**MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE**
**SUMY NATIONAL AGRARIAN UNIVERSITY**

**Department of Therapy, Pharmacology, Clinical Diagnostics and Chemistry**
**Faculty of Veterinary Medicine**

# MODULE SYLLABUS

**" Cardiology and pulmonology "**

**(selective)**

**Implemented in the "21 veterinary medicine" Academic Program**

**Area of specialization 20 "211 veterinary medicine"**
**"**

**at the second (master's) level of higher education**

**Sumy-2021**

Author: _____ Dolbanosova RV, Ph.D. , associate Professor

| Module syllabus agreed at the "Veterinary Toxicology" Department meeting Department of Therapy, Pharmacology, Clinical Diagnostics and Chemistry | Minutes N 15  08/06/ 2021 |
|---|---|
| | Head of Therapy, Pharmacology, Clinical Diagnostics and Chemistry Department _____ (L.G.Ulko) |

**Approved by:**
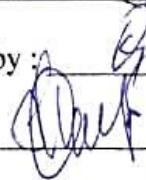
Guarantor of the Academic program _____ (L G Ulko)

Dean of the Faculty _____ (O L Nethiporenko)

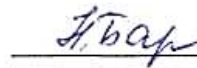Syllabus review (attached) is provided by : _____ (Шкромада О.

_____ (Сincp О.Я

Representative of the Department of
Education Quality assurance,
licensing and accreditation
)
_____ (Т.Баранік

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**Syllabus review data:**

| The academic year in which changes are made | The Academic program attachment number with changes description | Changes revised and approved | | |
|---|---|---|---|---|
| | | Minutes No and date of the department meeting | Head of Department | Guarantor of the Academic program |
| | | | | |
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| | | | | |

# 1. MODULE OVERVIEW

| 1. | Title | Cardiology and pulmonology |
|---|---|---|
| 2. | Faculty/Department | Veterinary medicine <br> Therapy, pharmacology, clinical diagnosis and chemistry |
| 3. | Type (compulsory or optional) | optional |
| 4. | Program(s) to which module is attached (to be filled in for compulsory types) | 21 Veterinary medicine <br> 211 veterinary medicine |
| 5. | Module can be suggested for (to be filled in for optional types) | 21 Veterinary medicine <br> 211 veterinary medicine |
| 6. | Level of the National Qualifications Framework | 7 |
| 7. | Semester and duration of module | 4 |
| 8. | ECTS credits number | 3 |

| 9. | Total workload and time allotment | Directed study | | | Self-directed study |
|---|---|---|---|---|---|
| | | Lectures | Practicals | Labs | |
| | | | **22** | | **122** |

| 10. | Language of instruction | English |
|---|---|---|
| 11. | Module leader | Dolbanosova RV |
| 12. | Module leader contact information | https://vet.snau.edu.ua/kafedri/kafedra-terapi%d1%97-farmakologi%d1%97-klinichno%d1%97-diagnostiki-ta-ximi%d1%97/sklad-kafedri/dolbanosova-rimma-valentinivna-k-vet-n-docent / <br> e- mail : rimma19-82@ukr.net |
| 13. | Module description | The discipline "Cardiology and Pulmonology" includes the basics of anatomy, physiology, morphology of the cardiovascular and respiratory systems , etiology, pathogenesis, symptoms, diagnosis, treatment and prevention of heart and lung diseases . |
| 14. | Module aim | The purpose of the discipline is to provide students with theoretical and practical knowledge of the heart and lungs, etiology, pathogenesis, symptoms, course, diagnosis and differential diagnosis, treatment and prevention of diseases associated with cardiovascular and respiratory systems. |
| 15. | Module Dependencies | 1.   The educational component is based on: foreign and Latin language, anatomy, physiology, biochemistry, |

| | | |
|---|---|---|
| | (prerequisites, co-requisites, incompatible modules) | clinical diagnostics.<br>2. The educational component is an additional component for clinical diagnosis, internal diseases of animals, parasitology, infectious diseases , pathological anatomy, diagnosis and therapy of internal diseases of productive animals, special propaedeutics. |
| 16. | The policy of academic integrity | Adherence to academic integrity for higher education seekers involves: independent performance of educational tasks, tasks of current and final control of learning outcomes; references to sources of information in the case of the use of ideas, statements, information; compliance with copyright law; providing reliable information about the results of their own educational or scientific activities. Violations of academic integrity in the study of OK "Internal Diseases of Animals" are: academic plagiarism, academic fraud (copying, deception, publishing someone's work for their own), the use of electronic devices during the final control of knowledge<br>For violation of academic integrity, students may be held subject to the following academic liability:<br>Academic plagiarism - grade 0, re-completion of the task.<br>Academic fraud - cancellation of points; re-assessment re-performance of non-independently performed work;<br>Use of electronic devices during the final control of knowledge - suspension from work, grade 0 |
| 17 | Link in Moodle | https://cdn.snau.edu.ua/moodle/course/view.php?id=4676 |

## 2. CORRELATION BETWEEN MODULE LEARNING OUTCOMES (MLOs) AND PROGRAM LEARNING OUTCOMES (PLOs)

| MLOs: On successful completion of the module the learner will be able to: | PLOs | | | How assessed |
|---|---|---|---|---|
| | PLO 1 | PLO 4 | PLO 20 | |
| MLOs 1. Use knowledge of anatomy, physiology, morphology to determine the work of the cardiovascular and respiratory systems of different species of animals in normal and pathological | + | | | Oral interview<br><br>Working with animals |
| MLOs 2. Use in practice general and special methods of research of cardiovascular and respiratory system. | | + | + | Presentations with reports on topics<br><br>Work with animals and equipment |
| MLOs 3 Differentiate clinical signs of diseases of the cardiovascular and respiratory systems | + | + | | Multiplechoice tests |
| MLOs 4. Use knowledge of the features of etiopathogenesis , symptoms and course of the disease for the appointment of treatment and prevention, choosing drugs according to the diagnosis of the disease. | | + | | Simulation exercises<br><br>Solving situational problems |

## 3. MODULE INDICATIVE CONTENT
### Autumn semester

| Topics | Distribution of hours | | Learning resources |
|---|---|---|---|
| | Directed study | Self-directed study | |
| | Labs | | |
| **Topic 1**. Study of the cardiovascular system<br>**Plan**.<br>1. Study of the cardiovascular system | 2 | 12 | 1,3,4,6,8 |

| | | | |
|---|---|---|---|
| 2.     Cardiology and interventional medicine . <br> 3.     Basic methods of examination of the heart and blood vessels (examination, percussion, auscultation). | | | |
| **Topic 2**. Special methods of examination of the heart and blood vessels <br>                      **Plan** <br> 1.     Special methods of examination of the heart and blood vessels <br> 2.     Electrocardiography <br> 3.     Phonocardiography <br> 4.     Blood pressure test <br> 5.     X-ray diagnosis of heart disease | 4 | 18 | 2,5,6,9,12 |
| **Topic 2.** Special methods of cardiovascular research <br>                    **Plan**. <br>   1.   Study of heart murmurs <br>   2.   Examination of peripheral vessels <br>   3.   Cardiac arrhythmias <br>   4.   Functional diagnosis of the cardiovascular system | 4 | 18 | 1, 4, 9, 11,12,13 |
| **Topic 3.** Diseases of the cardiovascular system. <br> 1.     Classification, prevalence, general symptoms and syndromes of diseases of the cardiovascular system. <br> 2.     Pericardial diseases. Methods of diagnosis, differential diagnosis, treatment and prevention. <br> 3.     Myocardial disease. Methods of diagnosis, differential diagnosis, treatment and prevention. <br> 4.     Diseases endocardial . Methods of diagnosis, differential diagnosis, treatment and prevention. <br> 5.     Defects heart. Methods of diagnosis, differential diagnosis, treatment and prevention. <br> 6.     Vascular diseases. Methods of diagnosis, differential diagnosis, treatment and prevention. | 4 | 22 | 7,8, 14,18,19 |
| **Topic 4.** Research of the respiratory system. <br>                    **Plan** <br> 1.     General scheme of research of respiratory system <br> 2.     Examination of the anterior respiratory system <br> 3.     Chest examination <br> 4.     Additional methods of research of respiratory system | 2 | 12 | 10,12,14,17 |
| **Topic 5.** Diseases of the respiratory system <br><br> 1.     Classification, prevalence, general symptoms and syndromes of respiratory diseases . <br>   2.   Diseases of the upper respiratory tract. Methods of diagnosis, differential diagnosis, treatment and prevention. | 2 | 16 | 11,13,15,19 |

| | | | |
|---|---|---|---|
| **Topic 5.** Diseases of the respiratory system<br><br>1.      Inflammatory lung diseases. Methods of diagnosis, differential diagnosis, treatment and prevention.<br>2.      Lung diseases are not inflammatory in nature. Methods of diagnosis, differential diagnosis, treatment and prevention. | 2 | 16 | 8,11,14,16,18 |
| **Topic 6 .** Pleural diseases.<br>1.      Study of pleural diseases<br>2.      Methods of diagnosis, differential diagnosis, treatment and prevention of pleural diseases . | 2 | 14 | 2,12,10,17 |
| **In just one year** | **22** | **128** | |

## 4. TEACHING AND LEARNING METHODS

| MLOs | Teaching methods (directed study) | Hours | Learning methods (self-directed study) | Hours |
|---|---|---|---|---|
| **MLOs** 1.<br><br>Use knowledge of anatomy, physiology, morphology to determine the work of the cardiovascular and respiratory systems of different species of animals in normal and pathological | *Informative lesson* where students receive ready-made information that needs to be memorized , *visualization lessons* - demonstration materials, forms of visualization, which not only supplement verbal information, but also act as carriers of meaningful information.<br><br>*Problematic* - disputes based on lecture materials.<br><br>Use of the MOODLE, ZOOM platform during the mixed form of training. | 4 | *Extracurricular work* - reading literature on the topic, watching videos about the heart , fixing animals during research , | 28 |

| **MLOs** 2. You use in practice general and special methods of research of cardiovascular and respiratory system. | Acquaintance with the general and special methods of research , in the conditions of NNVK "Vivarium" of SNAU and veterinary clinics of Sumy . Conducting a general examination of animals to identify clinical and subclinical stages of the disease. Use of the MOODLE, ZOOM platform during the mixed form of training. | 6 | *Extracurricular work* - drawing up a plan for the study of the cardiovascular and respiratory systems for a specific species of animals. View video files on special methods of cardiovascular and respiratory system research. | 28 |
|---|---|---|---|---|
| **MLOs** 3. Differentiate clinical signs of diseases of the cardiovascular and respiratory systems | *Visualization classes are* demonstration materials, forms of visualization, which not only supplement verbal information, but also act as carriers of meaningful information. *Lesson - press- conference* where students are asked to ask the teacher in writing questions on the topic to be studied. For two or three minutes, students formulate questions and pass them on to the teacher. During the lesson the teacher gives answers to questions. Students ask questions at the beginning of the topic to identify the interests of the group or flow, their attitudes, opportunities; in the middle - to involve students in the key moments of the course | 6 | *Extracurricular work* - Solving situational problems. Testing on the MOODLE platform | 36 |

| | | | | |
|---|---|---|---|---|
| | and systematization of knowledge; at the end - to determine the prospects for the development of the acquired content. *Work with animals* , where the main clinical manifestations of animal diseases are understood and differential diagnosis is performed. *Problematic* - disputes on the materials of the lesson . Use of the MOODLE, ZOOM platform during the mixed form of training. | | | |
| **MLOs** 3. Use knowledge of the features of etiopathogenesis, symptoms and course of the disease for the appointment of treatment and prevention, choosing drugs according to the diagnosis of the disease. | *Visualization classes are* demonstration materials, forms of visualization, which not only supplement verbal information, but also act as carriers of meaningful information. *Work with animals* , where the conditions of keeping animals, the links of pathogenesis of the main clinical manifestations of internal non-communicable diseases of animals and protocols for treatment and prevention are proposed *Problematic* - disputes on the materials of classes . | 6 | *Extracurricular work* - Reading material on the proposed topics. Watch videos on internal non-communicable diseases of the cardiovascular and respiratory systems, which are located on the MOODLE platform Solving situational problems. | 36 |

| | Use of the MOODLE, ZOOM platform during the mixed form of training. | | | |
|---|---|---|---|---|
| **MLOs** 5.<br>Analyze the results obtained after the appointment of treatment and prevention.<br>Use the acquired knowledge for further therapeutic activities | *Analytical method* - after the appointment of a protocol for the treatment of animal intoxications, an analysis of each prescribed drug and method of therapy is performed.<br>*Lecture-conference* - creates a problematic situation that encourages students to look for a solution, raising goals step by step.<br>*Working with animals* to observe animals being treated. Using the MOODLE, ZOOM platform during a mixed form of learning. | 10 | *Extracurricular work* - acquaintance with the existing protocols of treatment of animals for intoxications.<br>Preparation of presentation and reports on the topic | 10 |

## 1. ASSESSMENT

## 5.1. Diagnostic assessment

## 5.2. Summative assessment

## 5.2.1. Intended learning outcomes methods:

| No | Summative assessment methods | Grades | Deadline |
|---|---|---|---|
| | **Autumn semester** | | |
| 1. | Oral interview | 15 points / 15% | Up to 15 weeks |
| 2. | Solving situational problems, simulation exercises | 20 points / 20% | Until the 13th week |
| 3. | Presentations with reports on topics | 15 points / 15% | Up to 14 weeks |
| 4. | Work with animals and equipment | 30 points / 30% | Up to 12 weeks |
| 5. | Multiplechoice tests | 20 points / 20% | Up to 7 weeks |

## 5.2.2. Grading criteria

| Summative assessment method | Unsatisfactory | Satisfactory | Good | Excellent |
|---|---|---|---|---|
| Oral interview | <5 points | 5-10 | 11-14 points | 15 points |
| | Task requirements not met | Most requirements are met, but some components are missing or insufficiently disclosed, there is no analysis of other approaches to the issue | All requirements of the task are fulfilled | All requirements of the task are fulfilled, creativity, thoughtfulness is shown, own solution of a problem is offered |
| Solving situational tasks, drawing up protocols | <10 points | 11-15 | 15-19 points | 20 points |
| | Task requirements not met | Most requirements are met, but some components are missing or insufficiently disclosed, there is no analysis of other approaches to the issue | All requirements of the task are fulfilled, the situational task is solved completely, the report is made | All requirements of the task are fulfilled, creativity, thoughtfulness is shown, own solution of a problem is offered |
| Preparation of presentations and reports | <5 points | 5-10 | 11-14 points | 15 points |
| | Task requirements not met | The presentation is prepared, but the report is not clear, not | All the requirements of the task are met, the report and presentation | All requirements of the task are fulfilled, creativity, thoughtfulness is shown, own |

| | | logical | meet the requirements | solution of a problem is offered |
|---|---|---|---|---|
| Working with animals | <15 points | 15-20 | 21-26 | 27-30 |
| | Task requirements not met | Most of the requirements are met, but there are minor violations of the methods | The task is done correctly | All requirements of the task are fulfilled, creativity, thoughtfulness is shown, own solution of a problem is offered |
| Multiple choice tests | <10 points | 10-15 | 16-19 | 20 |
| | Less than 10 correct answers | 10-15 correct answers | 16-19 correct answers | All correct answers |

### 5.3. Formative assessment

Formative exercises are designed to enable students to develop particular aspects of their learning, prior to summative assessments. Formative exercises are designed to help students use feedback and self-reflection to manage and develop their learning so that they can see how to improve their work.

| No | Formative Assessment elements | Date |
|---|---|---|
| 1 | Oral feedback from the teacher while working on situational tasks | 10-15 minutes at the end of each topic studied |
| 2 | Feedback from the student during work | The next lesson after learning a new topic |
| …3 | Oral feedback from the teacher and students after the presentation of independent work | 5-12 weeks |
| 4 | Discussion of situational tasks with group discussion | After learning a new topic |
| 5 | Express survey with peer review of students | 6, 14 weeks |

Self-assessment can be used both an element of formative and summative assessment.

# 6.    LEARNING RESOURCES

## 6.1. Key resources

1.    Meurs KM, Mauceli E, Lahmers S, et al: Genome-wide association identifies a deletion in the 3' untranslated region of striatin in a canine model of arrhythmogenic right ventricular cardiomyopathy, Hum Genet 128:315–324, 2010.

2.    Oyama MA, Reiken S, Lehnart SE, et al: Arrhythmogenic right ventricular cardiomyopathy in Boxer dogs is associated with calstabin2 deficiency, J Vet Cardiol 10:1–10, 2008.

3.    Meurs KM, Lahmers S, Keene BW, et al: A splice site mutation in a gene encoding for PDK4, a mitochondrial protein, is associated with development of dilated cardiomyopathy in the Doberman Pinscher, Hum Genet. 131:1319–1325, 2012.

4.    Reist-Marti SB, Dolf G, Leeb T, et al: Genetic evidence of subaortic stenosis in the Newfoundland dog, Vet Rec 170:597, 2012.

5.    Werner P, Raducha MG, Prociuk U, et al: A novel locus for dilated cardiomyopathy maps to canine chromosome 8, Genomics 91:517–521, 2008.

6.    Carlos Sampedrano C, Chetboul V, Mary J, et al: Prospective echocardiographic and tissue Doppler imaging screening of a population of Maine Coon cats tested for the A31P mutation in the myosin-binding protein C gene: a specific analysis of the heterozygous status, J Vet Intern Med 23:91–99, 2009.

7.    Kittleson MD, Meurs KM, Munro MJ, et al: Familial hypertrophic cardiomyopathy in Maine Coon cats: an animal model of human disease, Circulation 99: 3172–3180, 1999.

8.    Meurs KM, Kuan M: Differential methylation of CpG sites in two isoforms of myosin binding protein C, an important hypertrophic cardiomyopathy gene, Environ Mol Mutagen 2:161–164, 2011.

9.    Meurs KM, Norgard MM, Ederer MM, et al: A substitution mutation in the myosin binding protein C gene in ragdoll hypertrophic cardiomyopathy, Genomics 90:261–264, 2007.

10.    M. Yesuf, H. Mazengia, andM. Chanie, "Histopathological and bacteriological examination of pneumonic lungs of small ruminants slaughtered at Gondar, Ethiopia," *Am-Europian Journal of Scientific* Research, vol. 7, pp. 226–231, 2012.

11.    Respiratory Diseases of Small Ruminants, Amit Kumar, Suresh K. Tikoo, Praveen Malik,and Aruna T. Kumar Volume 2014, P.58

12.    https://pubmed.ncbi.nlm.nih.gov/3423455/

13.    https://bmcvetres.biomedcentral.com/articles/sections/pulmonology-and-respiratory-diseases

### 6.2. Guidelines

14.    Mary J, Chetboul V, Sampedrano CC, et al: Prevalence of the MYBPC3-A31P mutation in a large European feline population and association with hypertrophic cardiomyopathy in the Maine Coon breed, J Vet Cardiol 12:155–161, 2010.

15.    Meurs KM, Sanchez X, David RM, et al: A cardiac myosin binding protein C mutation in the Maine Coon cat with familial hypertrophic cardiomyopathy, Hum Mol Genet 14:3587–3593, 2005.

16.    Meurs KM, Spier AW, Miller MW, et al: Familial ventricular arrhythmias in boxers, J Vet Intern Med 13:437–439, 1999.

17.    Mausberg T, Wess G, Simak J, et al: A locus on chromosome 5 is associated with dilated cardiomyopathy in Doberman Pinschers, PLoSOne, 6: e2004.

18.    https://www.worldcat.org/title/veterinary-echocardiography/oclc/741879225

19.    https://www.amazon.com/Rapid-Review-Interpretation-Animal-Practice-ebookdp07Z6QS6Z3/dp/B07Z6QS6Z3/ref=mt_other?_encoding=UTF8&me&qid

## Рецензія на Робочу програму (силабус)

| Параметр, за яким оцінюється робоча програма (силабус) освітнього компонента гарантом або членом проєктної групи | Так | Ні | Коментар |
|---|---|---|---|
| Результати навчання за освітнім компонентом (ДРН) відповідають НРК | | | |
| Результати навчання за освітнім компонентом (ДРН) відповідають передбаченим ПРН (для обов'язкових ОК) | | | |
| Результати навчання за освітнім компонентом дають можливість виміряти та оцінити рівень їх досягнення | | | |

Член проектної групи ОП _____ _____

| Параметр, за яким оцінюється робоча програма (силабус) освітнього компонента викладачем відповідної кафедри | Так | Ні | Коментар |
|---|---|---|---|
| Загальна інформація про освітній компонент є достатньою | | | |
| Результати навчання за освітнім компонентом (ДРН) відповідають НРК | | | |
| Результати навчання за освітнім компонентом (ДРН) дають можливість виміряти та оцінити рівень їх досягнення | | | |
| Результати навчання (ДРН) стосуються компетентностей студентів, а не змісту дисципліни (містять знання, уміння, навички, а не теми навчальної програми дисципліни) | | | |
| Зміст ОК сформовано відповідно до структурно-логічної схеми | | | |
| Навчальна активність (методи викладання та навчання) дає змогу студентам досягти очікуваних результатів навчання (ДРН) | | | |
| Освітній компонент передбачає навчання через дослідження, що є доцільним та достатнім для відповідного рівня вищої освіти | | | |
| Стратегія оцінювання в межах освітнього компонента відповідає політиці Університету/факультету | | | |
| Передбачені методи оцінювання дозволяють оцінити ступінь досягнення результатів навчання за освітнім компонентом | | | |
| Навантаження студентів є адекватним обсягу освітнього компонента | | | |
| Рекомендовані навчальні ресурси є достатніми для досягнення результатів навчання (ДРН) | | | |
| Література є актуальною | | | |

Рецензент (викладач кафедри) _____  _____ _____
                              (назва)                  (посада, ПІБ)         (підпис)