseological related phrases, idiomatic expressions. Comparison “non-idiomatic ” (free) compatibility of words and more idiomatic ways of expressing thoughts.</p> <p>Educational and professional sphere</p> <p>Animal anatomy and physiology</p> <p>Clinical diagnostics of animals</p> <p>Diagnosis, treatment, prevention, and vaccination</p> <p>Veterinary pathology</p> <p>Human role in animal welfare</p>

## 2. History

<b>Name of the discipline</b>	<b>History</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
History as a science.	Subject and objectives of the course. History as a science. Social, political, and socio-natural history. Periodization of the world-historical process. Civilizational, culturological and formational approaches to the history of mankind.
The origin of the Eastern Slavs. Basic theories of the formation of the Old Russian state.	The origin of the Eastern Slavs. The first written evidence of the Slavs. The Great Migration of Peoples. Eastern Slavs. Neighbors of the Eastern Slavs. The territory of the Eastern Slavs. The great trade route of antiquity- "from the Varangians to the Greeks". Economy. The role of the community. Cities. Religion. Background and formation of the Old Russian state. The role of the Varangians in the formation of the state. The origin of the word "Rus". The significance of the formation of the Old Russian state.
Domestic and foreign policy of the first Russian princes.	Stages in the history of the state. Domestic and foreign policy of the first Kievan princes. Russkaya Pravda. Social structure of ancient Russian society. The rise of the state. Acceptance of Christianity. The importance of adopting a national religion. The reign of Yaroslav. Ancient Russia and the West. Transition to feudal fragmentation. Activity of Vladimir Monomakh.
Feudal fragmentation in Russia.	Time frame of the period of feudal fragmentation. Causes of feudal fragmentation. Positive and negative consequences of feudal fragmentation. History and political fate of the Principality of Galicia-Volhynia. Features of the development of the Novgorod feudal Boyar Republic. Veche. Relations between the Novgorod boyars and the prince. Novgorod's policy towards Russian lands and its consequences. Vladimir-Suzdal Principality. Politics of Princes Yuri Dolgoruky and Andrey Bogolyubsky, Vsevolod's Big Nest. Reasons for the establishment of autocracy in the North-East of Russia. Basic models of socio-cultural development of Russian lands
Russia's Struggle for independence in XIII century.	Mongols at the turn of HP -XIII Formation of the Mongolian state. The beginning of the Mongol conquests. The first meeting of Russians and Mongols. Preparation of the Mongols for a new

	<p>campaign to the West. Two campaigns of Batu Khan in Russia. Heroic resistance of the Russian people. Batu's campaign to Europe. Establishment of the Mongol-Tatar yoke in Russia. Consequences of the Mongol conquest and the Golden Horde yoke for Russia. Mongol influence on the further development of Russia. Alexander Nevsky's fight with German knights and Swedish soldiers invaders. The significance of Alexander Nevsky's activities for Russia. Rus and the East.</p>
<p>Formation of the Russian centraliCreditsd state.</p>	<p>Prerequisites for the unification of Russian lands. Stages of creating a Russian centraliCreditsd state. Reasons for the rise of Moscow. The first Moscow princes. Daniel Alexandrovich. Ivan Kalita and the Golden Horde. Moscow is the center of struggle against the Mongol-Tatars. Dmitry Ivanovich and Sergiy Radonezh. Battle of Kulikovo. The feudal War for Power in Moscow.. Completion of the unification of Russian lands under Ivan III and Vasily III. Overthrow of the Golden Horde yoke. Power and Management apparatus under Ivan the Great III The ideology of Ivan's time III - the emergence of the theory of "Moscow - the third Rome". Features of the formation of the Russian centraliCreditsd state.</p>
<p>Russia in XVI v.</p>	<p>The reign of Elena Glinskaya. Results of boyar rule. Wedding to the kingdom of Ivan IV. Reforms of the "Elected Rada". Appearance of the Creditsmsky Sobor. Registration of the order system. Local government reform. Folding of the estate-representative monarchy. Sudebnik of 1550 Monetary reform. Military reform. Stoglavny Cathedral. Foreign policy objectives. Western direction of foreign policy. The Livonian War of 1558-1583 Introduction of the Oprichnina. Its causes and political outcomes. Different views on the activities of Ivan the Terrible.</p>
<p>Turmoil in the Russian state.</p>	<p>The reign of Ivan the Terrible's son Fyodor Ioannovich. Crisis of the Rurik dynasty. Time frame of Troubles. Causes of Turmoil. Election to the throne of Boris Godunov, his politics. Appearance of the impostor False Dmitry I and his rule. Vasily Shuisky - Russian tsar. The Bolotnikov Uprising. False Dmitry II. Foreign intervention. The reign of the Seven Boyars. The first Creditsmstvo militia. The second Creditsmstvo militia. Kozma Minin and Prince Dmitry Pozharsky. Liberation of Moscow from the Poles. Creditsmsky Sobor of 1613 Election of the first tsar of the Romanov dynasty, Mikhail, to the Russian throne. Results of the Troubles.</p>

<p>The era of "Peter's modernization" in Russia.</p>	<p>Socio-economic development of Russia in the late XVII B. New features in the economy.. Peter and Sophia. 1696- Peter the Great I - sole ruler. Main areas of Peter's activity I. "The Great Embassy". The Streltsy Uprising. XVIII B. in European and world history. The problem of entering the "realm of reason". Military reform. Transformation of Russian industry. State of agriculture. Development of trade. The policy of protectionism. Social policy of Peter the Great I. "Table of Ranks" 1722. Tax policy. Governance reforms. Provincial reform. Replacing orders with boards. Formation of absolutism. Cultural transformations. The Northern War. Battle of Poltava. Peter's Prut Campaign I. Russia is a new naval power. The Peace of Nystad 1721 Various assessments of Peter's performance I.</p>
<p>Russia after Peter the Great I. The reign of Catherine the Great.</p>	<p>Palace coups, their socio-political essence and consequences. Ekaterina II sources and essence of domestic policy dualism. "Enlightened absolutism". The doctrine of Natural Law. Activities of the Assigned Commission. The growth of social polarization and isolation of social strata. New legal status of the nobility. Disintegration of the service system. Alienation of society from state power. The Cossack uprising led by Pugachev. Stages of the peasant War. Catherine's foreign policy II. Russo-Turkish War of 1768-1774 Russo-Turkish War of 1787-1791 Russia and Poland. Sections of the Polish-Lithuanian Commonwealth.</p>
<p>Russia in the first half of the XIX century.</p>	<p>The beginning of Alexander's reign I. Alexander's liberal initiatives I. Decree "On free farmers". Educational reforms. Changes in the public administration system. M. M. Speransky. "A Note on ancient and New Russia" by N. M. Karamzin. Curtailment of reforms. Constitutional project of N. N. Novosiltsev. Introduction of military settlements. Directions of Russia's foreign policy. Creating an anti-Napoleonic coalition. The Peace of Tilsit, 1807 The Patriotic War of 1812. The Decembrist movement.</p> <p>The personality of Nikolai Pavlovich. Introduction by Nicholas I He ascended the throne on December 6, 1826. Reconstruction of the public administration system. The role of the Imperial Chancellery. Development of industry and communication routes. The peasant question. Social policy. Policy in the field of education, the press, and religion. Nicholas ' foreign Policy I. Wars with Turkey, Persia, and the Caucasian highlanders.</p>



<p>The era of great reforms in Russia. Alexander II.</p>	<p>Preparation of the peasant reform. Abolition of serfdom. Liberal reforms of the 1860s and 70s. Various directions of social movement. The ideology of narodism. The labor movement and the spread of Marxism. Main directions of foreign policy. The Balkan direction. Central Asian direction. Far Eastern direction. Social movement in the 60s. Left-wing circles. Formation of the ideology of narodism. Alexander's counter-reforms III. Liberal populism. Penetration of Marxist ideas in Russia.</p>
<p>Russia at the turn of XIX-XX centuries.</p>	<p>Autocracy and the bourgeoisie. The peasant question. Working question. Russo-Japanese War. The first Russian Revolution. Formation of political parties. Stolypin agrarian reform. Russia's participation in the First World War.</p> <p>The political crisis of autumn 1916. The collapse of the monarchy. Formation of the Provisional Government. Classes and parties in March and October. Domestic and foreign policy of the bourgeois government. Recommendations. Problems of dual power. The Kornilov revolt. The collapse of the Provisional Government's policy. October armed Uprising. Meaning.</p>
<p>Soviet Russia in the 1920s-30s.</p>	<p>II All-Russian Congress of Soviets, its decisions. Establishment of Soviet power in the localities. Reasons for the "triumphal march of the Soviet government". The Civil War. The policy of "war communism". The crisis of the 1920s NEP. Formation of the USSR. National-state construction. Constitution of the USSR of 1924 I. V. Stalin's position on overcoming the socio-economic crisis in the country. The course of the Bolshevik Party to transform the USSR into an industrial power. Industrialization of the national economy. Collectivization agriculture. The Cultural Revolution. Results of socio-economic and political development of the country in the 1920s-30s.</p>
<p>The USSR during the Great Patriotic War.</p>	<p>Objectives of the USSR in the field of interstate relations. Confrontation between the USSR and the leading capitalist Powers in the second half of the 1920s Hitler's coming to power in Germany in 1933 was a hotbed of tension in Europe. The USSR and Germany in the 1930s. Non-Aggression Pact of August 23, 1939. Preparation of the USSR for war. German attack on the USSR. Periodization of the Great Patriotic War. The Soviet counteroffensive at Stalingrad in November 1942 marked the beginning of a radical turning point in the Soviet economy. The Great Patriotic War. Battle of the Kursk Bulge. Liberation of Kiev. Liberation of the USSR. The entry of Soviet troops into the territory of</p>

	<p>neighboring states in the fall of 1944. The storming of Berlin by Soviet troops. Signing of the act of surrender by representatives of the German command on May 8, 1945. The Soviet rear during the war years. Reasons for the victory of the USSR in the Great Patriotic War. Results of the war.</p>
<p>The Soviet Union in the Cold War. Growing crisis phenomena.</p>	<p>The USSR is a world power in the post-war period. "The Truman Doctrine" - a new foreign policy course of the former allies of the USSR. Response measures of the USSR. State of the USSR economy: the 4th five-year plan for the restoration and development of the National economy of the USSR for 1946-1950. Development of the defense industry. State of agriculture. The main problems. Socio-political and cultural life of the country. The death of J. V. Stalin. The struggle for power. National economy in 1953-1964 XX congress of the CPSU. New program of the CPSU. Easing international tensions. Displacement of N. S. Khrushchev.</p> <p>Background and limits of the 1965 economic reforms Power and society in 1964-1984 Crisis of the dominant ideology. Dissident movement. Stagnation and pre-crisis phenomena in the late 1970s and early 1980s</p> <p>Reasons and first attempts at comprehensive reform of the system in 1985 "Perestroika". XIX All-Union Party Conference. Elections to the Councils of People's deputies. Formation of different parties. Foreign policy. The collapse of the socialist camp. Parade of sovereignties of former Soviet republics. GKChP-attempts to save the Soviet Union. The collapse of the CPSU and the USSR. Education in the CIS.</p>
<p>Post-Soviet Russia: Difficulties in Forming a democratic society (1991-2009).</p>	<p>Changes in the political life of the country: adoption of the principle of separation of powers. Liberal concept of Russian reforms: transition to the market, formation of civil society and the rule of law. "Shock therapy" of economic reforms in the early 1990s. The constitutional crisis in Russia in 1993 and the dismantling of the Soviet power system. Constitution of the Russian Federation 1993 Chechen War. Science, culture, and education in market conditions. Social price and first results of reforms. Foreign policy of the Russian Federation Russian Federation in 1991-1999 Political parties and social movements in Russia at the present stage. Russia and the CIS. Russia in the world economy and international relations. V. V. Putin's reforms. D. A. Medvedev's presidency.</p>

### 3. Philosophy

<b>Name of the discipline</b>	<b>Philosophy</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction to Philosophy.	Definition and essence of the subject of study. A brief history of philosophy. Sections that make up the subject. Characteristics of sections.
Philosophical culture of Ancient India and Ancient China.	The emergence of philosophy in Ancient Greece. Milesian school. Castes, upanishads, brahman, atman, incarnation, reincarnation, saksaras, karma, asceticism. The Buddha. The four truths. Narvana and Achaea. The Five Commandments. Confucius.
Aristotle.	Creation of the Aristotle School. Worldview and main areas of philosophy. Typologies of philosophical doctrines. Monism. Materialism, famous materialists. Idealism, there are two types: objective and subjective. Solipsism. Dualism. Pluralism. Eclecticism. Hinduism.
Philosophy of ancient Greece.	Philosophical thoughts of Hegel. The formation of Greek philosophy, the so-called natural philosophy. The heyday of Greek philosophical thought or the Athenian school, at the center of this period is the philosophy of Socrates and his followers and the philosophy of Plato and Aristotle. Sunset (the Hellenistic era) and the decline of philosophy. Problems of Greek philosophy. Ancient philosophy.
The philosophy of Aristotle.	Aristotle's doctrine of four causes: matter – "that from which"; form – "that which"; acting or producing cause – "that from which"; end, or final cause – "that for which". The school that Aristotle opened. Aristotle's doctrine of the soul, types of the soul. The Ethics of Aristotle. Revival of ancient culture.
Philosophy of the New Time .	The doctrine of the omnipotence of reason and the limitless possibilities of scientific research. Major representatives of Modern philosophy. Problems of Modern philosophy  Features of Modern philosophy  Ideas of Modern philosophy

<p>Philosophy of Enlightenment. General characteristics and representatives.</p>	<p>Faith in progress and optimism. Characteristic features of the Enlightenment. Deism. Encyclopedia or explanatory dictionary of Sciences, Arts and Crafts. Engels. The materialistic nature of Marxist philosophy and the dialectic essence of Marxism.</p>
<p>O. Comte's positivism.</p>	<p>History of positivism. Its main provisions. Voluntarism. Nietzsche. Freud, three floors. Sublimation. O. Comte's Law of three Stages. An encyclopedic law expressed in the classification of sciences. The doctrine of Changing social systems " Social dynamics"</p>
<p>Existentialism.</p>	<p>History of the emergence of the term existentialism. His philosophy. The meaning of fear for existential philosophy. Principles of existentialism</p>

#### 4. Legal studies

<b>Name of the discipline</b>	<b>Legal studies</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
The concept, features and essence of law. Principles and functions of law.	Concept and features of law, Subjective and objective in law, Social value of law, its essence and functions
Law in the system of social norms.	Law in the system of social norms: social and technical norms.  Types of social norms.  Correlation of law and morality.
Sources (forms) of law.	Sources of law: concept and types;  Legal precedent and judicial lawmaking.  Regulatory agreement. Principles of law. Legal doctrine. A legal custom. Norm control in the activity of courts of the Russian Federation. Constitutional control in the Russian Federation.
A rule of law.	Norm of law: concept, features and structure. Types of legal norm elements. Legal force of a legal norm. Correlation between the rule of law and the article of a normative legal act. Classification of legal norms.
Legal relations and legal facts.	Legal relationship: concept and features. Structure of the legal relationship: object and content of the legal relationship. Structure of the legal relationship: object and content of the legal relationship, subjects of the legal relationship. Legal personality, legal capacity, legal capacity, and tort-ability. Types of legal relations. Legal facts: concept and types. Actual composition. Legal presumptions and legal fictions.
Legal awareness and legal culture.	The concept and structure of legal awareness. Functions of legal awareness. Elements of the concept of legal culture.
Lawmaking and systematization of law. Legal equipment.	Lawmaking: concepts, types, subjects, and principles. Systematization of law. Legal equipment.
Implementation and interpretation of the law. Law and order. Effectiveness of law.	Implementation of the right. Interpretation of the law. Object and subject of interpretation of law. Ways of interpreting the law. Law and order, efficiency of law.
Lawful behavior, offense, and legal liability.	Legitimate behavior. Objective and subjective aspects of lawful behavior. The offense and its signs. Classification of

	offenses. Composition of offenses. Legal liability: concept, goals, types.
The legal system. Mechanism of legal regulation.	The legal system. Mechanism of legal regulation. Concept, features, structure, and types of legal practice. International and domestic law: general characteristics. Correlation between international and domestic law.
Legal systems and legal families.	The concept, types and features of legal families/systems.
Law and personality. Human rights. Fundamentals of citizenship in the Russian Federation.	<p>The concept of the legal status of a person and citizenship. Institute of Constitutional Rights, Freedoms and Duties of Citizens of the Russian Federation.</p> <p>The concept of citizenship. Ways to lose your citizenship.</p>

## 5. Latin language

<b>Name of the discipline</b>	<b>Latin language</b>
<b>Scope of the discipline</b>	<b>4 CREDITS (144 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) disciplines:</b>
Introduction to the Latin language.	Goals of the discipline. Tasks of the discipline. The Latin language system. The role of the Latin language in the development of European culture. Expanding students ' general linguistic horizons.
The history of the Latin language.	Latin is one of the Indo-European languages. Essay on the history of the Latin language: the first written monuments, periodization of the history of the Latin language. The role of the Latin language in history and in the modern world. Influence of the Latin language and ancient culture on the formation of national languages and culture of Europe.
How the Latin language works.	Alphabet. Phonetics. Reading rules. Accent. Use the Latin-Russian dictionary;
Grammars of the Latin language.	Names: noun, adjective, numeral. Grammatical categories of the name: gender, number, case. Plurālia tantum nouns. Падежная система: nominatīvus, genetīvus, datīvus, accusatīvus, ablatīvus, vocatīvus. Features of neuter declension.
A noun.	Slime declensions of nouns. The dictionary form of a noun and its meaning for a certain type of declension. I-th declension. Gender of nouns of the 1st declension. Case endings. II-th declension. Gender of nouns of the 2nd declension. Endings of the nominative singular. Features of the formation of the vocative singular case. Case endings. The third declension. Generic affiliation of words of the 3rd declension. Defining the noun stem 3rd declension. Varieties of the 3rd declension: consonant, vowel, mixed. Case endings of the 3rd declension. The fourth declension. Gender of nouns of the 4th declension. Exceptions to the 4th declension gender rule. Features of the formation of the 4th declension. Case endings. V-th declension. Gender of nouns of the 5th declension. Exceptions to the gender rule. Case endings.
The name is an adjective.	Adjectives of 1-2 declensions. Adjectives of the 3rd declension. Three groups of adjectives of the 3rd declension. Features of declination. Degrees of comparison of adjectives. Positive degree. Comparative degree. Suffixes of comparative degree. Features of declination of comparative degree. Superlative degree. Superlative suffixes: -issim-, -errim-, -illim-. Superlative declension. Analytical

	forms of degrees of comparison. Suppletive forms of degrees of comparison.
The name is a numeral.	Categories of numerals: quantitative, ordinal, dividing numerals, and adverbial numerals. Formations of quantitative numerals. Features of declination of quantitative numerals. Formation of ordinal numbers. Declination of ordinal numbers. Features of matching numerals with nouns in comparison with the Russian language.
A pronoun.	Categories of pronouns. Personal pronouns. Declension of personal pronouns. Suppletivism in the declension of the personal pronoun of the 1st person singular. Features of using the nominative case of personal pronouns. Reflexive pronoun. Features of use. Possessive pronouns. Formation and declension of possessive pronouns. Demonstrative pronouns. Features of pronominal declension. The use of demonstrative pronouns in the function of personal pronouns of the 3rd person. Relative values pronouns. Interrogative pronouns. Negative pronouns, Indefinite pronouns. Pronominal adjectives.
Adverb.	Non-derived adverbs. Derived adverbs: formed with suffixes; froCreditsn case forms. Degrees of comparison of adverbs.
Verb.	Grammatical categories of the verb: person, number, tense, voice, mood. Basic (dictionary) verb forms. Three verb bases. Methods of forming the perfect base and supine base. Types of conjugation. The verb esse. Personal and non-personal forms of the verb. Personal forms of the praesentis system; tenses, voices, moods. Personal endings of the real and passive voices. Suffixes of tenses and moods. Imperatīvus. Forms of prohibition. Personal forms of the perfecti system: tenses, voices, moods. Personal endings perfecti indicatiīvi actīvi. Suffixes of tenses and moods. Non-personal verb forms. Methods of formation of participium praesentis actīvi and participium perfecti pasīvi. Irregular verbs. Verbs that are complex with esse.
Word formation in Latin.	Word composition. The most important prefixes and suffixes. International character of some Latin affixes.
Latin language vocabulary.	Lexical richness of the Latin language. Latin foundations in linguistic and modern scientific terminology. Romanisms in Russian. Latin maxims and popular expressions.



## 6. Biological Physics

<b>Name of the discipline</b>	<b>Biological Physics</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Basic laws of mechanics.	<p>Safety instructions for working in a physical laboratory. Methods of physical measurements, recording their results and evaluating their accuracy.</p> <p>Dynamics of oscillatory motion. Mechanical vibrations and waves</p> <p>Sound and auditory sensations. Properties of ultrasonic waves Ultrasound in medicine.</p>
Thermodynamics.	<p>Balance and fluid movement. Surface phenomena. Hemodynamics. Breathing.</p> <p>Thermal phenomena. Thermodynamics of a living organism. Transfer phenomena. Cellular potential and dipole moment of the heart.</p>
Electric and magnetic fields.	Electric field. Direct current and electrophoresis. Magnetic field and magnetic resonance. Electromagnetic induction and alternating current. Introduction to rheography and rheograph.
Light waves.	<p>Interference and diffraction of light. Resolution of the microscope. Visual perception of light. Light polarization and saccharimetry. Lasers and holography. X-ray radiation.</p> <p>Interaction of light with matter. Refraction and reflection of light. Lenses and optical devices. Correction of visual deficiencies. light absorption and fluorescence (application in microscopy). Photoelectric effect.</p>
The structure of the atom and the atomic nucleus. X-ray radiation.	Elementary particles and their annihilation. Ionizing radiation and its effect on a living organism. Radioactive methods in biological medicine. Dosimetry.

## 7. Inorganic and Analytical Chemistry

Name of the discipline	Inorganic and Analytical Chemistry
Scope of the discipline	3 CREDITS (108 hours))
Summary of the discipline	
Name of sections (topics) of the discipline	Summary of sections (topics) of the discipline:
The structure of the atom. Chemical bond.	The atom. The composition of an atom. A chemical element. Electronic configurations of atoms and ions. Periodic law. The method of valence bonds. Valence. Hybridization of orbitals. Chemical bonding in complex compounds.
Thermochemistry. Chemical equilibrium.	Fundamentals of thermochemistry. Enthalpy. Hess's law. Entropy. Gibbs free energy. Chemical equilibrium. The law of mass action. Chemical equilibrium shift.
Solutions. Electrolytic dissociation.	Dispersed systems. Solutions. Methods for expressing the concentration of solutions: mass fraction, molar concentration, molar concentration of substance equivalents. Theory of electrolytic dissociation.
Dissociation of weak and strong electrolytes. Hydrolysis of salts.	Weak electrolytes. The law of dilution. The total ion effect. Strong electrolytes. Activity and activity coefficient. Ionic strength. Ionic product of water. Hydrogen index. Hydrolysis of salts.
Heterogeneous equilibria. Coordination connections.	Solubility constant. Solubility. Conditions of dissolution and precipitation formation.  Electrolytic dissociation and instability constant of coordination compounds.
Redox reactions.	Redox reactions. Redox potentials. The Nernst equation. The condition of redox reactions.
The main classes of inorganic compounds.	The main classes of inorganic compounds. Relationship between classes of inorganic compounds
Fundamentals of qualitative analysis	Fundamentals of qualitative analysis of cations and anions. Determination of cations I – VI analytical groups and anions I – III analytical groups in solutions
Fundamentals of quantitative analysis	Fundamentals of quantitative analysis. Methods of neutralization, complexometry, oxidimetry and photolorimetry.

## 8. Organic Chemistry

<b>Names of the discipline</b>	<b>Organic Chemistry</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction. Hydrocarbons (alkanes, alkenes, alkynes, dienes).	Organic chemistry as a field of science that studies the structure. Isomerism. Hybridization of the carbon atom. Homological series. Nomenclature, isomerism, and production methods. Physical properties. Chemical properties. Identification.
Aromatic compounds.	Aromatic compounds. The concept of aromaticity. Electrophilic substitution reactions in the aromatic core. Orientation rules.
Halogen derivatives.	Halogen derivatives. Reactions of nucleophilic substitution of halogen in halide alkyls and arenes. Identification of halogen-derived hydrocarbons.
Alcohols. Phenols.	Methods of obtaining alcohols. Reactivity of alcohols. Phenol, production methods and chemical properties. Identification of alcohols and phenol.
Amines. Aminophenols. Amino alcohols.	Aliphatic and aromatic amines. Basic properties of amines. Acylation and alkylation. Reactions with nitrous acid. Aniline, production methods and chemical properties.
Aldehydes and ketones.	Methods for obtaining aldehydes and ketones. Reactions by carbonyl group and by $\alpha$ -position. Identification of the aldehyde group.
Carboxylic acids. Derivatives of carboxylic acids. Dibasic carboxylic acids. Fats, oils, and lipids. Hydroxy acids. Oxoacids.	Receiving methods. Derivatives of carboxylic acids: salts, halides, anhydrides, amides, nitriles, esters. Higher fatty acids. Dibasic carboxylic acids. Hydroxy acids. Chemical properties. Optical isomerism.
Carbohydrates.	Carbohydrates. Classification, structure, isomerism, and properties. Glucose, mannose, galactose, fructose. Disaccharides. Structure and properties. Polysaccharides.

Amino acids. Peptides and proteins.	Amino acids. Classification, nomenclature, structure, and receipt. Chemical properties of amino acids. Peptides and proteins. Peptide bonds.
-------------------------------------	--

## 9. Physical and colloidal Chemistry

<b>Names of the discipline</b>	<b>Physical and colloidal Chemistry</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Properties of solutions.	Colligative properties of electrolyte solutions. Solubility of gases in liquids. Cryoscopy and ebullioscopy. Diffusion in solutions. Osmosis. Isotonic Vant-Hoff coefficient.
Electrolyte solutions.	Differences between the properties of electrolyte solutions and those of non-electrolyte solutions. Theory of electrolytic Arrhenius dissociation. Dissociation constants. Electrical conductivity of electrolyte solutions. Specific, equivalent, and molar electrical conductivities of electrolyte solutions and their concentration dependence. The Kohlrausch rule. Application of conductometry in analytical chemistry.
Electromotive forces (EMF).	Mechanism of occurrence of a potential jump at the interface between phases. Occurrence of a potential jump on an inert metal due to oxidation-reduction of a nonmetal. Contact potential difference between metals. Electroplating elements. The Nernst equation. Classification of electrodes. Electrode potentials.
Adsorption.	Surfactants and inactive substances. Gibbs adsorption. Adsorption of gases and vapors on solid adsorbents. Dynamic nature of adsorption. Physical adsorption and chemisorption.
Fundamentals of formal kinetics.	Kinetic law of effective masses and its scope. Kinetic equation and molecular weight of reactions. Kinetics of simple reactions of various orders. Effect of temperature on the reaction rate. The Van't Hoff temperature coefficient and the Arrhenius equation. Catalysis. Enzymatic catalysis.
Colloidal chemistry.	Features of colloidal solutions. Classification of colloidal systems and methods of their preparation. Molecular-kinetic properties of dispersed systems. Sedimentation in dispersed systems. Methods of cleaning colloidal systems (reverse osmosis, dialysis, electrodialysis, ultrafiltration). Optical properties of sols. Light scattering. Rayleigh's law. Structure of the micelle of a hydrophobic sol. The Faience-Paneta rule. The role of

	the stability. Electrokinetic properties of dispersed systems. Stability and coagulation of colloidal fluids systems. Kinetic and aggregative stability. Coagulation. The Schulze-Hardy rule. Solutions of high-molecular compounds (HMC). IUD solutions are molecular colloids. Properties of IUD solutions. Swelling. Amphoteric properties of proteins. Isoelectric state. Salting out, denaturation, and coacervation.
--	--

## 10. Biological Chemistry

<b>Name of the discipline</b>	<b>Biological Chemistry</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
<p>Introduction to Biochemistry</p> <p>Proteins: structure, properties, and functions</p> <p>Complex proteins, nucleic acids, and enzymes.</p>	<p>Subject, tasks and main directions of biochemistry. Basic chemical components of living systems. The concept of the structure of amino acids and proteins. Biologically active peptides. Structural and functional diversity of proteins. Protein folding. The role of chaperones. Physical and chemical properties of amino acids and proteins. Methods of studying amino acids and proteins. Classification of proteins (simple and complex proteins). Relationship between protein structure and function. Simple proteins. Features of the structure of connective tissue proteins. Dialysis proteins. Paper chromatography of amino acids. Conjugated (complex) proteins: nucleoproteins, chromoproteins, phosphoproteins, glycoproteins, proteoglycans, lipoproteins, metalloproteins, complex proteins-enzymes. Nucleoproteins: role in the phenomena of heredity; general characteristics of protein and polynucleotide components. Structure, biological functions of mononucleotides, and the nature of their binding in nucleic acids. Structural features and spatial organization of various types of molecules RNA and DNA. Relationship between the structure of nucleic acids and their functions. Basics of biocatalysis. Chemical nature of enzymes. Features of enzymes as biocatalysts: dependence on physical and physico – chemical environmental conditions (temperature, ionic strength, pH); high selectivity (substrate specificity and specificity of action); sensitivity to the physicochemical parameters of various substances (inhibitors, activators). Coenzymes – the concept of their functional role and chemical composition diversity. Allosteric centers, their regulatory functions. Classification and nomenclature of enzymes. Enzyme activity, units of its measurement. Kinetics of enzymatic catalysis. The Michaelis-Menten equation. Regulation of enzymatic activity: fast and slow ways of its implementation. Enzyme inhibitors: irreversible and reversible; competitive and non-competitive (allosteric). The use of inhibitors in medicine and in everyday life. Reversible enzyme inhibition as a mechanism of action most medications. Isoenzymes and their role in enzyme diagnostics. Immobilized enzymes.</p>
<p>Molecular mechanisms of regulation and self-regulation</p> <p>Lipids: structure, properties, and functions. Biological membranes.</p>	<p>Vitamins are essential factors of human nutrition. Distribution of vitamins in nature. Chemical nature of vitamins, pictures of hypo- and hypervitaminosis in the body. Classification of vitamins. The concept of antivitamins. Characteristics and formulas of individual water-soluble vitamins B1, B2, pantothenic acid, PP, B6, B12, H (biotin), folic acid, C, A, D, E, K. Coenzymes are derivatives of vitamins. Functional role of coenzymes. Quantitative determination of vitamin C. Lipids. Functions and classification of lipids. Chemistry of lipids, formulas of lipids. The main representatives of various classes of lipids. Fat-soluble vitamins and their transport. Characteristics and formulas of individual fat-soluble vitamins A, D, E, and K. Hormones are coordinators of biochemical processes. Subordination of endocrine organs. Chemical structure of hormones, their physiological action. Mechanism of action of</p>

	hormones. Prostaglandins, prostacyclines, leukotrienes, and thromboxanes. The effect of hormones on metabolism.
--	---



## 11. Computer science

<b>Name of the discipline</b>	<b>Computer science</b>
<b>Scope of the discipline</b>	<b>2 CREDITS ( 72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Basic concepts and methods of computer science theory and coding.	<p>Basic concepts and methods of computer science and coding theory. General characteristics of information collection, transmission, processing, and accumulation processes.</p> <p>Technical means of implementing information processes. Software tools for implementing information processes. Local and global computer networks. Concept and models of information exchange protocols. Data transmission media, modems, satellite and fiber-optic communication channels. Application capabilities of teleinformation systems: e-mail. Electronic bulletin boards (BBS), teleconferences, transmission of formalCreditsd information, access to remote databases, extraterritorial organization joint projects. Protection of information in networks.</p>
Types of information technologies.	Types of information technologies. Information technology as the basis of all modern intensive high-tech technologies. Information technology of data processing. Information technology of management. Information technology for decision support. Information technology of expert systems.
Creation of databases, statistical processing, development of current and annual zootechnical reporting forms.	Creation of databases, statistical processing, development of current and annual zootechnical reporting forms. Tasks that can be solved using databases. Automated information resources: databases. Data and knowledge. Differences between them. Spreadsheets. Database, data bank, database management system, database administrator. Organization of relationships between data: hierarchical, network, relational. Use of databases on the example of the automated workplace "Selex-cows-young growth" pedigree accounting in farms.
Optimization of rations using automated control systems workplace (ARMa) "Rations".	Analysis of the existing diet, calculation of the premix, calculation of the optimal diet, taking into account restrictions on the dachas of each feed, restrictions on the nutritional content of the diet, taking into account the

	ratios between the given nutritional elements, taking into account the given structure of the diet. Calculation of optimal feeding rations for various full-age groups of animals of different productivity directions.
Operational management of animal husbandry.	Operational management of animal husbandry. Accounting, planning, monitoring and analysis of technological operations related to the physiological cycle of animals. Automatic generation of tasks for performing technological operations.
Expert system: Animal diseases.	Diseases of cattle, diseases of pigs, diseases of poultry, diseases of dogs. Creating a knowledge base of the expert system by filling out reference books and setting links between the corresponding records. Automated diagnostics of animal diseases, issuing recommendations on disease prevention, treatment and rehabilitation of animals, obtaining certificates on diseases, their signs, pathogens, medical and preventive measures; on diseases characteristic of different groups of animals.

## 12. Biology with the basics of ecology

<b>Name of the discipline</b>	<b>Biology with the basics of ecology</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Invertebrates.	Introduction. Origin of life, forms of manifestation of life.
	The simplest ones. General characteristics, taxonomy, morphophysiological features, significance for ecology and veterinary medicine.
	Coelenterates. General characteristics, taxonomy, morphophysiological features, significance for ecology.
	Flatworms. General characteristics, taxonomy, morphophysiological features, significance for ecology and veterinary medicine.
	Roundworms. General characteristics, taxonomy, morphophysiological features, significance for ecology and veterinary medicine.
	Annelids. General characteristics, taxonomy, morphophysiological features, significance for ecology and veterinary medicine.
	Arthropods. General characteristics, taxonomy, morphophysiological features, significance for ecology and veterinary medicine.
	Shellfish. General characteristics, taxonomy, morphophysiological features, significance for ecology.
Vertebrate animals.	Cartilaginous fish. General characteristics, taxonomy, morphophysiological features, significance for ecology and veterinary medicine.
	Bony fish. General characteristics, taxonomy, morphophysiological features, significance for ecology and veterinary medicine.
	Amphibians. General characteristics, taxonomy, morphophysiological features, significance for ecology and veterinary medicine.

Reptiles. General characteristics, taxonomy, morphophysiological features, significance for ecology and veterinary medicine.

Birds. General characteristics, taxonomy, morphophysiological features, significance for ecology and veterinary medicine.

Mammals. General characteristics, taxonomy, morphophysiological features, significance for ecology and veterinary medicine.

### 13. Animal anatomy

<b>Name of the discipline</b>	<b>Animal anatomy</b>
<b>Scope of the discipline</b>	<b>5 CREDITS (180 hr.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction to animal anatomy.	Animal anatomy as a science, its place in a number of biological and veterinary disciplines. History of the development of animal anatomy as a science.
Musculoskeletal system.	General morphofunctional characteristics of the structure and development of the musculoskeletal system of movement and their determining factors. The importance of the apparatus in the vital activity of the body. Characteristics of the skeleton, principles of its division into divisions. The role of the skeleton in the vital activity of the body. Morphofunctional characteristics of bone junctions, their classification and morphogenesis. Morphofunctional characteristics of skeletal muscles. The relationship of the muscular system with other systems of the body.
General (skin) cover.	General morphofunctional characteristics of the skin and its derivatives. The role of the skin as an indicator of the physiological state of the body.
Nervous system and analytical Credits.	Principles of the nervous system structure. Division of the nervous system into central and peripheral divisions and their interrelation. Anatomical composition and morphofunctional characteristics of analytical Credits and their classification.
The endocrine system.	Anatomical composition and morphofunctional characteristics of the endocrine glands and their classification.
The cardiovascular system.	Structure and significance of blood and lymph circulation organs, hematopoietic organs, and the immune (lymphoid) system. The structure of the heart. Circulatory circles, including in the fetus. Regularities of the course, location and branching of blood vessels, anastomoses, collectors and collaterals, vascular arches and plexuses, mirror networks, microcirculatory bed. The main arterial and venous highways, lymphatic vessels, their structure and connections with the venous system.
Splanchnology.	The concept of body cavities, serous cavities, membranes and their derivatives (mesentery, omentum, ligament, fold). Their development and mutual arrangement. The digestive system. Anatomical structure. General morphofunctional characteristics, its development in phylo-

	and ontogenesis. Breathing apparatus. Anatomical composition and general principle of the respiratory apparatus structure. The genitourinary system. Anatomical structure. Morphofunctional characteristics of the genitourinary system, its phylo-and ontogenesis.
Features of poultry anatomy.	Morphofunctional analysis of the anatomy of organs and systems of various species of domestic birds in connection with flight, nutrition features and industrial maintenance.

## 14. Cytology, Histology and Embryology

<b>Name of the discipline</b>	<b>Cytology, Histology and Embryology</b>
<b>Scope of the discipline</b>	<b>8 CREDITS (288 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Cytology.	Histological elements. Main types: cell, symplast, syncytium, intercellular substance. Cell theory. Cell.
General histology. The concept of fabrics. Epithelial tissues.	General morpho-functional characteristics of epithelial tissues, histogenesis of epithelial tissues.
Internal environment tissue system. Blood.	The concept of the internal environment tissue system. Blood and lymph, their main functions. Shaped elements of blood and lymph.
Hematopoiesis. Immunity.	Hematopoietic system: erythropoiesis, granulocytopoiesis, lymphocytopoiesis, monocycytopoiesis, thrombocytopoiesis. Immunity. T-lymphocytes, B-lymphocytes, NK- cages.
Loose and dense connective tissue.	Type Fibrous connective tissues. General morpho-functional characteristics of loose connective tissue. Structure of tendons and ligaments.
Skeletal tissues. Cartilage tissues.	General characteristics of skeletal tissues. Classification. Cartilage tissues. Types of cartilage tissue (hyaline, elastic, fibrous).
Skeletal tissues. Bone tissue.	Reticulofibrous (coarse-fibrous) bone tissue. Lamellar bone tissue.
Muscle tissue.	Somatic striated (striated) muscle tissue. Cardiac striated (striated) muscle tissue.
Nerve tissue.	Neurons. Classification and structure. Macrogliia and microglia, structure and functions. Nerve fibers, structure, types.
Private histology. The nervous system.	Organs of the peripheral and central nervous system.
Private histology. Sensor system.	Classification. General principle of cellular organization of receptor divisions. Neurosensory and sensorepithelial receptor cells.
The cardiovascular system.	General principles of structure and tissue composition of blood vessel walls. Classification of vessels.

The system of hematopoietic organs and immune defense.	General characteristics of hematopoietic organs and immune defense.
Organs of the digestive system.	General characteristics of the digestive system.
The endocrine system.	Central and peripheral parts of the endocrine system. Hormones and their classification.
Respiratory system.	Features of the structure of the wall of the airways: nasal cavity, larynx, trachea and main bronchi.
Skin and its derivatives.	Skin. General characteristics. Sources of development.
The system of urinary and urinary organs.  The reproductive system.	General characteristics of the urinary organ system.  Germ cells and their development.  Meiosis. The structure of germ cells.
General embryology.	Embryogenesis. Histological structure of the embryo at different stages of development.



## 15. Animal physiology and ethology

<b>Name of the discipline</b>	<b>Animal physiology and ethology</b>
<b>Scope of the discipline</b>	<b>10 CREDITS (360 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction to physiology.	The subject of animal physiology. History of physiology.
Excitable tissues.	Excitable tissues, their characteristics. Muscle physiology. Physiology of nerve fibers.
The nervous system.	General characteristics of the structure and functions of the nervous system. Central nervous system (CNS): spinal cord and brain. The autonomic nervous system.
The endocrine system.	General characteristics of the endocrine glands. The hypothalamus. Pituitary gland. The thyroid gland. Parathyroid (parathyroid) glands. The adrenal glands. Sexual glands. The thymus. Epiphysis. "Tissue hormones".
Blood system.	The concept of the blood system. Blood, tissue fluid, and lymph. Basic functions. Plasma and blood serum. Shaped elements blood. Hematopoiesis. Blood clotting. Teaching about blood groups.
The immune system.	Immunity, its significance. Structural organization of the immune system: Natural and adaptive immunity. Humoral and cellular immune response.
Circulatory and lymphatic system.	The importance of blood circulation for the body. Heart physiology. Functional characteristics of blood vessels. Lymph and lymph circulation.
The respiratory system.	The essence of breathing. Transfer of gases by blood. External indicators of the respiratory system. Nervous and humoral regulation of respiration.
The digestive system.	The essence of digestion. Basic functions of the digestive system. Methods of studying digestion. Digestion in the oral cavity. Digestion in the stomach. Digestion in the small and large intestines.
Metabolism and energy.	Biological significance of metabolism and energy. Protein exchange. Carbohydrate exchange. Lipid metabolism. Mineral metabolism. Water exchange. Energy exchange.
The selection system.	Kidneys and urinary tract. Excretory functions of the digestive tract, respiratory organs. Skin.

The breeding system.	Reproductive organs and their functions in males and females. Pregnancy. Childbirth.
Lactation system.	The concept of lactation. Milk and colostrum. The process of milk formation. Milk delivery.
Higher nervous activity.	Higher, or conditioned reflex activity of the cerebral cortex. I. P. Pavlov on the types of higher nervous activity. Sleep and hypnosis. Memory.
Fundamentals of ethology.	Types, forms, and systems of behavior
Sensor systems.	The concept of analyzer systems. Visual, auditory vestibular, olfactory, taste and skin analyzers.
Traffic system.	Features and types of traffic
Adaptation of the body.	General mechanisms of adaptation. Stress.

## 16. Pathological physiology

<b>Name of the discipline</b>	<b>Pathological physiology</b>
<b>Scope of the discipline</b>	<b>9 CREDITS (324 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
General pathological physiology.	The study of diseases (nosology), causes (etiology), mechanisms of development (pathogenesis), course, prognosis. Typical circulatory disorders, pathology of homeostasis, fever. The effect of pathogenic environmental factors. Pathophysiology of the cell. Inflammation. Pathology of thermal regulation. Reactivity of the body. Pathophysiology of the immune system. Typical pathological processes. Violations of the water-salt (electrolyte balance.) and acid-base equilibria. Metabolic pathology, pathology tumor growth. Immunogenic reactivity, allergy, hereditary diseases. Pathophysiology of the blood system, pathology of the heart and blood vessels. Hypoxia and hypoxemia, pathophysiology of extreme conditions. Pathophysiology of digestion, liver, types and pathogenesis of jaundice. Pathophysiology of urination and urinary excretion. Pathophysiology of the endocrine system. Neurosis in animals. Violations of trophic functions. Immobilization of animals, types of anesthesia. Violation of peripheral blood circulation and microcirculation. Hyperbiotic processes. Tumor growth. Hypobiotic processes. Metabolic disorders.
Private pathological physiology.	Pathophysiology of the blood system. General anemia. Leukocytosis. Leukopenia. Leukemia. Changes in the biochemical composition of blood. Pathophysiology of general circulation: cardiac and extracardial causes. Pathologies of the pericardium and myocardium. Cardiac arrhythmias: tachycardia, bradycardia, extrasystoles, blockages, atrial fibrillation. Heart defects. Dysregulation of vascular tone. Hypertension, hypertension. Atherosclerosis. Hypotension. Collapse. Fainting. Pathophysiology of respiration. Violation ventilation of lungs. Violation of the functions of the upper respiratory tract. Pathology of the lungs. Violation of pleural function. Pneumothorax. Insufficiency of internal respiration. Types of hypoxia. Compensatory reactions in hypoxia. Pathophysiology of digestion. Loss of appetite and thirst. Salivation disorder. Esophageal dysfunction. Violation of the motor, evacuation and secretory functions of the stomach. Pathologies in the pancreas in ruminants. Violation of intestinal digestion. Pathophysiology of the liver. Modeling pathologies of the liver (extirpation of the liver, Eck-Pavlov fistulas). Metabolic disorders in functional disorders of the liver. Fatty liver disease as a universal reaction of the liver to damage. Hepatitis, hepatosis, cirrhosis. Jaundice. Pathophysiology of the kidneys. Quantitative disorders of diuresis. Nephritis,

nephrosis, and nephrosclerosis. Violation of the concentration ability of the kidneys. Qualitative changes in the composition of urine. Changes in daily diuresis. Uremia. Urolithiasis. Renal edema and hypertension. Pathophysiology of the endocrine system. Pituitary gland dysfunction. Disorders of the thyroid gland and parathyroid gland. Violation of the adrenal glands. Violation of the endocrine function of the pancreas. Violation of the function of the sex glands. Thymus and epiphysis dysfunction. Pathophysiology of the nervous system. Disorders of the motor function of the nervous system. Paralysis, paresis. Hyperkinesis. Ataxia. Sensitivity disorders. Violation of higher nervous activity.

## 17. Veterinary microbiology and mycology

<b>Name of the discipline</b>	<b>Veterinary microbiology and mycology</b>
<b>Scope of the discipline</b>	<b>6 CREDITS (216 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
General microbiology.	Taxonomy, morphology and structure of microorganisms. Physiology of microorganisms. Influence of environmental factors on microorganisms. Genetics of microorganisms. Distribution of microorganisms in nature.
Fundamentals of sanitary microbiology.	Sanitary-indicative microorganisms, characteristics of their properties. Principles of sanitary and microbiological research of water, soil, and air in livestock buildings. Microflora of feed.
Fundamentals of teaching about infection.	Definition of the term "infection — infectious process". Infectious disease. Stages of development and clinical manifestation of an infectious disease. The concept of sepsis, bacteremia, toxemia, septicopyemia. Microbial storage. The concept of pathogenicity and virulence of microbes.
Fundamentals of the doctrine of immunity.	The immune system and its functions. Central and peripheral organs of the immune system. Function of T-and B-lymphocytes. Three-cell cooperation of the immune response. Antigens and their properties. Antibodies. Their nature and function. Serological reactions. The concept of allergies and their types. Biologics.
Private microbiology.	Pathogenic cocci. Enterobacteria. Pathogens of swine erysipelas and listeriosis. Pathogenic mycobacteria. Pathogens of zoonotic infections. Yersinia. Causative agent of pasteurellosis. Pathogenic anaerobes. Pathogens of necrobacteriosis and hoof rot. Pathogenic Pseudomonas, rickettsias, mycoplasmas, and chlamydia. Pathogens of campylobacteriosis and leptospirosis. Pathogens of protozoal infections.
Mycology.	Pathogens of mold mycoses (mucor, penicilli, aspergillus, etc.). Pathogens of mycoses caused by yeast-like fungi (candidiasis, coccidiomycosis, epizootic lymphangitis, etc.) Pathogens of dermatomycosis: trichophytosis and microsporia. Characteristics of the most well-known mycotoxins (afla-and ochratoxins, penicillic acid, trichothecenes, rubratoxins, Creditsaralenone, etc.) and producer fungi.

## 18. Virology and biotechnology

<b>Name of the discipline</b>	<b>Virology and biotechnology</b>
<b>Scope of the discipline</b>	<b>5 CREDITS (180 hr.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
General virology.	Discovery of viruses and the history of their study. Structure and chemical composition of viruses. Classification of viruses, its scientific and practical value. Reproduction of viruses. Cultivation of viruses.
Pathogenesis of viral diseases of animals.	Pathways of virus entry into the animal body and barriers on these pathways. Primary localization and circulation of the virus. Tropism of viruses and its conditionality. The mechanism of damaging action of viruses on cells. Latent, chronic persistent, slow viral and prion infections.
Features of antiviral immunity.	Factors of non-specific and specific antiviral protection of animals. Interaction of cellular and humoral links in the formation of antiviral immunity.
Biotechnology.	Live and inactivated antiviral vaccines. Basic principles of obtaining and controlling live vaccines. Principles of preparation and control of inactivated antiviral vaccines. Subunit vaccines and genetically engineered vaccines. Advantages and disadvantages of different types of antiviral vaccines. Their practical application.
Serological reactions in virology.	Principles of diagnostics of viral diseases of animals.
Private virology.	The Poxvirus family. The Herpesvirus family. The Adenovirus family. The Picornavirus family. The Calicivirus family. The Togavirus family. The Paramyxovirus family. The Reovirus family. The Birnavirus family. The Retrovirus family. Prions and infections caused by them.

## 19. Veterinary pharmacology

<b>Name of the discipline</b>	<b>Veterinary pharmacology</b>
<b>Scope of the discipline</b>	<b>7 CREDITS (252 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction to pharmacology.	The subject of pharmacology. History of veterinary pharmacology.
Recipe.	Recipe structure. Various dosage forms and the rules for prescribing them in prescriptions.
General pharmacology.	Fundamentals of pharmacokinetics and pharmacodynamics. Drug interactions. Creation of new medicines. Names of medicines.
Private pharmacology: - substances acting on the central nervous system;	Drugs for anesthesia, alcoholics, sleeping pills, sedatives, analgesics, anticonvulsants, neuroleptics, tranquilizers, sedatives, anti-depressants, nootropics, psychostimulants, analeptics.
- agents acting on afferent and efferent innervation;	Holinomimetics, holinoblockers; adrenomimetics, adrenoblockers; antihistamines; local anesthetics, astringents, enveloping, emollients and adsorbents; emetics, ruminants, expectorants, laxatives, essential oils, bitterness.
- substances that regulate the functions of individual organs and systems;	Substances that act primarily on the cardiovascular system; substances that affect the processes of hemostasis and hematopoiesis; agents for infusion therapy; substances that affect the gastrointestinal tract; agents that affect the contractility of the myometrium.
- substances that affect mainly the metabolic processes;	Hormones and their antagonists, minerals, vitamins, and enzymes.
means to correct the immune status and productivity of animals;	Immunostimulants, immunoblockers; anti-inflammatory agents; agents that affect the productivity of animals.
- antimicrobial and antiparasitic agents;	General principles of antimicrobial therapy; antibiotics, synthetic antimicrobials, antiseptics and disinfectants; antiprotozoal agents; anthelmintics; antifungal and antiviral agents.
- antitumor drugs.	General principles of tumor therapy, drugs used for tumor chemotherapy.

## 20. Veterinary genetics

<b>Name of the discipline</b>	<b>Veterinary genetics</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Genetics and its place in the system of natural sciences.	Subject of genetics. The concept of heredity and variability. History of genetics development. The significance of G. Mendel's works in the development of genetics as a science. Methods of genetics.. The importance of genetics in agronomy.
Patterns of inheritance of traits during sexual reproduction.	Mendel's laws. Types of dominance. Alleles. Analyzing crossbreeding. Patterns of inheritance of traits in mono -, di -, and polyhybrid crosses
Fundamentals of cytogenetics.	Cellular structure of organisms. Cell structure. Chromosomes, their types and structure. Cell division. Mitosis. Biological significance of mitosis. Pathology of mitosis. Meiosis. Genetic control of meiosis. Genetic significance of meiosis. Pathology of meiosis. Karyotypes.
Interaction of non-allelic genes.	Complementary interaction of genes. Suppression. Dominant epistasis. Cryptomeria (recessive epistasis). Polymerization. Pleiotropy. Modifier genes. Multiple alleles.
The chromosomal theory of heredity.	Coupling and crossover. T. H. Morgan's chromosomal theory. The crossing-over mechanism. The siCredits of the cross and the linear arrangement of genes in the chromosome. Single and multiple intersections. Interference . Localization of genes. Linear arrangement of genes on a chromosome. Genetic maps of chromosomes. Cytological evidence of crossing-over. Factors affecting chromosome crossing.
Genetics of gender.	Inheritance of gender-related traits. Determination of gender. Disorders in the development of gender.
Variability and methods for studying it.	Types of variability and methods of study. . Statistical character of splitting. The chi-square criterion. Study the relationship between attributes.
Molecular basis of heredity.	Evidence for the genetic role of DNA. Chemical composition and structure of nucleic acids. Types and structure of RNA .The genetic code and its properties. Protein biosynthesis.
Mutational variability. Types of mutations and mutagenic factors.	Classification of mutations. Induced and spontaneous mutagenesis. Mutation process. Mutagenic factors. Ionizing radiation and mutations. Chemical mutagenesis. Polyploidy and aneuploidy.
Population genetics.	The concept of populations. Determination of gene frequencies and genotype ratios in populations. The Hardy-Weinberger law. Factors of population dynamics.
Genetic abnormalities. Diseases with a hereditary predisposition.	Genetic, hereditary-environmental, and exogenous anomalies. Autosomal and sex-linked types of inheritance of abnormalities



Human and animal blood types and biochemical polymorphism.	Inheritance of blood groups. The importance of blood types for practice. Biochemical polymorphism and its significance.
Biotechnology.	Genetic and cellular engineering, cloning, transgenic plants and animals.

## 21. Breeding with the basics of private zootechnics

<b>Name of the discipline</b>	<b>Animal breeding with the basics of private zootechnics</b>
<b>Scope of the discipline</b>	<b>5 CREDITS (180 hr.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
The essence of the discipline "Breeding of agricultural animals".	History and current state of the science of feeding agricultural, small domestic and exotic animals.
Features of breeding agricultural and small domestic animals .	Exterior assessment methods.
Scientific basis of animal selection.	Selection of animals.
Scientific basis of animal selection.	Selection of animals for breeding.
Comprehensive assessment of animals.	Exterior and constitution.
Technological cycle in animal husbandry.	Technological cycle in different branches of animal husbandry.
Milk production technology.	Production cycle in dairy cattle breeding.
Meat production technology.	Production cycle in beef cattle breeding.
Technology of other animal husbandry industries.	Production cycle in pig breeding.
	Stati and exterior of the horse. Vices and disadvantages of the exterior of riding, trotting, and heavy-duty horses.
	Rune structure and wool defects. Production and selection methods of their elimination.
	Apiculture.

## 22. Feeding animals with the basics of feed production

<b>Name of the discipline</b>	<b>Feeding animals with the basics of feed production</b>
<b>Scope of the discipline</b>	<b>6 CREDITS (216 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
The importance of animal feeding science.	History and current state of the science of feeding agricultural, small domestic and exotic animals.
Features of digestive and metabolic physiology in small domestic and exotic animals.	Eating behavior.
Scientific basis of feeding agricultural and domestic animals.	Feed nutrition assessment. The concept of feed nutrition. Assessment of feed nutrition by chemical composition. Assessment of feed nutrition by digestible nutrients. Assessment of feed nutrition by the use and transformation of nutrients, the value of the nutrient balance.
Methods for assessing the energy nutritional value of feed.	Indicators of protein, carbohydrate, lipid, mineral and vitamin nutritional value of small pet food.
Comprehensive assessment of feed nutrition.	Feed and feed additives. Methodological bases of normalCreditsd feeding of domestic and exotic animals.
Basics of normalCreditsd feeding of small pets.	Basics of feeding ruminants, monogastric, carnivores and ornamental birds.
Feeding of small ruminants (sheep, goats).	Features of digestion, characteristics of feed, compilation and balancing of diets.
Feeding of small breed horses (ponies, polo ponies, falabella).	Features of digestion, characteristics of feed, compilation and balancing of diets.
Feeding dogs.	Features of digestion, characteristics of the main groups of feeds, compilation and balancing of diets for different gender and age groups. Basics of dietary nutrition.
Feeding domestic and breeding cats.	Features of the digestive system, characteristics of the main groups of feeds, compilation and balancing of diets. Features of feeding exhibition cats. Ready-made wet and dry feeds. Dietary feeds.
Feeding an ornamental bird.	Features of the physiology of digestion and metabolism. Feed characterization, preparation and balancing of rations.
Feeding decorative fur-bearing animals (rabbits, chinchillas) and small rodents.	Features of digestion, characteristics of feed, compilation and balancing of diets.
The importance of animal feeding science.	History and current state of the science of feeding agricultural, small domestic and exotic animals.

Features of digestive and metabolic physiology in small domestic and exotic animals.	Eating behavior.
Scientific basis of feeding agricultural and domestic animals.	Feed nutrition assessment. The concept of feed nutrition. Assessment of feed nutrition by chemical composition. Assessment of feed nutrition by digestible nutrients. Assessment of feed nutrition by the use and transformation of nutrients, the value of the nutrient balance.
Methods for assessing the energy nutritional value of feed.	Indicators of protein, carbohydrate, lipid, mineral and vitamin nutritional value of small pet food.
Comprehensive assessment of feed nutrition.	Feed and feed additives. Methodological bases of normal feeding of domestic and exotic animals.

## 23. Animal hygiene

<b>Name of the discipline</b>	<b>Animal hygiene</b>
<b>Scope of the discipline</b>	<b>4 CREDITS (144 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
General Zoohygiena.	Zoohygiena is the basis of general veterinary disease prevention. History of zoohygiena development. Air hygiene. Thermoregulation and heat exchange of the animal body with the environment. Adaptation and acclimatization of animals. Microclimate. Measures to ensure an optimal microclimate in livestock premises. Influence of the microclimate on the health and productivity of farm animals. Zoohygienic requirements for the soil and its sanitary protection from pollution. Zoohygienic water value. Hygiene of water supply and drinking of farm animals. Zoohygienic requirements for standards and feeding of farm animals. Hygiene of rational care and control over the conditions of keeping farm animals. Prevention of stress caused by uncomfortable conditions of detention. Hygiene of pasture keeping of farm animals. Hygiene of transportation of animals and raw materials of animal origin. Zoohygienic design basics and operation of livestock facilities. Requirements for sanitary and technical equipment of livestock premises for different types and technological groups. Features of occupational health and personal hygiene of livestock workers. Environmental protection in the working area of animal husbandry.
Private zoohygiena.	Hygienic requirements for keeping cattle. Hygienic requirements for keeping pigs and sheep. Hygienic requirements in horse breeding. Hygienic requirements for keeping poultry.

## 24. Veterinary radiobiology

<b>Name of the discipline</b>	<b>Veterinary radiobiology</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hrs.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Physical bases of the action of ionizing radiation.  Biological effect of ionizing radiation.	Features of interaction of ionizing radiation with matter.
Molecular aspects of the biological action of ionizing radiation.	Places of accumulation of radionuclides in the human and animal bodies. Radio sensitivity of various biological species. Radiation dose and power.
Mechanism of biological action of ionizing radiation.	The main types of structural radiation damage to genetic material: the occurrence of inherited mutations, destabilization of DNA, the process of repair of its damage. Interphase cell death.
Opportunities and features of animal husbandry in conditions of pollution.	The main radiobiological paradox. Stochastic theory. Theory of free radicals. Damage repair. The Petko effect.
Methodology for predicting contamination of agricultural products and assessment of human dose loads.	Ways of radionuclide ingestion in animals and birds, their accumulation. Absorption of radioactive substances. Toxicity and siCredits of transition to agricultural products.
Measures to reduce the content of radionuclides in livestock products.	Main radionuclides-pollutants of agroecosystems: $^{137}\text{Ss}$ and $^{90}\text{Sr}$ . Formation of the dose load on animals. Goals and objectives of predictive calculations  Ways to reduce revenue $^{90}\text{Sr}$ and $^{137}\text{Cs}$ in animal husbandry products. Processing of livestock products to reduce the content of radionuclides in them.
Acute radiation sickness of animals under external and internal irradiation.	Dependence of the disease manifestations on the following factors: type of exposure, time factor, spatial factor, dose rate, type of incorporated radioisotope. Critical organs. Characteristic syndromes of vital systems.
Chronic radiation sickness of animals.	Three degrees of severity of chronic radiation sickness caused by general external or uniform internal radiation. Radiation-induced skin lesions in animals.
Features of the effect of ionizing radiation in small doses.	The concept of "low radiation dose". Adaptive response. The "witness" effect. Radiation-induced genome instability. Carcinogenic effects of radiation in small doses. Hormesis.

Effect of ionizing radiation on the embryo and fetus.	The embryo as the most radiosensitive system. Radiation embryopathies. Radiation damage during the fetal period. Effect of internal radiation on the fetus.
Use of ionizing radiation in animal husbandry and veterinary medicine.	The labeled atom method. Conservation and sterilization of animal products. Use of ionizing radiation in feed production.
Radiation expertise of agricultural production facilities.	Procedure for radiation monitoring. Radiochemical analysis of objects of veterinary supervision. Veterinary and sanitary examination of animals affected by radioactive substances.

## 25. Life safety

Name of the discipline	Life safety
Scope of the discipline	3 (108 hours))
Summary of the discipline	
Name of sections (topics) of the discipline	Summary of sections (topics) of the discipline:
Introduction to the discipline "Life safety" and its main provisions.	Purpose, subject, and objectives of the discipline. The main provisions of the discipline. Basic concepts in the course "Life safety". Characteristic human-habitat systems. Industrial, urban, domestic, and natural environments. Human interaction with the environment. Fundamentals of optimal interaction.
Risk. Risk analysis and risk management.	Risk assessment. Damage. Concept and types of risks. Acceptable risk concept. Probabilistic risk assessment and forecasting of dangerous events. Areas and criteria for excessive and acceptable risk.
Natural emergencies and protection of the population from their consequences.	Geophysical, geological, meteorological, agrometeorological, marine hydrological hazards; natural fires. Characteristics of damaging factors of sources of natural emergencies.
Technogenic emergencies and protection of the population from their consequences.	Fires, explosions, threat of explosions; accidents with the release (threat of release) of chemically hazardous substances (AHS); accidents with the release (threat of release) of radioactive substances (RV); accidents with the release (threat of release) of biologically hazardous substances (BW). Damaging factors of sources of technogenic emergencies. Phases of development of emergency situations. Man-made environmental pollution.
Surrounding world. Hazards encountered in everyday life and safe behavior.	The surrounding world and people, the nature of their interaction. A person as an object and subject of security. Situations that arise in the process of human life. Features of the city as a habitat. High-risk areas in the city.
Fundamentals of medical knowledge and first aid to victims of emergencies.	Injuries, poisoning and various types of lesions, major infectious diseases and their prevention. First aid for fractures and bleeding. Skills of performing artificial respiration and indirect heart massage.
Life safety management.	Organizational bases of Belarusian Railways management. Legal basis of environmental quality management. Environmental quality management. Environmental quality regulation.



<p>Monitoring as a basis for managing human life safety.</p>	<p>Types of monitoring: ecological, biosphere, social and hygienic. Use of environmental monitoring data in environmental quality management.</p>
<p>Harmful addictions and their social consequences.</p>	<p>Factors that destroy human health.</p> <p>Bad habits and their prevention. Computer addiction. The effect of alcohol on the human body. Drug addiction and substance abuse. Smoking and its impact on human health. Health and healthy lifestyle. Health promotion factors.</p> <p>Biological rhythms and human performance.</p> <p>Personal hygiene and health rules</p>

## 26. Clinical diagnosis

<b>Name of the discipline</b>	<b>Clinical diagnosis</b>
<b>Scope of the discipline</b>	<b>7 CREDITS (252 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
The concept of diagnosis.	Tasks of clinical trials. The concept of clinical diagnostics as a science, its goals and objectives. Symptoms and syndromes of diseases. Prediction and outcome of diseases.  Safety precautions for animal research.
Animal inspection.	Methods of fixing and taming animals.  Medical history. Scheme of a clinical study. Medical history.
Research methods.	General and special research methods.  Palpation, percussion, auscultation, thermometry.
General study of the animal.	Medical examination of agricultural animals.  Determination of the animal's temperament, type of nervous activity, and constitution.
Circulatory and lymphatic system.	The importance of blood circulation for the body. Heart physiology. Functional characteristics of blood vessels. Lymph and lymph circulation.
Respiratory system.	The essence of breathing. Transfer of gases by blood. External indicators of the respiratory system. Nervous and humoral regulation of respiration.
The digestive system.	The essence of digestion. Basic functions of the digestive system. Methods of studying digestion. Digestion in the oral cavity. Digestion in the stomach. Digestion in the small and large intestines.
Metabolism and energy.	Biological significance of metabolism and energy. Protein exchange. Carbohydrate exchange. Lipid metabolism. Mineral metabolism. Water exchange. Energy exchange.
The selection system.	Kidneys and urinary tract. Excretory functions of the digestive tract, respiratory organs. Skin.
The breeding system.	Reproductive organs and their functions in males and females. Pregnancy. Childbirth.
Lactation system.	The concept of lactation. Milk and colostrum. The process of milk formation. Milk delivery.

Higher nervous activity.	Higher, or conditioned reflex activity of the cerebral cortex. I. P. Pavlov on the types of higher nervous activity. Sleep and hypnosis. Memory.
Fundamentals of ethology.	Types, forms, and systems of behavior.
Sensor systems.	The concept of analyzer systems. Visual, auditory vestibular, olfactory, taste and skin analyzers.
Traffic system.	Features and types of traffic.
Adaptation of the body.	General mechanisms of adaptation. Stress.

## 27. Internal non-infectious diseases

<b>Name of the discipline</b>	<b>Internal non-infectious diseases of animals</b>
<b>Scope of the discipline</b>	<b>10 CREDITS (360 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
General therapy and prevention of internal non-infectious diseases of animals.	Definition of the subject, structural and logical scheme, history of formation, the role of science and practice in the prevention of internal non-infectious diseases. General prevention of VNB. Components of general prevention, medical examination, methods of its implementation. Fundamentals of general therapy. Principles of modern therapy, types of therapy, types of therapy based on the effect of the therapeutic factor. Physical therapy. Types of physical therapy, kineso -, mechano -, hydro -, light -, electro -, inhalation therapy. Therapeutic technique. Individual orders and group drug administration.
Diseases, metabolism in animals.	Diseases caused by metabolic disorders (spread, economic damage, syndromes. Diseases caused by protein-carbohydrate and lipid metabolism disorders). Diseases caused by a violation of mineral metabolism and microelementosis. Diseases caused by excess or lack of vitamins (fat-soluble and water-soluble vitamins).
Diseases of the cardiovascular and respiratory system.	Diseases of the cardiovascular system. Classification, syndromes. Pericarditis. Diseases of the heart muscle. Endocardial diseases. Heart defects. Vascular diseases. Diseases of the respiratory system. Classification, syndromes. Diseases of the upper respiratory tract. Diseases of the lungs and pleura. Hyperemia and edema of the lungs, pneumonia, gangrene of the lungs, emphysema, pleurisy.
Diseases of the digestive system, liver and biliary tract.	Diseases of the digestive system (distribution, classification, syndromes). Diseases of the anterior stomach in different animal species. Diseases of the ruminant pancreas hypotension, atony, acidosis and alkalosis of the scar, tympania, paraperatosis, traumatic reticulitis. Clogging of the book, inflammation of the abomasum. Stomach diseases in different animal species, gastroenteritis, enterocolitis, peptic ulcer disease. Diagnosis, treatment, and prevention. Gastrointestinal colic (distribution, classification, syndromes). Acute expansion of the stomach. Flatulence, enteralgia. Chymostasis and coprostasis. Thromboembolic colic. Diseases of the liver and biliary tract (classification, syndromes). Pigment exchange. Jaundice. Hepatitis, hepatosis, and fatty

	degeneration. Cirrhosis, cholecystitis, gallstone disease ascites, peritonitis.
Diseases of the urinary and nervous system, hematopoietic system.	Diseases of the urinary system (classification, syndromes). Nephritis, nephrosis, nephrosclerosis, pyelonephritis. Diseases of the urinary tract: pyelitis, urocystitis, urolithiasis. Hematuria of cattle. Diseases of the hematopoietic system. Classification, syndromes. Anemia. Hemorrhagic diathesis. Hemophilia, trombocytopenia. Blood-spotted disease. Diseases of the nervous system (distribution, classification, syndromes, diseases of the brain and meninges). Diseases of the spinal cord and its membranes, functional disorders the nervous system.
Poisoning of animals, diseases of young animals, birds and fur-bearing animals.	Poisoning (distribution, classification, syndromes, treatment and prevention). Diseases of young animals (anatomophysiological features in the postnatal period, distribution, economic damage, classification, treatment and prevention). Avian diseases (distribution, economic damage, classification, treatment and prevention). Diseases of fur-bearing animals (distribution, economic damage, classification, treatment and prevention of diseases of the digestive system, respiratory system, metabolic disorders, poisoning).

## 28. Operative surgery with topographic anatomy

Name of the discipline	Operative surgery with topographic anatomy
Scope of the discipline	5 CREDITS (180 hr.)
Summary of the discipline	
Name of sections (topics) of the discipline	Summary of sections (topics) of the discipline:
Introduction to the subject of operative surgery.	Definition of the subject, tasks and content of the discipline. History of veterinary surgery development. The importance of topographic anatomy in surgery. Introduction to the discipline and surgical clinic.
Safety precautions for providing surgical care to animals.	Safety precautions when working with animals. Organization of surgical care. Equipment of operating rooms. Rules for fixing and knocking down animals. Methods of immobilization.
Asepsis and antiseptics as a basis for combating surgical infection.	Asepsis and antiseptics in surgery. Prevention of surgical infection during operations. Surgical instruments and their application.  Sterilization of surgical instruments,  bandages and surgical underwear. Preparation of the surgeon's hands. Hand treatment products. Preparation of the operational field.
Desmurgia.	Desmurgia. Types of dressings, their manufacture. Classification of bandages. The technique of applying bandages. Technique of applying immobilizing bandages. Complications when applying immobilizing bandages.
General concepts of surgery.	Teaching about surgery. Elements of surgical operations.
Anesthesia during surgical operations.	The concept of anesthesia and local anesthesia. The concept of anesthesia and local anesthesia. Methods of conducting nerves of the limb in animals. Technique of spinal anesthesia.
Fast access and prompt reception.	Separation of tissues. Online access and reception. Techniques and methods for separating soft and hard tissues.  Types of bleeding and ways to stop it.  Bleeding, ways to stop it and prevent it. Blood transfusion.

<p>Connecting fabrics. Connecting tissues as an operative technique. The final stage of the operation.</p>	<p>Connecting fabrics. Types of suture material. Seams and knots. Method of joining fabrics. Suture material: classification, storage and application rules. Seams and knots. The technique of tying knots. Technique of applying skin sutures. Technique of applying intestinal sutures. Bone connection. Principles of stable fixation of bone fragments.</p>
<p>Surgical planning and prevention of complications.</p>	<p>Planning a surgical operation based on knowledge of topographic anatomy. Complications of surgical operations. Surgical interventions on various parts of the body and organs of animals.</p>

## 29. General and private surgery

<b>Name of the discipline</b>	<b>General and private surgery</b>
<b>Scope of the discipline</b>	<b>7 CREDITS (252 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Diagnosis and differential diagnosis of surgical pathology.	Methods of diagnosis of surgical pathology. Differential diagnosis of congenital or genetically determined abnormalities, inflammations, dystrophy, neoplasms.
Clinical forms of inflammation.	<p>Features of the course of inflammatory processes in various areas of the animal's body and in various tissues. Patterns of development of the inflammatory process.</p> <p>Methods for diagnosing the stage of the inflammatory process and choosing surgical treatment tactics.</p> <p>The use of pathogenetic therapy in surgical pathology. Types of pathogenetic effects, their clinical significance and methods for evaluating the results of therapy.</p> <p>Methods of hydrotherapy. Methods of hydrotherapy application in inflammatory and dystrophic processes. Types of compresses, the technique of their application.</p> <p>The main ganglia of the sympathetic part of the autonomic nervous system. Types and techniques of novocaine blockades.</p>
Surgical infection.	Surgical infection. Pustular skin diseases. Abscesses, phlegmons, Sepsis. Methods for detecting surgical infection. Differential diagnosis of aseptic and purulent inflammatory processes. Factors influencing the transition of aseptic inflammation to purulent. Treatment of purulent inflammatory processes. Evaluation of treatment outcomes. Outcomes of inflammatory processes.
Closed mechanical damage.	<p>Bruises. Hematomas, lymphoextravasates. Differential diagnosis of closed mechanical injuries, inflammatory and dystrophic processes in different animal species.</p> <p>Methods of treatment of edema, infiltrates and proliferates.</p>
Biology of the wound process.	<p>Biology of the wound process and its phases in different animal species. Types of wound healing by primary and secondary tension. The concept of granulations.</p> <p>Modern methods of complex wound treatment. Long-term non-healing wounds. Necrosis, ulcers, fistulas, dry and wet gangrene. Methods of treatment of aseptic and infection-</p>



	<p>complicated wounds. Complications that occur in the treatment of wounds, measures for their prevention and control of complications in the treatment of wounds.</p>
<p>Surgical pathology in various areas of the animal's body.</p>	<p>Diseases of the head, occiput and neck. Examination of children with diseases in the region of the head, occiput and neck. Differential diagnosis and surgical interventions in diseases of the head and neck.</p> <p>Diseases in the region of the withers and chest. Edema of the withers, hematomas, furunculosis, phlegmon, bursitis. Diagnosis and treatment of chest wounds. Features of surgical interventions in the withers and chest area.</p> <p>Surgical diseases of the abdomen and abdominal organs. Surgery of acute intestinal obstruction. Penetrating wounds of the abdominal wall, peritonitis. Differential diagnosis of diseases of the abdominal cavity. Methods of treating pathology of the pelvic region. Methods of treatment of diseases of the uterus and bladder. Modern methods of surgical interventions in the pelvic region.</p>
<p>Veterinary orthopedics.</p>	<p>The hoof mechanism. Diseases of hooves and hooves. Diagnostics of limb diseases. Principles of treatment of musculoskeletal system pathology. Clinical anatomy of hooves and hooves. Diagnosis of lameness. Functional tests.</p> <p>Hoof cleaning and trimming techniques. Treatment of hoof and hoof diseases. Horse forging techniques. Methods of treatment and prevention of chipping and slaughtering in horses. Rustergoltz ulcer and rheumatic inflammation of the hooves.</p>
<p>Veterinary ophthalmology.</p>	<p>Principles of diagnosis and treatment of eye diseases by surgical methods. Clinical anatomy of the visual organ. Methods of eye examination. Examination of animals with eye diseases. Methods of conservative and operative treatment of eye diseases. Diseases of the eyelids, conjunctiva, lacrimal system and cornea.</p>

### 30. Obstetrics, Gynecology and Andrology

<b>Name of the discipline</b>	<b>Obstetrics, Gynecology and Andrology</b>
<b>Scope of the discipline</b>	<b>8 CREDITS (288 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction to Animal Obstetrics and Gynecology.	Definition and essence of the subject of study. A brief history of the development of veterinary obstetrics. Sections that make up the subject. Characteristics of sections.
Veterinary obstetrics.	Morphofunctional features of the sexual apparatus structure in males and females of different animal species. Features of biological cycles of females. Ovogenesis. Spermatogenesis. Sexual reflexes of males and females. Fertilization. Physiology and pathology of pregnancy. Physiology and pathology of labor. Postnatal period. Diseases of newborns. Breast diseases and their classification. Abortions. Classification of abortions.
Gynecology.	Physiology and pathology of the female reproductive system. Gynecological diseases of female farm animals and companion animals.
Veterinary andrology.	Physiology and pathology of the male reproductive system.
Biotechnics of animal reproduction.	Natural and artificial insemination of animals. Features. A brief history of the origin and development of artificial insemination. Features. Advantages and disadvantages of this method. Research on the sperm quality of manufacturers.

### 31. Parasitology and invasive diseases

<b>Name of the discipline</b>	<b>Parasitology and invasive diseases</b>
<b>Scope of the discipline</b>	<b>7 CREDITS (252 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction to parasitology.	Definition and essence of parasitism. Types of parasitism. Biological bases of parasitology. Parasitology as a science. Components of veterinary parasitology.
General parasitology.	Parasite-host tandem relationships. Classification of parasites. Characteristic features of parasitic organisms. Types of parasite hosts.
Protozoology and protozoa.	Fundamentals of general protozoology. Private protozoology. Protozooses of agricultural animals, small domestic animals, as well as wild and zoo animals.
Veterinary arachnology.	General characteristics of arachnids. Features of development cycles. Permanent and temporary parasites. Ixodic ticks. Scabies mites and acaroses
Veterinary Entomology.	General characteristics of insects. Biological features of parasitic insects. Entomoses of animals.
Veterinary helminthology.	General helminthology. Private helminthology. Helminthiasis is a parasitic disease of the eyelid.  Trematodology. Trematodoses of animals. Cestodology. Cestodoses of animals. Cestodoses are dangerous for humans. Teniidosis of carnivores. Nematodology. Nematodoses.
Acanthocephaly.	General characteristics of the class. Biological features. Acanthocephalosis.

## 32. Epizootology and infectious diseases

<b>Name of the discipline</b>	<b>Epizootology and infectious diseases</b>
<b>Scope of the discipline</b>	<b>10 CREDITS (360 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction to epizootology and infectology.	Epizootology and the study of infectious diseases in the modern structure of veterinary education, science and practice. History of domestic epizootology. History of the fight against microbes and viruses. Infectious diseases and their pathogens. The nature of a contagious disease. Biological and social aspects in the phenomena of infectious pathology. Parasitism and pathogenicity. Parasitic system.
Infection and immunity.	The doctrine of infection. Infection as a multidimensional concept. Infectious process and pathogenesis of infectious diseases. Anti-infective immunity. Susceptibility, resistance, and immunological reactivity. Protective systems of the body. Biologics – means of active specific prevention of infectious diseases, requirements and control of their quality. Evaluation of the quality and effectiveness of anti-epizootic measures. Antibacterial protection of animals.
Epizootological research method and epizootic process.	Population dynamics of health and diseases. Epizootological research method. Epizootology of noncommunicable diseases. Epizootic process. Driving forces and development conditions. Mechanisms of development and manifestation. Sources of infection. Transmission of infectious disease pathogens. Justification, organization and planning of anti-epizootic measures in the system.
Scientific bases of anti-epizootic work.  Infections common to animals of different species, ruminant infections.	Strategy for infection control, prevention and eradication. Diagnostic strategy and tactics in epizootology. Diagnosis of infectious diseases. Treatment of infectious diseases.  Prion infections. FMD and anthrax. Rabies, Aujeszki's disease, tuberculosis, brucellosis. Leptospirosis, listeriosis, and pasteurellosis. Little-known infections and exotic zoonoses that are common to several animal species. Exotic infectious diseases of cattle, leukemia and other viral infections of industrial

	<p>animal husbandry. Sheep infections. Slow infections of animals.</p>
<p>Active specific prevention. Infections of pigs, horses, and poultry.</p>	<p>Acquired immunity. Active specific prevention of infectious diseases and its organization. Vaccinology. Immunological analysis in epizootology.</p> <p>Classical, African swine fever and other swine infections. Pathology of young growth and reproduction. Exotic and new infections. Horse infections. Newcastle disease and other acute epizootic viral and bacterial infections, a little-known and new infectious pathology of birds.</p>
<p>Epizootological nosology and geography. Infections of unproductive animals.</p>	<p>Infections that are common to humans and animals. Veterinary aspects of healthcare. Nosogeography. International and global aspects of epizootology. Conventional and emergent infections. Ecology and evolution of infectious disease pathogens. Systematics and evolution of infectious diseases.</p> <p>Zoonoses are infections that are common to animals and humans. Mycoses of animals. Infections of young animals. Infectious diseases of carnivores, rabbits, fish, bees, and laboratory animals.</p> <p>Infectious diseases of animals in the city.</p> <p>Foodborne infections and zoonoses. Veterinary aspects of healthcare. Natural focal infections.</p>

### 33. Pathological anatomy and forensic veterinary examination

<b>Name of the discipline</b>	<b>Pathological anatomy and forensic veterinary examination</b>
<b>Scope of the discipline</b>	<b>8 CREDITS (288 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
General pathological anatomy.	History of pathology. Cell pathology. General pathological processes. Damages: Dystrophy, atrophy, necrosis. The study of the morphology of disturbed metabolism. Pathogenesis and morphogenesis of protein dystrophies. Parenchymal (intracellular) dystrophy. Vascular-stromal (extracellular) protein dystrophy. Mixed dysproteinoses. Violation of the exchange of neutral and cytoplasmic fats. Exchange of mucins and mucoids. Mucosal dystrophy. Colloidal dystrophy. True and false concretions. Petrification – obyztvlenie. Necrobiosis. Causes and morphogenesis of necrosis. Necrosis outcomes. The doctrine of death – thanatology. Types of death. Cadaveric changes and their significance in veterinary practice. Hyperemia. Thrombosis. Embolism. Edema and dropsy. Types and forms. Morphological manifestation and outcomes. Alternative inflammation. Exudative inflammation. Proliferative inflammation. Types and forms. Morphological manifestation and outcomes. Organs of the immune system. Central peripheral areas. Cellular and humoral immunity. RGNT and RGZT. The essence of adaptive and compensatory processes, their morphological manifestation and significance for the body. Hypertrophy and hyperplasia: essence, types, outcomes. Tumors. Modern theories of the origin of tumors. Malignant and benign tumors. Classification and structure of tumors.
Private pathological anatomy.	Pathological anatomy of skin diseases and their derivatives. Pathological anatomy of diseases of the musculoskeletal system of animals: skeletal muscles, skeleton, joints, tendons. Clinical and morphological characteristics of diseases of the hematopoietic and cardiovascular systems of animals. Pathological anatomy of diseases of the nervous and endocrine systems. Pathological anatomy of poisoning with plant and mineral poisons. Radiation sickness. Pathological anatomy of infectious diseases. Pathological anatomy of parasitic diseases.
Clinical pathological anatomy.	Purpose of autopsy of animal corpses. Types of autopsies: diagnostic, research, and forensic veterinary. The importance of postmortem pathoanatomical diagnostics in the fight

against animal diseases. Stages of the diagnostic process: collection of anamnestic data, medical history and autopsy data. Additional diagnostic tests: bacteriological, virological, histological, histochemical, parasitological, chemical and their significance.

Methods and techniques of autopsy. Methods of autopsy of corpses of different animal species.

Autopsy documentation. Diagnostic protocol and act of forensic veterinary autopsy. Features of these documents and the content of their sections. Veterinary and educational work and the importance of the pathoanatomical Museum. Selection of pathological material and its preparation for fixation. Production of colored museum preparations.

Collection of pathological material for bacteriological, virological, histological and chemical studies.

### 34. Veterinary and sanitary expertise

<b>Name of the discipline</b>	<b>Veterinary and sanitary expertise</b>
<b>Scope of the discipline</b>	<b>7 CREDITS (252 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Veterinary and sanitary requirements for harvesting, transportation and processing of animals. vetsanexpertiza of slaughter products and branding of meat.	Veterinary and sanitary requirements for harvesting, transportation and processing of animals at meat processing enterprises. Norms of loading of farm animals during their transportation. Rules for receiving and conducting pre-slaughter inspection of animals. Requirements for placing animals during overexposure.
Vetsanexpertiza and evaluation of animal slaughter products for infectious diseases. Invasive and non-infectious diseases.	Infectious diseases in which the slaughter of animals for meat is prohibited. Infectious diseases in which animal slaughter products are subjected to laboratory testing. Infectious diseases in which animal slaughter products are subjected to thermal disinfection. Procedure for conducting veterinary and sanitary measures when detecting animals with infectious diseases.
Industrial veterinary and sanitary control during processing of meat of forcibly slaughtered animals	The procedure for acceptance for processing, laboratory control and storage conditions of meat of forced slaughtered animals, conditions and features of processing of meat of forced slaughter. Organoleptic and laboratory parameters of forced slaughter meat, meat of animals killed in a state of agony, and meat of dead animals.
Veterinary and sanitary expertise of commercial wild animal slaughter products	Types of wild animals and feathered birds for meat fishing, types of commercial marine mammals. Procedure for State veterinary supervision in the fishing of wild animals and feathered game. Features of veterinary and sanitary expertise of game slaughter products.
Veterinary and sanitary control in the production of dry animal feed and albumins	Categories of liquid fuel production enterprises. Characteristics of raw materials for the production of FFA. Veterinary control during processing of raw meat and blood, laboratory analysis of FFA and albumins.
Veterinary and sanitary expertise and laboratory control of meat and meat products on the market	Assortment of meat products. Characteristics of various types of meat. Veterinary and sanitary requirements for meat and meat products entering the market. Standards of sampling and procedure for laboratory control of meat and meat products of industrial manufacture and private sellers.
Veterinary and sanitary expertise and laboratory control of milk and fermented milk products on the market	Assortment of fermented milk products. Characteristics of sourdough products. Veterinary and sanitary requirements for milk and dairy products entering the market. Standards of sampling and procedure for laboratory control of milk and fermented milk products of industrial manufacture and private sellers.



### 35. Organization of veterinary business

<b>Name of the discipline</b>	<b>Organization of veterinary business</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Fundamentals of veterinary medicine in the Russian Federation.	<p>Introduction. Historical aspects. Organizational structure of the veterinary service in the Russian Federation. Veterinary institutions and organizations. Organization and planning of veterinary events. Documents regulating veterinary activities. General and special veterinary measures.</p> <p>Economics of veterinary measures. Financing of veterinary services and financing of veterinary activities.</p>
Veterinary supervision and its organization in the Russian Federation.	Veterinary supervision in the Russian Federation. Objects of veterinary supervision. Regulatory documentation. Veterinary services for supervised facilities.

## 36. Physical Culture

<b>Name of the discipline</b>	<b>Physical Culture</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Theoretical section.	<p>Physical culture in general cultural and professional training of students</p> <p>culture in general cultural and professional training of students.</p> <p>Socio-biological foundations of physical culture.</p> <p>Fundamentals of a healthy lifestyle.</p> <p>Psychophysiological foundations of educational work and intellectual activity. Means and methods of physical culture in Russia regulation of working capacity.</p> <p>General physical and sports training in the system of physical education.</p> <p>Fundamentals of the methodology of independent physical exercises.</p> <p>Individual choice of sports or exercise systems.</p> <p>Features of practicing your favorite sport (system of physical exercises).</p>
Professional and applied physical training.	<p>Professional and applied physical training of students.</p> <p>Professional and applied physical training of students.</p> <p>Physical culture in the industrial activity of bachelor and specialist.</p>
Practical section.	<p>Topic 1. Athletics.</p> <p>Topic 2. Basketball.</p> <p>Topic 3. Badminton.</p> <p>Topic 4. Skiing.</p> <p>Topic 5. Volleyball.</p> <p>Topic 6. Football.</p>
Control section.	Control tests to assess physical and technical fitness.



37. Foreign language for special purposes

<b>Name of the discipline</b>	<b>Foreign language for special purposes</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Foreign language (advanced level)	<p><u>Vocabulary and phraseology:</u></p> <p>Fixing the most commonly used vocabulary related to the professional language and reflecting a wide and narrow specialization.</p> <p>Expanding the vocabulary through lexical units that form the basis of the register of scientific speech.</p> <p>Familiarization with industry dictionaries and reference books. Stable phrases that are most often found in scientific speech.</p> <p><u>Word compatibility:</u></p> <p>Free phrases, morpho-syntactically and lexically-phraseologically related phrases, idiomatic expressions.</p> <p>Comparison of “non-idiomatic ” (free) word combinations and more idiomatic ways of expressing thoughts.</p>
Foreign language for special purposes	<p><u>Educational and professional sphere:</u></p> <p>Animal anatomy and physiology;</p> <p>Clinical diagnostics of animals:</p> <p>Diagnosis, treatment, prevention, and vaccination;</p> <p>Veterinary pathology;</p> <p>Human role in animal welfare;</p> <p><u>Business communication and communication tools:</u></p> <p>Design and style of a business letter. Electronic messages. Telephone conversations.</p> <p><u>Communication skills:</u></p>

	Communication with English-speaking partners. Resolving conflict situations. Success in negotiations. Successful presentations. Understanding the specifics of cross-cultural contacts.
--	---

38. Fundamentals of rhetoric and communication

<b>Name of the discipline</b>	<b>Fundamentals of rhetoric and communication</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Development of communication skills.	Development and improvement of the integrative communicative competence of future veterinarians, which includes as basic components linguistic, linguistic-subject, socio - and national-cultural, strategic, compensatory, discursive, speech-behavioral, infocommunication, etc. competence, which ensures the achievement of the necessary level of culture of educational, professional and professional communication, readiness and ability to solve professional and communicative tasks in the future. medical, expert-control, organizational and managerial, production and technological, design and consulting, educational and educational, scientific and research sphere, observing the norms of social and status relationships, norms and rules of professional and business etiquette.
Styles of the modern Russian literary language.	The language norm, its role in the formation and functioning of the literary language. Speech interaction. Basic units of communication. Oral and written versions of the literary language. Normative, communicative, and ethical aspects of oral and written speech. Functional styles of the modern Russian language. Interaction of functional styles. Scientific style. Specifics of using elements of different language levels in scientific speech. Speech norms of educational and scientific spheres of activity. Officially business style. Scope of its functioning, genre diversity. Speech etiquette in the document. Genre differentiation and selection of language tools in journalistic style. Features of oral public speech. The speaker and his audience. Main types of arguments. Speech preparation: selecting the topic, speech purpose, searching for material, starting, expanding, and ending the speech. Basic techniques for finding content and types of auxiliary materials. Verbal design of a public speech. Understanding and informative content and the expressiveness of public speech. Colloquial speech in the system of functional varieties of the Russian literary

	language. Conditions of colloquial speech functioning, the role of extra-linguistic factors. Speech culture. The main directions of improving the skills of competent writing and speaking.
--	---

39. **Fundamentals of Economics and management**

<b>Name of the discipline</b>	<b>Fundamentals of Economics and management</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Subject, method and tasks of economic science.	Subject of economics. Functions of the economy. Types of economic systems. Traditional economy. Command and administrative economics. Market economy. Mixed economy. The main sectors of the economy are primary, secondary and tertiary. Basic methods of economics. History of economic development. Basic economic schools.
Market mechanism.	The essence of the market mechanism. Basic elements of the market mechanism. Market functions. The main elements of the market. The law of demand and the law of supply. Price functions. Price equilibrium. Elasticity of supply and demand. Coefficient of elasticity. Arc and point elasticity. Properties of elasticity.
Factor of production markets.	Land market. Basic elements of the land market. Features of the formation of supply and demand in the land market. Land ownership and land holdings. Features of pricing in the land market. Land rent Balance in the land market. The labor market. The essence of the labor market. The concept of labor force. Labor market functions. Equilibrium in the labor market. Labor market models. Employed population.. Unemployment: its essence and main types. Oken's law. Wages. Main types of wages. Labor code contract: the nature and types of employment contracts. Capital market. The nature and types of capital. Supply and demand in the capital market. Factors influencing supply and demand in the capital market.
Disadvantages of the market mechanism.	Advantages of the market mechanism. Establishing the Waltraz equilibrium. Establishing the Marshall equilibrium. Edge equilibrium. A model with fading price fluctuations. A model with increasing price fluctuations. A model with uniform price fluctuations. Pareto-optimal distribution. Edgeworth's box. Achievable utility curve. Maximizing public welfare. The first theorem of welfare economics. The second theorem of welfare economics. External externalities. Internal externalities. Disadvantages of the market mechanism.
Theory of the firm.	The main approaches to the concept of "firm": technological and institutional, neoclassical



	<p>approaches. Enterprise life cycle. Business attributes. Enterprise functions. Classification of enterprises. Industrial enterprises. Non-industrial enterprises. Small ones. Medium. Large and especially large enterprises. Their role in the economy. State-owned enterprises. Municipal enterprises. Private enterprises. National ones. Foreign languages. Mixed businesses. Organizational and legal aspects business forms: economic partnerships and societies, peasant (farmer) farms, economic partnerships, production cooperatives, state and municipal unitary enterprises. Non-profit organizations.</p>
Fundamentals of management.	<p>Basic approaches to the concept of management. General and specific management. Subject of management. The main goal of management. Management and management: basic approaches to management. Basic principles of management. Main management functions: general, socio-psychological, technological functions. Main management schools: school of Scientific Management, classical school of Management, school of Human Relations, school of quantitative Methods.</p>
Interaction between a person and an organization.	<p>Basic approaches to human behavior. Model of human inclusion in the organizational environment from a human perspective. Model of human inclusion in the organizational environment from the organization's perspective. The basis of conflict is in the interaction of the individual and the organization. Causes of role conflict. Ways to eliminate it. Ways of human development. Motivation of human activity. Motivational process, its main elements. Theories of motivation content.</p>
External and internal environment of the organization.	<p>External environment of the organization. Definition. Basic elements of the organization's macro environment. Basic elements of the organization's microenvironment: Basic elements of the organization's internal environment. Goals and objectives of the organization. Organization structure. Internal organizational processes. Technology. Cadres. Organizational culture.</p>
Designing an organization.	<p>Factors of organization design. Situational factors of organization design. The impact of technology on organization design. Elements of organization design. Elements of building an "organizational building". Linear-functional structure.. Divisional structure. Matrix structure. Edhocratic structure. A participatory structure. Connections in the organization.</p>

## 40. Mathematics

<b>Name of the discipline</b>	<b>Mathematics</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction.	Number. Real numbers. A numeric straight line. Numeric sets. Modulus of a real number. A variable. Function. Methods for setting functions. Scope of the function definition. Properties of functions. Basic elementary functions.
Limits. Continuity.	The concept of a limit. Sequence limit. Function limit. Infinitesimal quantities. Limit theorems. Continuity of the function. Two remarkable limits.
A derivative. Differential.	The concept of a derivative. Geometric meaning of the derivative. The physical meaning of the derivative. The concept of the differential of a function Higher-order derivatives and differentials.
Applications of derivatives.	Basic theorems of differential calculus. Indicates that the function is monotonous. Points of the local extreme. Convexity and inflection points. Asymptotes of the function graph. General scheme of function research and plotting.
Indefinite integral.	Primitive and indefinite integral. Basic properties of an indefinite integral. Basic integration methods.
Definite integral.	Conditions for the existence of a certain integral. Classes of integrable functions. Basic properties of a definite integral. Applications of a certain integral.
Functions of several variables.	The concept of a function of several variables. Continuous functions of several variables. Partial derivatives of a function of several variables. Full differential. Local extremum of a function of several variables.
Differential equations.	Basic concepts. First-order linear differential equations. Second-order linear differential equations with constant coefficients.

## 41. General and veterinary ecology

<b>Name of the discipline</b>	<b>General and veterinary ecology</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction to general and veterinary ecology.	History of development, subject and main tasks of general ecology. Veterinary ecology, its content, main tasks.
Fundamentals of autecology.	Classification of factors. General patterns of the impact of factors on organisms. The main environmental factors: light, temperature, humidity. Feed as an environmental factor. Adaptive morphology of organisms (life forms). Basic living environments. Adaptations of organisms.
Demecology. Populations: basic concepts, classification.	Gender, age, spatial, and ethological (behavioral) structures of the population. Population dynamics. Environmental strategies.
Fundamentals of synecology.	Biocenosis. Ecological niche. Relations of organisms in biocenoses. Ecosystem and biogeocenosis. The cycle of matter and energy in ecosystems. Dynamics of ecosystems. Anthropogenic transformation of terrestrial ecosystems. Agroecosystems.
The biosphere.	Borders of the biosphere. Living matter, its functions. Biogeochemical cycle. Global environmental problems.
Environmental safety in animal husbandry.	Ecological and system organization of animal husbandry and veterinary facilities. Pasture assessment. Pasture degradation and causes of geochemical enzootics. The depleted species composition of vegetation in pastures is the cause of animal diseases.
Classification of infectious diseases due to environmental factors.	Ecological features of pathogenic microorganisms. Relationships between bacteria and vertebrates. Adaptive reactions of pathogenic microorganisms.

## 42. Introduction to the specialty

<b>Name of the discipline</b>	<b>Introduction to the specialty</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction to the specialty.	Primitive medicine, folk and professional veterinary medicine.
Development of veterinary medicine in the ancient world.	Development of veterinary medicine in China, India, Persia, Egypt, Rome.
Veterinary medicine in the Middle Ages.	Development of veterinary medicine in Europe and the Arab world.
Veterinary medicine of ancient Russia.	Veterinary medicine of pre-Slavic tribes, veterinary medicine of Russia in VII-XIV for centuries.
Veterinary Medicine XV-XVII for centuries.	Epizootic control, literature on animal husbandry and veterinary medicine.
Development of veterinary medicine in the Russian Empire.	Veterinary medicine in XVIII development of horse breeding, veterinary education, veterinary and sanitary affairs.
Development of veterinary medicine in Russia XIX century.	Development of natural sciences and scientific veterinary medicine Government Veterinary Medicine.
Veterinary medicine until 1917.	Organization and structure of veterinary medicine. Veterinary education, veterinary scientific societies. Veterinary medicine during the First World War.
Veterinary medicine in the years of Soviet power (1917-1921).	Organization and structure of veterinary medicine. Veterinary education.
Veterinary medicine in the years of Soviet power in the pre-war period.	Veterinary and sanitary supervision, scientific institutions, veterinary congresses.
Veterinary medicine during the Second World War.	Frontline and rear veterinary medicine. Feat of home front workers.
Veterinary medicine in the post-war years.	Organizational structure of the service. Fight against epizootics. Veterinary education.
Veterinary medicine from 1960 to 1990	Organizational structure of the service. Fight against epizootics. Veterinary education.
Development of military veterinary medicine.	Historical background. Creation of military veterinary medicine. Veterinary medicine of the Red Army, the formation of the Soviet Army.
Veterinary and Sanitary Service of the Armed Forces of the Russian Federation. International veterinary organizations.	Veterinary and Sanitary Service of the Armed Forces of the Russian Federation at the present stage. World veterinary organizations. International Epizootic Service.

Development of veterinary medicine in the Russian Federation in the period of new economic relations.	Organizational structure of the service. Fight against epizootics. Veterinary education.
Development of veterinary medicine for companion animals.	Surgery, therapy of small pets. Congresses and conferences.

### 43. Veterinary deontology

<b>Name of the discipline</b>	<b>Veterinary deontology</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction. Subject of Deontology.	Interrelation of ethics and deontology. The history of the emergence of deontological norms, the relationship between veterinary deontology and bioethics.
The surrounding reality as we perceive it.	View emerging issues from different perspectives. The position of the doctor and the position of the pet owner. Search for common items. Keys to mutual understanding.
What we live, learn, and work for. Defining a goal.	Goal setting as the basis of preparation for professional activity and professional activity itself.
Interaction with the world.	Stages of cognition of the world as the formation of the foundations for professional activity. Interference in consciousness as a cause of problems of perception of the world and the way to conflicts in professional activity.
Feeling yourself in the world relative to other people.	Distribution of roles in interaction between people. Dependence, independence, consistency as the basis of interaction. The role of acceptance or rejection of the imposed role in the emergence of professional conflicts..
Interaction with people.	Ways to influence people to achieve the best possible opportunity to help the patient. A contract as a basis for cooperation is a way to achieve mutually beneficial relations in the everyday and professional sphere.
Management as the main form of influencing people.	Relationships between people according to the scheme: manager-managed. Benefits and dangers of such relationships.
Leading in our lives. Is this a good thing or a bad thing?	Management as an opportunity to influence decision-making by a person (client, colleague, manager). Management as a way to bring the greatest benefit to the patient..
Professional school. Teacher and Student.	Stages of mastering professional skills. The relationship between master and disciple. Gratitude and payment for training.
A person's path in life/profession. Strategy and tactics of individual stages of the path in life / profession.	Creating key points on the professional development and growth map. Algorithm for setting and solving professional tasks. Solving "unsolvable problems".

Professional behavior.	Fundamentals of medical behavior of a veterinarian. Medical malpractice and medical error. Behavior of a doctor in a professional team.
Management of patients with chronic and incurable diseases.	Features of relationships with owners of chronically ill patients. Features of curation of chronically ill patients. Questions of euthanasia.
Ethical issues in the daily practice of a veterinarian. Medical Mind and Clinical Thinking.	Analysis of complex cases in the professional activity of a veterinarian. Ethics of intercollegiate relations. Conflicts with pet owners and colleagues. Development of clinical thinking and the point of application of the medical mind.
Ethical aspects of professional self-determination.	Specialization in choosing the field of professional activity. Features of various fields of activity of a veterinarian.

#### 44. Economics and organization of agricultural production

<b>Name of the discipline</b>	<b>Economics and organization of agricultural production</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Theoretical foundations and trends in the development of agriculture.	The role and significance of agriculture as a branch of the national economy. Agriculture management system of the Russian Federation. Sustainable development of agricultural production and food security.
Formation of a multi-layered economy in agriculture.	Types and forms of agricultural enterprises. Current state of agricultural production. The role of state regulation and the market in the development of agriculture
Land, labor and financial resources, fixed and current assets.	Land resources. Land market. Land pledge. Land Fund of the Russian Federation. Composition and structure of labor resources. Labor market, improving the use of labor resources in agriculture.
The role of the market and the state in the development of agriculture.	The economic essence of placement. Concentration of agricultural production. Agro-industrial integration and cooperation.
Scientific and technological progress, intensification and innovatization of agriculture.	Extensive and intensive rate of agricultural development. Scientific and technological progress. The essence of innovative development.
Sustainable agricultural development and food security.	The essence of management in agriculture. Influence of management decisions on the results of agricultural production.



45. A foreign language. Professional communications

<b>Name of the discipline</b>	<b>A foreign language. Professional communications</b>
<b>Scope of the discipline</b>	<b>4 CREDITS (144 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline</b>
Foreign language (advanced level).	<p><u>Vocabulary and phraseology:</u></p> <p>Fixing the most commonly used vocabulary related to the professional language and reflecting a wide and narrow specialization.</p> <p>Expanding the vocabulary through lexical units that form the basis of the register of scientific speech.</p> <p>Familiarization with industry dictionaries and reference books. Stable phrases that are most often found in scientific speech.</p> <p><u>Word compatibility:</u></p> <p>Free phrases, morpho-syntactically and lexically-phraseologically related phrases, idiomatic expressions.</p> <p>Comparison of “non-idiomatic ” (free) word combinations and more idiomatic ways of expressing thoughts.</p>
Professional communications.	<p><u>Educational and professional sphere:</u></p> <p>Animal anatomy and physiology;</p> <p>Clinical diagnostics of animals:</p> <p>Diagnosis, treatment, prevention, and vaccination;</p> <p>Veterinary pathology;</p> <p>Human role in animal welfare;</p> <p><u>Business communication and communication tools:</u></p> <p>Design and style of a business letter. Electronic messages. Telephone conversations.</p> <p><u>Communication skills:</u></p>

	Communication with English-speaking partners. Resolving conflict situations. Success in negotiations. Successful presentations. Understanding the specifics of cross-cultural contacts.
--	---

#### 46. Veterinary sanitation

<b>Name of the discipline</b>	<b>Veterinary sanitation</b>
<b>Scope of the discipline</b>	<b>4 CREDITS (144 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
General aspects of veterinary sanitation.	Introduction and general concept of veterinary sanitation. Veterinary sanitation as a system of comprehensive protection of veterinary supervision facilities. Development history and personalities. Material and technical support, general technology and mechanization of veterinary and sanitary measures. Veterinary ecology of pathogenic microorganisms and parasites, bioecology of rodents and insects, scientific bases of disinfection, deratization and disinsection.
Veterinary and sanitary measures.	Disinfection. Disinvasion. Deratization. Disinsection. Decontamination of manure and effluent, associated objects and animal waste (soil, air space). Veterinary sanitation of water sources. Decontamination. Degassing. Veterinary and sanitary plants (scrap plants). Veterinary sanitation in transport. Veterinary sanitation of raw materials of animal origin. Features of decontamination of non-trivial objects of veterinary and sanitary supervision (milk, egg, silage, fodder, etc.). Policy of stamping out (eradication of infections, slaughter of animals and disposal of corpses), veterinary sanitation of the urban environment, the practice of controlling stray, harmful, problematic animals and pests in the city.

47. **Forensic veterinary medicine and animal autopsy**

<b>Name of the discipline</b>	<b>Forensic veterinary medicine and animal autopsy</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Forensic veterinary medicine.	Introduction. A brief history of the discipline's development. The procedural part. Forensic veterinary examination of animal corpses. The procedure for drawing up the protocol of pathoanatomical autopsy and its main differences from the act of forensic examination. Forensic veterinary examination in case of violation of the norms of keeping, feeding, and exploitation of animals. Forensic veterinary examination in case of falsification of the specific affiliation of meat and meat products. Forensic veterinary examination in case of falsification of meat of patients, killed in the agonal state and fallen animals. Forensic veterinary examination based on materials of physical evidence. Forensic veterinary toxicology. Judicial liability of veterinary workers (professional crimes, negligence, mistakes).

#### 48. Technology of processing livestock products

<b>Name of the discipline</b>	<b>Technology of processing livestock products</b>
<b>Scope of the discipline</b>	<b>5 CREDITS (180 hour.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Meat production in the world.  Raw materials for the meat industry and the system of preparation of slaughtered animals.	Organization of animal slaughter sites. Transportation of slaughtered animals. The order of acceptance and delivery of animals for slaughter.
Technology of processing slaughtered animals.	Methods of stunning and exsanguinating animals. Processing of large and small cattle, pigs, horses, camels. Poultry processing. Fundamentals of offal processing technology, classification of offal. Technology of primary processing of hides and leather and fur raw materials. Classification of skins.
Methods of preserving slaughter products and hides.	Technology of preserving meat and meat products. Canning of hides.
Commodity evaluation of carcasses and offal and their labeling.	Requirements of state standards for determining the categories of fatness for different types of live animals and carcasses. Marking of carcasses of different animal species.
Quality indicators of meat products.	Morphological composition of carcasses and chemical composition of meat of different animal species. Fundamentals of veterinary and sanitary assessment of slaughter products.

49. Toxicology Department

Name of the discipline	Toxicology Department
Scope of the discipline	3 CREDITS (108 hours))
Summary of the discipline	
Name of sections (topics) of the discipline	Summary of sections (topics) of the discipline:
Introduction to toxicology.	Subject of toxicology. History of veterinary toxicology.
General toxicology.	The concept of poison. Classification of toxic substances by toxicity, degree of danger. Toxicity criteria. Toxicokinetics and toxicodynamics. Causes and conditions of poisoning. Clinical signs of poisoning. Diagnosis of poisoning. Chemical and toxicological studies. Treatment and prevention of poisoning. Vetsanexpertiza.
Private toxicology: - chemical toxicosis;	Poisoning of animals with pesticides (organophosphorus and organochlorine compounds, carbamates, nitroids, urea derivatives, heterocyclic compounds, nitro - and halide derivatives of phenol, copper-containing compounds, derivatives of chlorophenoxyacetic acid, sulfur preparations, zoocides, poisoning of animals with derivatives of other chemical groups: barium, selenium, molybdenum, nickel, thallium, cobalt, etc.); poisoning of animals with toxic substances. metal-containing compounds and metalloids (mercury-containing and cadmium-containing compounds, lead, fluorine, arsenic, etc.).
- feed toxicosis;	Poisoning of animals with sodium chloride, urea, potatoes and potato tops and bard, beets and beet tops, corn, sunflower seeds, meal and cake, boiled nettle. Toxicology of feed products of microbial synthesis. Premixes, their veterinary-sanitary and toxicological characteristics.
- phytotoxicosis;	Poisoning of animals with plants: mainly acting on the central nervous system; liver; containing saponin-glycosides; thioglycosides; cardiac glycosides; cyanoglycosides; photosensitiCreditsrs; plants that cause a violation of salt metabolism; hemorrhagic diathesis; mechanical damage to tissues; accumulating nitrates; containing essential oils; changing the quality of milk, meat, honey.
- mycotoxicosis;	Animal damage by aflatoxins, deoxynivalenol, Creditsaralenone, ochratoxins, T-2 toxin, stachybotriotoxicosis.

<p>- poisoning caused by poisons of animal origin;</p>	<p>Toxicodynamics and measures of assistance in case of animal bites by venomous snakes, karakurt, scorpion, stinging by hymenopteran insects. Sanvetexpertiza.</p>
<p>- poisoning of animals with toxic substances;</p>	<p>Damage to animals with substances of nerve-paralytic, skin-abscess and general toxic effects. Effect on animals of suffocating, tear and irritating toxic substances, psychotomimetics</p>
<p>- poisoning with polychlorodibenzodioxidines and polychlorinated biphenyls.</p>	<p>Sources of environmental pollution from PCBs and PCDD. Their toxicity. Ability to migrate in the soil-plant-animal system. Methods of analysis. Tolerance values. Monitoring in the environment. Toxicological significance of dioxins and existing measures to prevent poisoning.</p>

## 50. Immunology

<b>Name of the discipline</b>	<b>Immunology</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
History of immunology. Organs, tissues, and cells of the immune system. Antigens.	<p>Introduction. History of immunology.</p> <p>Organs and lymphoid tissue of the immune system of animals and birds.</p> <p>Populations of immune system cells. Hematopoietic stem cells. T-lymphocytes. Subpopulations of T-lymphocytes. B-lymphocytes. Subpopulations of B-lymphocytes. NK-lymphocytes. NKT-lymphocytes are myeloid cells. Dendritic cells. Cells of the mononuclear phagocyte system. Granulocytes. Mast cells. Platelets</p> <p>Endothelial cells. Antigens and conditions that determine their immunogenicity. Immune responses in immunodiagnostics.</p>
Innate and adaptive immunity. Immunological tolerance and insufficiency. Immunomodulators.	<p>Characteristic features of innate and adaptive immunity. Innate immunity. Protective factors.. Adaptive immunity and its forms. Humoral immunity. Antibodies (formation, types, structure, properties), antigen-antibody interaction. The main histocompatibility complex and its biological significance. Cytokines, their functions, classification, features of action. Cellular immunity</p> <p>Immunological tolerance. Immunological insufficiency. Immunomodulators.</p>



## 51. Instrumental diagnostic methods

Name of the discipline	Instrumental diagnostic methods
Scope of the discipline	3 CREDITS (108 hours))
Summary of the discipline	
Name of sections (topics) of the discipline	Summary of sections (topics) of the discipline:
Radiology.	<p>1. Radiation safety techniques when working in an X-ray room. Device and management of X-ray diagnostic devices used in veterinary medicine. Getting X-rays. X-ray examination of animals. X-ray diagnostics of inherited diseases of the bone and joint system of animals.</p> <p>2. X-ray diagnostics of diseases of the thoracic cavity of animals. X-ray diagnostics of diseases of the gastrointestinal tract of animals. X-ray diagnostics of diseases of the urinary system of animals. X-ray diagnostics of systemic diseases of animal bones. X-ray diagnostics of traumatic injuries of the bone and joint system of animals.</p>
Ultrasound diagnostics.	<p>1. Physical basis of ultrasound and principles of ultrasound diagnostics. Echocardiography.</p> <p>2. Ultrasound of the abdominal and pelvic cavities, ultrasound of the thoracic cavity, ultrasound of the pancreas and thyroid gland. Doppler imaging.</p>
Endoscopy.	Gastroscopy. Cystoscopy. Bronchoscopy. Laparoscopy. Rectoscopy
A biopsy.	Study of soft tissue and internal organ biopsy techniques. Conducting thoracocentesis. Puncture of the abdominal wall
Tomography.	Introduction to the research methods: linear tomography, magnetic resonance imaging, computed tomography.
ECG.	Mastering methods of electrocardiography, phonocardiography, vectorcardiography in animals.
Probing.	Investigation of the digestive system in different animal species using probing.

52. **A foreign language. Translation of special texts**

<b>Name of the discipline</b>	<b>A foreign language. Translation of special texts</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline</b>
Foreign language (advanced level).	<p>Improving the level of initial knowledge of a foreign language and mastering a sufficient level of communicative competence to solve social and communicative tasks in professional activities when communicating with foreign partners.</p> <p>Mastering the skills of business professional speech; developing oral communication skills on business professional topics; mastering the basic grammatical phenomena of the language characteristic of business speech; mastering the business professional vocabulary of the language; mastering the skills of business correspondence.</p>
Translation of special texts	<p>Design and style of a business letter. Electronic messages. The main types of commercial email. Telephone conversations. Writing skills: CV. Service note. Business plan. Feedback. Article. Report. Translation of professional materials and texts.</p>

53. **Communication workshop**

<b>Name of the discipline</b>	<b>Communication workshop</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Theoretical foundations of social interaction.	Types of social interaction. Communication functions in various spheres of interaction between people. Individual-typological features of a person's personality. Styles and means of communication. Communication barriers and ways to overcome them.
Social interaction in the professional sphere.	Structure of business communication. Types and forms of interaction in the professional field of veterinary medicine. Methods of effective communication in business communication. Features of the organization of professional activities of people with disabilities.
Fundamentals of conflictology.	Causes and significance of conflicts in the domestic and professional spheres. Ways to prevent conflicts and get out of conflict situations. Methods of psychological protection of the individual from traumatic negative effects.

## 54. Biometrics in veterinary medicine

<b>Name of the discipline</b>	<b>Biometrics in veterinary medicine</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Modern ones statistical data complexes: domestic and foreign.	Modern ones statistical data complexes: domestic and foreign.
Descriptive statistics.	Calculation of the main characteristics of sample populations; Confidence limits of the general average, its estimation. Estimation of the difference between sample averages, between sample fractions.
Mathematical analysis of experimental data.	Correlation analysis. Regression analysis. Calculation of data from factorial experiments by the method of variance analysis.
Using software packages when planning an experiment.	Planning and methodology of the experiment.

## 55. Career Management

<b>Name of the discipline</b>	<b>Career Management</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Theoretical and methodological issues of business career management.	<ul style="list-style-type: none"> <li>- Business career as a socio-economic category.</li> <li>- Life plans and career.</li> <li>- The main characteristics of the concept of "business career management".</li> </ul>
Practical activity in the organization of career process management.	<ul style="list-style-type: none"> <li>- Management of personnel and career processes in the organization.</li> <li>- Recruitment, selection and recruitment of new employees.</li> <li>- Planning career processes in the organization.</li> <li>- Evaluation of works and employees.</li> </ul>
Practical recommendations for individual career management.	<ul style="list-style-type: none"> <li>- Career goals and career planning.</li> <li>- Self-assessment from a career perspective. Professional orientation and career choice.</li> <li>- Organization and regulation of an individual career.</li> </ul>
Specifics of career management for certain categories of employees.	<ul style="list-style-type: none"> <li>- Features of managing the career of managers (managers).</li> <li>- Specifics of career management for young professionals.</li> </ul>

56. **Fundamentals of social and legal knowledge**

<b>Name of the discipline</b>	<b>Fundamentals of social and legal knowledge</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Fundamentals of constitutional law	The Constitution of the Russian Federation. Legal foundations of the constitutional order. Structure of state power and local self-government.
Fundamentals of civil law	Content, subjects and objects of civil legal relations. Legal capacity and legal capacity of subjects of civil law.
Fundamentals of labor law	Sources of labor law. Labor relations, their sides and grounds for occurrence. Features of forming labor relations for people with disabilities.
Fundamentals of social entrepreneurship	Types of subjects of business law. The main directions of state regulation of entrepreneurial activity.

57. Medicinal and poisonous plants

<b>Name of the discipline</b>	<b>Medicinal and poisonous plants</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
"General part".	<p>History of the use of medicinal plants. Fundamentals of pharmacognosy.</p> <p>Classification of medicinal plants and medicinal plant raw materials.</p> <p>Active ingredients of medicinal plants.</p> <p>Standardization and quality analysis of medicinal plant raw materials.</p>
"Technology of production of medicinal plant raw materials".	<p>History of the use of medicinal plants. Fundamentals of pharmacognosy.</p> <p>Classification of medicinal plants and medicinal plant raw materials.</p> <p>Active ingredients of medicinal plants.</p> <p>Standardization and quality analysis of medicinal plant raw materials.</p>

58. Forage plants

<b>Name of the discipline</b>	<b>Forage plants</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
"General part".	History of forage plant cultivation. Basics of feeding. Classification of forage plants. Standardization and analysis of the quality of forage plant raw materials.
"Plant feed production technology»	Hay Straw Cake mix Pulp press Silo Haylage



59. **Fundamentals of intellectual work**

<b>Name of the discipline</b>	<b>Fundamentals of intellectual work</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Intellectual property in research work.	Principles of scientific research in the Russian Federation in the field of veterinary medicine. State registration of inventions. Procedure for planning and conducting research work.
The education system in the Russian Federation. Intellectual property in teaching activities.	Methods of preparation and presentation of lecture materials. Scheme of forming the structure of laboratory-practical, seminar and lecture classes in the disciplines taught in the framework of educational programs for training a veterinarian.

60. Diseases of productive animals

<b>Name of the discipline</b>	<b>Diseases of productive animals</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Differential diagnosis of diseases of productive animals.	<p>Methods of working with pet owners.</p> <p>Algorithm for differential diagnosis of various diseases.</p> <p>Urgent conditions and routine diagnostics.</p> <p>Medical examination.</p>
Diseases of the gastrointestinal tract.	<p>Methods of diagnostics of chronic and urgent pathologies of the gastrointestinal tract.</p> <p>Palpation, percussion and auscultation of the abdominal organs.</p> <p>X-ray and ultrasound examination of the abdominal cavity.</p> <p>Operative and conservative treatment of patients.</p> <p>Rehabilitation.</p>
Diseases of the liver, gallbladder, and pancreas.	<p>Methods of investigation of the patient with pathology of the digestive glands. Coprogram.</p> <p>Development of therapeutic diets.</p>
Diseases of the urinary system.	<p>Algorithm for differential diagnosis of diseases of the urinary system.</p> <p>Nephritis, nephrosis, nephrosclerosis, pyelonephritis.</p> <p>Diseases of the urinary tract: pyelitis, urocystitis, urolithiasis.</p> <p>Hematuria. Urinalysis, ultrasound and X-ray diagnostics. Cystocentesis.</p>
Diseases of the genitals of productive animals.	<p>Differential diagnosis of genital diseases.</p> <p>Ultrasound and X-ray diagnostics of genital diseases.</p> <p>Operative and conservative treatment.</p>

	<p>Endometritis. The pyometer. Vulvovaginitis.</p> <p>Ovarian cysts.</p> <p>Prostatitis. Neoplasms of the prostate.</p>
Features of diseases of the respiratory organs of productive animals.	<p>Examination of the respiratory system.</p> <p>Auscultation of the respiratory tract.</p> <p>Chest X-ray.</p> <p>Thoracocentesis.</p>
Pathologies of the cardiovascular system.	<p>Diseases of the cardiovascular system.</p> <p>Classification, syndromes.</p> <p>Diseases of the heart muscle.</p> <p>Endocardial diseases.</p> <p>Heart defects.</p> <p>Vascular diseases.</p>
Infectious diseases of productive animals.	<p>Methods of diagnosis and prevention.</p> <p>Development of the method of admission of a patient with suspected infectious pathology.</p> <p>Algorithm of differential diagnostics.</p> <p>Etiotropic therapy.</p> <p>Symptomatic treatment.</p>
Endocrinological pathology. Diagnostic methods and correction.	<p>Algorithm for differential diagnosis of endocrinological pathology.</p> <p>Trichoscopy, analysis of the results of tape tests and scrapings.</p> <p>Blood and urine testing.</p>

## 61. Diseases of horses

<b>Name of the discipline</b>	<b>Diseases of horses</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Morphofunctional features of ungulates.	Fundamentals of horse anatomy and physiology.
Pathological processes of the gastrointestinal tract.	Pathology of the oral cavity. Diseases of the stomach and intestines The essence of colic syndrome.
Diseases of the maxillofacial and respiratory organs.	Maxillofacial pathology. Diseases of the nasal sinuses and teeth. Ophthalmology. Pathologists of the respiratory system.
Problems of the musculoskeletal system.	Bursitis, arthritis, and tendovaginitis. Rheumatic fever.
Diagnostic measures for various diseases of horses.	Additional and special research methods. Documentation for animal management. Medical history.

## 62. Diseases of small domestic animals

<b>Name of the discipline</b>	<b>Diseases of small domestic animals</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction.	The discipline is a system of knowledge about diseases of small domestic animals.
Differential diagnosis of MJ diseases.	Methods of working with pet owners. Algorithm for differential diagnosis of various diseases. Urgent conditions and routine diagnostics. Medical examination of MJ.
Diseases of the gastrointestinal tract.	Methods of diagnostics of chronic and urgent pathologies of the gastrointestinal tract. Palpation, percussion and auscultation of the abdominal organs. X-ray and ultrasound examination of the abdominal cavity. Operative and conservative treatment of patients. Rehabilitation.
Diseases of the liver, gallbladder, and pancreas.	Methods of investigation of the patient with pathology of the digestive glands. Coprogram. Development of therapeutic diets.
Diseases of the urinary system.	Algorithm for differential diagnosis of diseases of the urinary system. Nephritis, nephrosis, nephrosclerosis, pyelonephritis. Diseases of the urinary tract: pyelitis, urocystitis, urolithiasis. Hematuria. Urinalysis, ultrasound and X-ray diagnostics. Cystocentesis.
Diseases of the genitals of small domestic animals.	Differential diagnosis of genital diseases. Ultrasound and X-ray diagnostics of genital diseases. Operative and conservative treatment. Endometritis. The pyometer. Vulvovaginitis. Ovarian cysts. Prostatitis.
Features of diseases of respiratory organs of small animals.	Examination of the respiratory system. Auscultation of the respiratory tract. Chest X-ray. Thoracocentesis.
Features of diseases.	Diseases of the cardiovascular system. Classification, syndromes. Diseases of the heart muscle. Endocardial diseases. Heart defects. Vascular diseases.
Infectious diseases of MJ. Methods of diagnosis and prevention.	Methods of diagnosis and prevention. Development of the method of admission of a patient with suspected infectious pathology. Algorithm of differential diagnostics. Etiotropic therapy. Symptomatic treatment.

Endocrinological pathologies. Diagnostic methods and correction.	Algorithm for differential diagnosis of endocrinological pathologies. Trichoscopy, analysis of the results of tape tests and scrapings. Blood and urine testing.
Urgent states in everyday practice.	Conducting X-ray and ultrasound examinations of patients. Analysis of radiographs, tomograms, test results, and ultrasound protocols. Development of intensive care algorithms.

### 63. Diseases of small pets

<b>Name of the discipline</b>	<b>Diseases of small pets</b>
<b>Discipline's content</b>	<b>3 CP (108 hours.)</b>
<b>Course Description</b>	
<b>Name of discipline section</b>	<b>Summary of discipline's sections:</b>
Differential diagnosis of diseases MJ	Methods of working with pet owners. Algorithm for differential diagnosis in various diseases. Urgent states and planned diagnostics. Clinical examination MJ.
Diseases of the gastrointestinal tract.	Methods of diagnosis of chronic and urgent pathologies of the gastrointestinal tract. Palpation, percussion and auscultation of the abdominal organs. Radiography and ultrasound examination of the abdominal cavity. Surgical and conservative treatment of patients. Rehabilitation.
Diseases of the liver, gallbladder and pancreas.	Methods of research of the patient in the pathology of the digestive glands. Coprogram. The development of therapeutic diets.
Diseases of the urinary system.	Algorithm for the differential diagnosis of diseases of the urinary system. Nephritis, nephrosis, nephrosclerosis, pielonephritis. Diseases of the urinary tract: Pielit, urocystitis, urolithiasis. Hematuria. Urine examination, ultrasound and X-ray diagnosis. Cystocentesis
Diseases of the genital organs of small domestic animals.	Differential diagnosis of diseases of the genital organs. Ultrasound and X-ray diagnosis of genital diseases. Surgical and conservative treatment. Endometritis. Pyometra. Vulvovaginitis. Ovarian cysts. Prostatitis. Prostate neoplasm. Venereal sarcoma.
Features of diseases of the respiratory organs of small animals.	Examination of the respiratory system. Auscultation of the respiratory tract. Chest radiograph. Thoracentesis.

Features of diseases	Diseases of the cardiovascular system. Classification, syndromes. Diseases of the heart muscle. Endocardial diseases. Heart defects. Vascular disease.
Infectious diseases mJ. Methods of diagnosis and prevention.	Methods of diagnosis and prevention. Testing the method of receiving a patient with suspected infectious pathology. Algorithm of differential diagnostics. Etiotropic therapy. Symptomatic treatment.
Endocrinological pathologies. Diagnostic methods and correction	Algorithm for the differential diagnosis of endocrinological pathologies. Trichoscopy, analysis of the results of scotch tests and scrapings. Blood and urine tests.
Urgent states in everyday practice.	X-ray and ultrasound examinations of patients. Analysis of radiographs, tomograms, test results and ultrasound protocols. Development of intensive care algorithms.

## 64. Zoopsychology

<b>Name of the discipline</b>	<b>Zoopsychology</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Introduction to zoopsychology.	Subject and tasks of zoopsychology. Areas of application of zoopsychological knowledge. Methods of zoopsychological research. A brief historical sketch of the formation of zoopsychology as a science.
General characteristics of the learning process.	Universal laws of learning. The concept and classification of learning. Teaching methods. Results of a comparative study of the rational activity of animals of different taxonomic groups.
Levels of mental development.	Concepts of stage development of the psyche (Fabry, Leontiev). Characteristics of the stages of elementary sensory psyche. Characteristics of the stages of the perceptual psyche.
Communication in animals.	Methods of information transmission – signaling methods ("language") in different animal species. Language of postures and body movements, language of smells, sound language. The main categories of signals by semantic meaning in animals.
The juvenile period of mental development.	Animal game theories. Fabry game concept. Types of Fabry games.
Psychosomatic disorders in animals.	Disruptions of higher nervous activity in animals: neuroses, forms of their manifestation, causes and prevention of neuroses in animals (I. P. Pavlov). Deviant dog behavior: causes, types, diagnosis and prevention (A.V. Nikolskaya).
Private zoopsychology.	Features of zoopsychology of animals of different taxonomic groups.



65. **Personality psychology and professional self-determination**

<b>Name of the discipline</b>	<b>Personality psychology and professional self-determination</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
The psyche. Consciousness and self-awareness.	Man as a person, becoming a person. Mental characteristics of the individual. The concept of human capabilities and abilities.
Character, temperament and orientation of the individual.	Types of temperaments, their psychological characteristics. Temperament characteristics: extraversion, introversion, plasticity.
Psychology of professional activity.	Activity as a way of existence. People in the labor market. Human capabilities that lead to professional success.
Professional self-determination	Professional self-determination at different stages of human age development. Social aspects of professional self-determination and employment of young specialists.

66. Diseases of bees and fish

Name of the discipline	Diseases of bees and fish
Scope of the discipline	3 CREDITS (108 hours))
Summary of the discipline	
Name of sections (topics) of the discipline	Summary of sections (topics) of the discipline:
Beekeeping products.	Honey. Flower pollen. Propolis. Wax. Bee royal jelly. Bee venom. Drone homogenate.
Biology of the bee family.	Bee family. Development of the worker bee, queen bee, and drone.
Structure of the bee.	External structure of the bee. The digestive system. Circulatory system. The nervous system. Sensory organs. Dancing bees. Bee breeds. Respiratory system. Reproductive organs.
Infectious diseases of bees.	Varroatosis of bees. Acarapidosis of bees. Ascopherosis of bees. Aspergillosis. Nosematosis. American rotter. European rottenness. Salmonellosis of bees. Baggy brood. Viral paralysis of bees. Wing deformity virus.
Non-infectious diseases of bees.	Carbohydrate starvation. Protein starvation. Fall toxicosis. Chemical toxicosis. Genetic lethality. Frozen brood.
Veterinary and sanitary measures in the apiary.	Apiary passport. Basic preventive measures.

67. **Space technologies at the service of the agro-industrial complex**

<b>Name of the discipline</b>	<b>Space technologies at the service of the agro-industrial complex</b>
<b>Scope of the discipline</b>	<b>3 CREDITS (108 hours))</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Defining the tasks of using space technologies in the agro-industrial complex	Modern space technologies and opportunities for their use in the agro-industrial complex.
Information support on land structure and condition	Technologies of space monitoring of the Earth, interpretation of the received information.
Study of satellite systems for remote sensing of the Earth	Detailing the technology of remote sensing of the earth.
Study of satellite image data for agricultural objects	Interpretation of data obtained from satellite images of agricultural land.
Methods of protection in emergency situations	Space-based emergency forecasting
Organization and monitoring of the occurrence and spread of diseases	Methods for monitoring the occurrence of diseases using space technologies in the agroindustrial complex.

68. **Organization of state veterinary supervision**

<b>Name of the discipline</b>	<b>Organization of state veterinary supervision</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Organization of State veterinary supervision in the Russian Federation.	The concept of state veterinary supervision. Goals and objectives of state veterinary supervision. Veterinary supervision bodies. Powers of veterinary supervision bodies. Rights and obligations.
Structure of legislation in the field of veterinary supervision.	Federal regulatory legal acts. The Law on Veterinary Medicine. Legislation in the field of food quality and safety. Veterinary rules and instructions. Departmental regulatory legal acts. International obligations of the Russian Federation in the field of veterinary safety.
Structure of veterinary supervision bodies in the Russian Federation.	Organization of federal state veterinary supervision. Organization of regional state veterinary supervision.
State veterinary supervision at enterprises.	Organization of state veterinary supervision at enterprises. Procedure for carrying out state supervision in accordance with government regulations and veterinary requirements.
Measures to confirm the compliance of supervised facilities with veterinary requirements.	Survey activities. Monitoring and sampling.
Liability for violation of Federal legislation in the field of veterinary medicine.	Administrative Code of the Russian Federation. Proceedings in the case of an administrative offense in the field of veterinary medicine. Federal Law "On Protection of the Rights of Legal Entities and Individual Entrepreneurs in the Exercise of State Control (Supervision) and Municipal Control".

69. **Veterinary and industrial laboratories with basic design principles**

<b>Name of the discipline</b>	<b>Veterinary and industrial laboratories with basic design principles</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Preparation and design of medical and technical buildings	Requirements for medical and technical buildings. Purpose, technical characteristics, technical and economic conditions, and special conditions. Documentation.
Organization of veterinary laboratories	The main premises of the veterinary laboratory. Structure of the veterinary laboratory. Procedure for organizing a veterinary laboratory. Main tasks of the veterinary laboratory. Principles of design and technical equipment of a veterinary laboratory.
Organization of production laboratories	The main premises in the production laboratory. Structure of the production laboratory. Procedure for organizing a veterinary and sanitary examination laboratory. Main tasks of the production laboratory. Principles of design and technical equipment of the laboratory of veterinary and sanitary expertise.

## 70. Anaesthesiology, resuscitation and intensive care

<b>Name of the discipline</b>	<b>Anaesthesiology, resuscitation and intensive care</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
General concepts of anaesthesiology, resuscitation, and intensive care.	Pain, general and local anesthesia, analgesia, anesthesia, resuscitation, critical care.
Homeostasis. Principles of homeostasis maintenance in critical conditions and under anesthesia.	Homeostasis, causes and variants of its disorders. Acid-base balance, hypo- and hyperventilation, hypoxemia, shock and collapse, endotoxemia. Methods for maintaining homeostasis in critical conditions. Maintenance of homeostasis during anesthesia and its complications.
Equipment for monitoring patients and performing anaesthetic and resuscitation measures.	Equipment for patient intubation, providing inhalation anesthesia and artificial ventilation, devices for inhalation anesthesia, devices for infusion therapy and maintaining body temperature in anesthetized patients. Tools for monitoring patients under anesthesia and in critical condition.
Methods, pharmacological agents and techniques of analgesia, premedication and anaesthetic support.	Preoperative preparation and premedication of the patient, means for introductory anesthesia and total intravenous anesthesia. Means for inhalation anesthesia. Features of selection and combination of medicines in resuscitation and anaesthetic practice. Local anesthetics and indications for local anesthesia and analgesia.
Technique of inhalation and total intravenous anesthesia.	Venous catheterization of the patient, orotracheal intubation, endostal, intra-arterial catheterization. Urethral catheterization. Selection of an anaesthetic aid for a patient.
Methods of local anesthesia and analgesia.	Preparations for local anesthesia. Techniques of local anesthesia/analgesia. Risks and treatment of overdose. Complications of local anesthesia/analgesia.
Specific features of anesthesia. Anesthesia of particularly difficult patients.	Features of anesthesia of aging and seriously ill animals. Preparation and support of complex anesthesia patients. Features of anesthesia in patients with diseases of individual organs and systems. Anesthesia in endocrinological patients. Anesthesia and analgesia in patients in shock. Recovery from anesthesia.
Urgent situations during anesthesia. Cardiopulmonary resuscitation.	Hypoxia, aspiration of foreign material into the trachea, respiratory failure, bleeding, hypotension, cardiac arrhythmias, hypothermia, malignant hyperthermia and ipr. Signs of cardiopulmonary shock and cardiac arrest. Procedure for cardiopulmonary resuscitation.



## 71. Therapy of animal diseases

<b>Name of the discipline</b>	<b>Therapy of animal diseases</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
General concepts of infectious, invasive, and non-infectious diseases of small domestic animals (dogs and cats). Dermatology.	Distribution of internal non-infectious, parasitic and infectious diseases in small domestic animals of different species (dogs and cats). Features of the spread and course of diseases in animals of the main age groups (young animals, adults, old animals). Dermatology. Anatomical and physiological features of the skin in animals of different species. Skin physiology. Basic methods of skin research. Private dermatology. Parasitic skin diseases. Infectious diseases of the skin. Hereditary issues skin diseases. Allergic and autoimmune skin lesions. Alimentary-related skin diseases.
General somatic diseases of small domestic animals (dogs and cats).	Anatomical and physiological features of internal organs in animals of different species. Basic methods of laboratory diagnostics. Diseases of the gastrointestinal tract. Diseases of the liver, gallbladder and bile ducts. Diseases of the respiratory system. Diseases of the urinary and genitourinary systems. Diseases of the spleen. Diseases of the musculoskeletal system.
Endocrinology of small domestic animals (dogs and cats).	Anatomical and physiological features of the endocrine glands in animals of different species. Basic methods of laboratory diagnostics. Diseases of the thyroid gland. Diseases of the adrenal glands. Diseases of the pituitary gland. Diseases of the insular apparatus of the pancreas. Diseases of the genital glands in male and female animals (dogs and cats).
Ophthalmology of small pets (dogs and cats).	Anatomical and physiological features of the visual organ. Methods of studying the visual organ. Diseases of the eyelids. Diseases of the anterior segment of the eye. Diseases of the posterior segment of the eye. Diseases of the internal structures of the visual organ. Diseases of the lacrimal organs.



## 72.        Reconstructive surgery

<b>Name of the discipline</b>	<b>Reconstructive surgery</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Elements of surgical operations.	<p>Separation of tissues. Goals and methods of tissue separation. The concept of rational sections. Separation of tissues by ultrasound, laser. Separation of soft tissues. Separation of bone tissue.</p> <p>Connecting fabrics. Classification of seams, seams on separate types of fabrics. General principles and features of applying intestinal sutures. The importance of a surgical suture for wound healing. Connecting the bones. Gluing of fabrics. Plastic surgery. Suture material.</p> <p>Surgical instruments and their types.</p>
Skin plastic surgery.	Indications for skin grafting. Types of skin grafting. Surgical technique and possible complications. Features of rehabilitation.
Maxillofacial surgery.	Correction of congenital deformities. Treatment of inflammatory diseases of the soft tissues of the face and neck. Operations to eliminate the consequences of injuries. Operations in the head area.
Anterior cruciate ligament.	Injuries and ruptures of the anterior cruciate ligament. Causes, symptoms, treatment, and prevention.
Osteosynthesis.	Classification of osteosynthesis methods. Characteristics of osteosynthesis methods. Indications and contraindications.

## 73. Dentistry

<b>Name of the discipline</b>	<b>Dentistry</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Anatomy and physiology of animal oral cavity organs.	Modern understanding of the state of the dentoalveolar system of animals. Teething theory.
Clinical manifestations of major diseases of the oral cavity organs in animals.	Features of bite in animals, malocclusion anomalies, incorrect tooth erasure, non-carious dental diseases, dental diseases of carious origin.
Basic principles of surgical treatment of diseases of the dentoalveolar system in animals.	Analgesia and anesthesia; gingivectomy, tooth extraction, root apical resection, conservative treatment
Surgical treatment of private dental pathology.	Basic means of local anesthesia and methods of surgical intervention.

## 74. Ophthalmology

<b>Name of the discipline</b>	<b>Ophthalmology</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
Anatomy and physiology of the visual organ and its auxiliary devices.	Eye anatomy, visual perception, blood-ophthalmic barrier.
Research and diagnosis of eye diseases.	Examination of the lacrimal ducts, ophthalmoscopy, determination of eye refraction.
Fundamentals of therapy and surgery of eye diseases.	Features of eye pathology, forms and methods of using drugs in ophthalmology, novocaine blockade. Glaucoma in dogs and cats. Diseases of the iris and ciliary body. Uveitis. Diseases of the third century. Cataracts in dogs and cats. Regeneration of the cornea. Corneal ulcers. Sequestration of the cat's cornea. Eye injuries in dogs and cats.

75. **Laboratory diagnostics of infectious and invasive diseases**

<b>Name of the discipline</b>	<b>Laboratory diagnostics infectious and invasive diseases</b>
<b>Scope of the discipline</b>	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
<b>Name of sections (topics) of the discipline</b>	<b>Summary of sections (topics) of the discipline:</b>
General principles of laboratory diagnostics	Principles of material collection. Blood testing (general clinical analysis, biochemical analysis). Urinalysis. Study of feces.
Laboratory diagnostics of infectious diseases	Complex method of laboratory diagnostics of infectious diseases of animals. Epizootological method. Pathomorphological method. Histological method. Hematological method. Microscopy. Isolation of the pathogen.  Methods of laboratory diagnostics of bacterial diseases. Methods of laboratory diagnostics of viral diseases. Methods of laboratory diagnostics of mycoses.
Laboratory diagnostics of invasive diseases	Methods of laboratory diagnostics used in parasitology. Intravital diagnostics of helminthiasis in different animal species. Blood testing for parasitic diseases. Urine testing for parasitic diseases. Study of feces in parasitic diseases. Study of eye chamber and genital flushes in parasitic diseases. Investigation of skin scrapings in parasitic diseases. Differential laboratory diagnostics of invasive diseases of domestic animals animals.

## 76. Clinical laboratory diagnostics

Name of the discipline	<b>Clinical laboratory diagnostics</b>
Scope of the discipline	<b>2 CREDITS (72 hours.)</b>
<b>Summary of the discipline</b>	
Name of sections (topics) of the discipline	<b>Summary of sections (topics) of the discipline:</b>
Introduction.	Objects and methods of laboratory research.
A blood test.	<p>Rules for collecting material from different animal species.</p> <p>Principles of constructing the research scheme and algorithm.</p> <p>General clinical blood test.</p> <p>General principles of calculating the shaped elements of blood. Counting of red blood cells.</p> <p>White blood cell count. Deduction of the leukocyte formula.</p> <p>Methods for determining hemoglobin.</p> <p>Obtaining defibrinated blood, plasma, and serum.</p> <p>Determination of erythrocyte sedimentation rate (ESR).</p> <p>Biochemical blood test.</p>
Laboratory information diagnostics of the allocation system. Urinalysis.	<p>Rules for collecting material from different animal species.</p> <p>Principles of constructing the research scheme and algorithm.</p> <p>Study of kidney function, physical and chemical properties of urine.</p> <p>General clinical urinalysis.</p> <p>Biochemical analysis of urine.</p> <p>Preparation of the smear.</p> <p>Microscopy of urinary sediment. Uroliths.</p>
Laboratory diagnostics of the endocrine system.	Diagnosis of pathology of the endocrine glands (biochemical blood test).

Laboratory diagnostics of the respiratory system.	Principles of collecting punctate and biopsy samples. Laboratory study of the material.
Laboratory diagnostics of the digestive system.	Determination of the enzymatic activity of saliva. Study of gastric secretion. Determination of acidity and enzymatic activity of gastric juice. Coprology. Rules of collection and laboratory examination of feces.