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ФИО: Ястребов Олег Александрович
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Federal State Autonomous Educational Institution for Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
Agrarian and Technological Institute

WORKING COURSE SYLLABUS

Fodder plants

Recommended by the Methodological Council for the Education Field:

36.05.01 Veterinary medicine

2022 г.

1. GOALS AND OBJECTIVES OF THE DISCIPLINE

The aim of mastering the discipline "**Fodder plants**" is to provide students with the knowledge that constitutes the biological basis of higher education in terms of structure, diversity, patterns of existence and planetary role of plants, the formation of student's ideas about the most common forage plants.

2. REQUIREMENTS FOR THE RESULTS OF MASTERING THE DISCIPLINE

The development of the discipline "**Fodder plants**" is aimed at creating the following competencies (parts of competencies) for students:

Table 2.1. List of competencies formed by students during the development of the discipline (results of the development of the discipline)

Code	Competence	Indicators of competence accomplishment (within the discipline)
GPC-2	The ability to interpret and evaluate in professional activity the influence of natural, socio-economic, genetic and economic factors on the physiological state of the animal organism.	GPC-2.1 Has knowledge of the influence of natural, socio-economic, genetic and economic factors on the animal body.
		GPC-2.2 He is able to establish the presence and reliability of cause-and-effect relationships between the effects of certain etiological factors on the animal's body and the development of diseases.
		GPC-2.3 Possesses methods of preventive and curative correction of the effects of adverse environmental factors that can cause deterioration of animal health.
GPC -4	The ability to use methods of solving problems using modern equipment in the development of new technologies in professional activity and to use modern professional methodology for conducting experimental research and interpreting their results.	GPC-4.1 Possesses the conceptual and methodological apparatus of basic natural sciences at a level sufficient for full-fledged professional activity at the modern level.
		GPC-4.2 He knows the methods of solving problems using modern equipment.
		GPC-4.3 He is ready to use modern methodology in the development and conduct of experimental research.
		GPC-4.4 Uses modern professional methodology in interpreting research results.
GPC -6	The ability to analyze, identify and assess the risk of the risk of the occurrence and spread of diseases.	GPC-6.1 Has knowledge in the field of etiology and pathogenesis of animal diseases of different species.
		GPC-6.2 Has the skills to diagnose non-infectious, infectious and invasive

		diseases, identify pathogens of infectious and invasive diseases in animals.
		GPC-6.3 He knows the patterns of the occurrence and spread of diseases in animal populations, factors predisposing to diseases and the causes of possible complications.
PC -13	Ability to develop recommendations for special feeding of sick animals for therapeutic purposes.	PC-13.1 He is able to justify the appointment of special feeding to an animal for therapeutic purposes in various diseases;
		PC-13.2 He is able to recommend the approximate composition of therapeutic diets, the desired ratio of nutrients, the presence of special additives and components that enhance the therapeutic effect of the diet;
		PC-13.3 He is able to use special programs and databases for the selection of industrial therapeutic diets and dietary supplements, as well as for the compilation of individual therapeutic diets for animals of various species.
PC -16	Ability to organize organizational, technical, zootechnical and veterinary measures aimed at the prevention of non-communicable diseases in accordance with the plan for the prevention of non-communicable animal diseases	PC-16.1 He is able to assess the impact of animal housing and feeding conditions on their health as part of the implementation of action plans for the prevention of animal diseases
		PC-16.2 He is able to carry out veterinary quality control and procurement of animal feed in order to ensure their veterinary and sanitary safety as part of the implementation of action plans for the prevention of animal diseases
		PC-16.3 He is able to detect deviations from the plan of timing, types, quality of measures to prevent the occurrence of non-infectious animals
		PC-16.4 Take corrective measures to implement measures to prevent the occurrence of non-infectious animal diseases based on the results of control
		PC-16.5 Conduct conversations, lectures, seminars for employees of the organization in order to explain the principles of work on the prevention of animal diseases
PC -24	Ability and willingness to promote veterinary	PC-24.1 He is able to set goals in the field of veterinary knowledge promotion, plan

	knowledge, including in the field of prevention of animal diseases.	the strategy and tactics of upcoming events.
		PC-24.2 He is able to use computer and telecommunication facilities for the preparation and demonstration of materials used in the process of promoting veterinary knowledge.
		PC-24.3 He is able to conduct conversations, lectures, seminars for employees of the organization in order to explain the principles of work on the prevention of animal diseases.

3. COURSE IN HIGHER EDUCATION

The discipline "**Fodder plants**" belongs to the part formed by the participants of educational relations of the block B1 of the Educational Program of Higher Education.

As part of the Educational Program of Higher Education, students also master other disciplines and /or practices that contribute to achieving the planned results of mastering the discipline "**Fodder plants**".

Table 3.1. List of Higher Education Program components disciplines that contribute to expected learning outcomes

Competence code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
GPC -2	The ability to interpret and evaluate in professional activity the influence of natural, socio-economic, genetic and economic factors on the physiological state of the animal organism.	Biology with the basics of ecology Veterinary genetics Veterinary Microbiology and Mycology Virology and biotechnology Physiology and ethology of animals Breeding with the basics of private animal husbandry Animal health and welfare Pathological physiology Veterinary radiobiology Pathological anatomy	Zoopsychology Здоровье и благополучие ЖИВОТНЫХ Horse diseases Diseases of Productive Animals Diseases of small pets Болезни мелких домашних ЖИВОТНЫХ Diseases of bees and entomophages Fish pathology and aquaculture Diseases of exotic animals Anesthesiology, resuscitation and intensive care Dermatology Cardiology

		Instrumental diagnostic methods Toxicology Obstetrics, gynecology and andrology Internal diseases General surgery Private Veterinary Surgery Parasitology and invasive diseases Epizootology and infectious diseases Forensic veterinary examination and dissection of animals Immunology General and Veterinary Ecology Veterinary sanitation	Endocrinology Nephrology Veterinary ophthalmology Animal Dentistry
GPC -4	The ability to use methods of solving problems using modern equipment in the development of new technologies in professional activity and to use modern professional methodology for conducting experimental research and interpreting their results.	Inorganic and analytical chemistry Organic chemistry Biological physics Computer science Physical and Colloidal Chemistry Cytology, Histology and Embryology Biological chemistry Veterinary Microbiology and Mycology Virology and biotechnology Physiology and ethology of animals Breeding with the basics of private animal husbandry Pathological physiology Veterinary radiobiology Clinical diagnostics Pathological anatomy	The basics of intellectual work Personality psychology and professional self-determination Clinical laboratory diagnostics Laboratory diagnostics of infectious and invasive diseases Horse diseases Diseases of Productive Animals Diseases of small pets Болезни мелких домашних животных Diseases of bees and entomophages Fish pathology and aquaculture Diseases of exotic animals Anesthesiology, resuscitation and intensive care Dermatology Cardiology

		<p>Operative surgery with topographic anatomy Instrumental diagnostic methods Toxicology Obstetrics, gynecology and andrology Internal diseases General surgery Private Veterinary Surgery Parasitology and invasive diseases Epizootology and infectious diseases Maths Immunology Veterinary sanitation Processing technology for livestock products Medicinal and poisonous plants</p>	<p>Endocrinology Nephrology Reconstructive surgery Veterinary ophthalmology Animal Dentistry</p>
GPC-6	<p>The ability to analyze, identify and assess the risk of the risk of the occurrence and spread of diseases.</p>	<p>Biology with the basics of ecology Life safety Veterinary Microbiology and Mycology Virology and biotechnology Animal health and welfare Feeding animals with the basics of forage production Veterinary radiobiology Clinical diagnostics Pathological anatomy Instrumental diagnostic methods Toxicology</p>	<p>Animal health and welfare Clinical laboratory diagnostics Laboratory diagnostics of infectious and invasive diseases Organization of state veterinary supervision Horse diseases Diseases of Productive Animals Diseases of small pets Болезни мелких домашних животных Diseases of bees and entomophages Fish pathology and aquaculture Diseases of exotic animals</p>

		<p>Obstetrics, gynecology and andrology Internal diseases General surgery Private Veterinary Surgery Parasitology and invasive diseases Epizootology and infectious diseases Veterinary and sanitary examination Organization of veterinary affairs Forensic veterinary examination and dissection of animals Introduction to the specialty General and Veterinary Ecology Veterinary sanitation Processing technology for livestock products Medicinal and poisonous plants</p>	<p>Anesthesiology, resuscitation and intensive care Veterinary ophthalmology Animal Dentistry</p>
PC -13	<p>Способность разрабатывать рекомендации по специальному кормлению больных животных с лечебной целью</p>	<p>Physiology and ethology of animals Feeding animals with the basics of forage production Pathological physiology Internal diseases General surgery Private Veterinary Surgery Medicinal and poisonous plants</p>	<p>Anesthesiology, resuscitation and intensive care Dermatology Cardiology Endocrinology Nephrology</p>
PC -16	<p>Ability to develop recommendations for special feeding of sick animals for therapeutic purposes.</p>	<p>Veterinary genetics Life safety Physiology and ethology of animals Breeding with the basics of private animal husbandry</p>	<p>Zoopsychology Здоровье и благополучие животных Horse diseases Diseases of Productive Animals</p>

		<p>Animal health and welfare Feeding animals with the basics of forage production Obstetrics, gynecology and andrology Internal diseases General surgery Private Veterinary Surgery Organization of veterinary affairs Fundamentals of Economics and Management Economics and organization of agricultural production Medicinal and poisonous plants</p>	<p>Diseases of small pets Болезни мелких домашних животных Diseases of bees and entomophages Fish pathology and aquaculture Diseases of exotic animals Veterinary ophthalmology Animal Dentistry</p>
PC -24	<p>Ability and willingness to promote veterinary knowledge, including in the field of prevention of animal diseases.</p>	<p>Physiology and ethology of animals Breeding with the basics of private animal husbandry Animal health and welfare Feeding animals with the basics of forage production Pathological physiology Pathological anatomy Toxicology Obstetrics, gynecology and andrology Internal diseases General surgery Private Veterinary Surgery Parasitology and invasive diseases</p>	<p>Zoopsychology Здоровье и благополучие животных Horse diseases Diseases of Productive Animals Diseases of small pets Болезни мелких домашних животных Diseases of bees and entomophages Fish pathology and aquaculture Diseases of exotic animals Dermatology Cardiology Endocrinology Nephrology Reconstructive surgery Veterinary ophthalmology Animal Dentistry</p>

		Epizootology and infectious diseases Basics of Rhetoric and Communication Introduction to the specialty General and Veterinary Ecology Veterinary sanitation Veterinary deontology Economics and organization of agricultural production Medicinal and poisonous plants	Foreign language for special purposes Russian language for special purposes Foreign language. Translation of special texts Russian language. Translation of special texts Foreign language. Professional communications Russian language. Professional communications
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4. COURSE WORKLOAD AND TRAINING ACTIVITIES

Course workload of the discipline "**Fodder plants**" is 2 credits.

*Table 4.1. Types of academic activities during the period of the HE program mastering for **full-time** study*

Types of academic activities		HOURS	Semesters				
			2	-	-	-	
Contact academic hours		36	36	-	-	-	
including							
Lectures		-	-	-	-	-	
Lab work		-	-	-	-	-	
Seminars (workshops/tutorials)		36	36	-	-	-	
Self-study		30	30	-	-	-	
Evaluation and assessment (exam/pass/fail grading)		6	6	-	-	-	
Course workload		Academic hour	72	72	-	-	-
		Credit unit	2	2	-	-	-

*Table 4.2. Types of academic activities during the period of the HE program mastering for **part-time** study*

Types of academic activities		HOURS	Semesters			
			2	-	-	-
Contact academic hours		18	18	-	-	-
including						
Lectures		-	-	-	-	-

Lab work		-	-	-	-	-
Seminars (workshops/tutorials)		18	18	-	-	-
Self-study		44	44	-	-	-
Evaluation and assessment (exam/pass/fail grading)		10	10	-	-	-
Course workload	Academic hour	72	72	-	-	-
	Credit unit	2	2	-	-	-

5. CONTENT OF THE DISCIPLINE

Table 5.1 Content of the discipline (module) by type of academic work

Name of the discipline section	Content of the section (topics)	Types of academic activities
Section 1. Fundamentals of Botany	Topic 1.1. Basic concepts and definitions of botany. - Sections and tasks of botany; directions, methods and basic concepts of botany.	Seminar classes
	Theme 1.2 General characteristics of lower and higher plants: - the main features of higher plants, - the importance of plants in nature and human life; - protection of the plant world.	Seminar classes
Section 2. Plant Morphology	Topic 2.1. Root: concept, structure and functions. - Root functions; root differentiation; root metamorphosis.	Seminar classes
	Topic 2.2. The shoot as a single organ: - the concept of the shoot and its functions; - types of shoots; morphology of the shoot (nodes, internodes); - metamorphosis of the shoot.	Seminar classes
	Topic 2.3. Leaf. - morphological structure and functions of the leaf; - classification of leaves; types of leaf veins; - leaf metamorphosis.	Seminar classes

Section 3. Plant systematics	<p>Topic 3.1. Plant systematics as a science.</p> <ul style="list-style-type: none"> - The concept of species in plants; - phylogenetic systems of the plant world; - system of botanical taxonomic categories; 	Seminar classes
	<p>Topic 3.2. Division of the division of flowering plants into classes. Comparative characteristics of monocotyledonous and dicotyledonous classes.</p> <ul style="list-style-type: none"> - Characteristics of families on the example of major medicinal and fodder plants. 	Seminar classes
Section 4. Fodder plants.	<p>Theme 4.1 General information about forage plants, their botanical characteristics.</p> <ul style="list-style-type: none"> - The content of the main biologically active substances in forage plants and their effect on the body of animals. 	Seminar classes
	<p>Topic 4.2 General information about poisonous plants, their botanical characteristics. Prevention of poisoning.</p> <ul style="list-style-type: none"> - The main signs of poisoning by poisonous plants; - methods of first aid in case of poisoning by poisonous plants. 	Seminar classes

6. CLASSROOM INFRASTRUCTURE AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Material and technical support of the discipline

<i>Classroom for Academic Activity Type</i>	<i>Equipping the classroom</i>	Specialized educational/laboratory equipment, software and materials for the development of the discipline (if necessary)
Seminary	An auditorium for conducting seminar-type classes, group and individual consultations, ongoing	- <i>teaching herbarium,</i>

	monitoring and interim certification, equipped with a set of specialized furniture and multimedia presentation equipment.	- the collection of the Khrzhanov Museum Herbarium. V.G. Khrzhanovsky, - living plant material, -collections of fixed generative and vegetative plant organs, -auxiliary equipment and materials.
Self-studies	An auditorium for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to an electronic information and educational environment.	

7. RECOMMENDED SOURCES FOR COURSE STUDIES

Main reading:

1. Terekhin Alexey Alekseyevich. Plants of meadows and pastures: a training manual / a.a. terekhin, m.e. pavlova, i. Istomina. - electronic text data. - m.: rudn, 2016. - 110 c. - isbn 978-5-209-06445-9: <https://lib.rudn.ru/megapro/web/searchresult/topage/1>
2. Main species and varieties of fodder crops. Results of scientific activities of the central breeding center / z. Sh. Shamsutdinov, g. I. Ivshin, g. F. Kuleshov, m. Yu novoselov; ed. Z. Sh. Shamsutdinov, a.s. novoselova. - moscow: nauka, 2015. - 545 c. - isbn 978-5-02-039110-9: <https://lib.rudn.ru/megapro/web/searchresult/topage/1>
3. Tumanyan a.f. legume fodder plants: textbook / a.f. tumanyan, g.f. semukhina. - moscow: technica, 2000.: ill. - isbn 5-93969-003-3: <https://lib.rudn.ru/megapro/web/searchresult/topage/1>

Additional Reading:

1. Meadow farming: Textbook for universities / V.A. Tyuldyukov, N.G. Andreev, V.A. Voronkov, V.A. Savitskaya; ed. by V.A. Tyuldyukov. - Moscow: Kolos, 1995. - 415 p.: ill. - (Textbooks and teaching aids for students of higher agricultural educational institutions). - ISBN 5-10-002926-9: 35.00.
2. Fodder production with the basics of farming: Textbook / N.G. Andreev, V.A. Tyuldyukov, V.A. Savitskaya, I.S. Gavrilov; N.G. Andreev, V.A. Tyuldyukov, V.A. Savitskaya, etc. ed. by N.G. Andreev. - M.: Agropromizdat, 1991. - 559 p.: ill. - (Textbooks and tutorials for students of technical colleges). - ISBN 5-1000-0606-4: 1.60.
3. Ievlev Nikolai Ivanovich. Forage plants on peat soils of the European North / N. I. Ievlev. - L.: Nauka, 1983. - 149 p.: ill. - 1.50. <https://lib.rudn.ru/MegaPro/Web/SearchResult/ToPage/1>

Resources of the Internet information and telecommunication network:

1. Electronic library system of RUDN and third-party Electronic library systems to which university students have access on the basis of concluded contracts:

- Electronic library system of RUDN - ELS RUDN <http://lib.rudn.ru/MegaPro/Web>
- ELS "University Library online" <http://www.biblioclub.ru>
- ELS Yurayt <http://www.biblio-online.ru>
- ELS "Student Consultant" www.studentlibrary.ru
- ELS "Lan" <http://eZlanbook.com/>
- ELS "Trinity Bridge" <http://www.trmost.com/>

2. Databases and search engines:

- electronic fund of legal and regulatory and technical documentation <http://docs.cntd.ru/>
- search engine Yandex <https://www.yandex.ru/>
- search engine Google <https://www.google.ru/>
- abstract database SCOPUS <http://www.elsevierscience.ru/products/scopus/>

Educational and methodological materials for independent work of students during the development of the discipline/ module*:

1. A course of lectures on the discipline "**Fodder plants**".
2. Seminary workshop on the discipline "**Fodder plants**".

* - All educational and methodological materials for independent work of students are placed in accordance with the current procedure on the discipline page in the **Telecommunication educational and Information System!**

8. MID-TERM ASSESSMENT

Evaluation materials and a point-rating system* for assessing the level of competence formation (part of competencies) based on the results of mastering the discipline "**Fodder plants**" are presented in the Appendix to this Work Program of the discipline.

* - Assessment Materials and a Point Rating System are formed based on the requirements of the relevant local regulatory act of the RUDN.

DEVELOPER:

Associate Professor of Agrobiotechnology

Department

Position, Basic curriculum

Signature

Pavlova M.E.

Full name.

HEAD OF THE DEPARTMENT:

Agrobiotechnology Department

Name Basic Curriculum

Signature

Pakina E.N.

Full name.

HEAD OF THE HIGHER EDUCATION PROGRAM:

Director of the Department of Veterinary Medicine

Position, Basic curriculum

Signature

Vatnikov Yu.A.

Full name