



MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
STATE BIOTECHNOLOGICAL UNIVERSITY
Faculty of Veterinary Medicine

APPROVED by
Head of the Internal diseases and
clinical diagnosis of animals
Department

O. V. MATSENKO
(signature) (surname and initials)

"20" June 2025 year

Department of "Internal diseases and clinical diagnostics of animals"
(name of department)

WORKING PROGRAM
EDUCATIONAL DISCIPLINE

"ENSURING THE HEALTH OF HIGH-PRODUCING COWS"
(code and name of academic discipline)

Level of higher education	<u>second</u> (name)
Branch of knowledge	<u>21 Veterinary medicine</u> (code and name)
Specialty	<u>211 Veterinary medicine</u> (code and name)
Educational program	<u>Veterinary Medicine</u>

(academic title, position, surname and initials)

(name of department)

Protocol from: " 20 " June 2025 year № 13

The work program has been agreed

(name of EPP)

(signature)

(full name)

The validity period has been extended to:

the head of department

(the name of department)

(signature)

(_____)
(Name)

the head of department

the head of department

1. Description of the academic discipline

Name of indicators	Characteristics of the academic discipline
	full-time education
Number of credits <u>3</u>	Discipline status
	optional
Parts - <u>2</u>	Year of education:
	<u>5</u>
	Semester
Total numbers of hours <u>90</u>	<u>9</u>
	Lectures
	<u>14 h</u>
	Practical, (seminar)
	<u>30 h</u>
	Laboratory lessons
	Self Work
	<u>46 h</u>
Hours for full-time education: classrooms - 44; independent work of the acquirer - 46	<u>Type of control:</u>
	<i>differentiated test</i>

2. The aim and tasks of the discipline

The purpose of the discipline “Ensuring the Health of High-Producing Cows” is to provide students with comprehensive knowledge of the etiology, mechanisms of development, characteristic clinical signs, course, and possible complications, as well as modern methods of diagnosis, treatment, and prevention of internal diseases in productive animals within modern farming systems.

The objectives of studying the discipline are to equip students with the necessary scope of specialized knowledge that ensures high professional competence of future veterinarians for effective work as master-level veterinary clinicians in the conditions of contemporary farms.

The subject of the discipline includes the etiology, pathogenesis, clinical manifestations, diagnostics, and treatment methods of transition period diseases such as postpartum hypocalcemia, type I and type II ketosis, acute and subclinical (SARA) ruminal acidosis and their consequences (laminitis, abomasal displacement). The discipline focuses on timely and evidence-based treatment of animals and modern preventive measures for these conditions.

Successful mastering of the course material requires prior study of the following basic disciplines (according to the structural and logical scheme of the educational program): Animal Biochemistry, Pathophysiology, Clinical Diagnosis of Animal Diseases, Clinical Biochemistry, Pathological Anatomy and Physiology, Microbiology, Virology, Epizootiology, Parasitology, Pharmacology.

3. Program of educational discipline

Chapter I. Introduction to the Discipline «Ensuring the Health of High-Producing Cows» Diagnosis, Treatment, and Prevention of Metabolic Disorders in High-Producing Cows

Topic 1. Purpose and Objectives of the Discipline. Features of Digestion in High-Producing Cows, Dispensary Examination of Cattle, Modern Housing and Management Technologies.

Summary: The topic highlights the digestive peculiarities of ruminants with high milk productivity, emphasizing the role of rumen microbiocenosis, fermentation processes, the formation of volatile fatty acids, and the energy–protein balance. It presents the principles of cattle dispensary examination — systematic clinical, laboratory, and instrumental assessment for early detection of metabolic disorders and nutritional correction. Modern technologies of housing and management of high-producing cows are discussed, ensuring optimal conditions for their health, reproduction, and stable lactation.

Recommended literature (references): 1. [3–13]; 4. [11–30]; 6. [115–133]; 7. [213–228]; 11. [19–148].

Topic 2. Postpartum Hypocalcemia (Milk Fever, Parturient Paresis).

Summary:

The topic covers the causes, mechanisms of development, clinical signs, diagnosis, and treatment of postpartum hypocalcemia in high-producing cows. It emphasizes the role of calcium–phosphorus metabolism, hormonal regulation, and nutrition during the transition period. The main preventive principles are provided — dietary cation–anion balance, use of mineral supplements, and monitoring of animal condition in the postpartum period.

Recommended literature (references): 1. [39–60]; 2. [31–63]; 5. [29–48]; 11. [52–132]; 12. [36–60].

Topic 3. Acute and Subclinical Rumen Acidosis (SARA).

Summary: The etiology, pathogenesis, and clinical signs of acute and subclinical rumen acidosis in high-producing cows are presented. The topic discusses the effects of excess easily digestible carbohydrates in the diet, alterations of the rumen microflora, and disruption of acid–base balance. The main diagnostic methods, therapeutic approaches, and preventive strategies are described, including dietary correction, use of buffers, and control of structural fiber content in the ration.

Recommended literature (references): 1. [17–31]; 8. [64–84]; 10. [55–62]; 11. [22–159].

Topic 4. Abomasal Displacement.

Summary: The topic considers the causes, mechanisms of development, and clinical signs of abomasal displacement in high-producing cows. It emphasizes the role of nutritional disorders, hypocalcemia, and postpartum stress in the development of this pathology. Main diagnostic methods, conservative and surgical treatment approaches, and preventive measures aimed at stabilizing gastrointestinal function during the transition period are described, along with strategies for preventing abomasal displacement in dairy cows.

Recommended literature (references): 3. [85–105]; 8. [63–79]; 9. [94–151]; 12. [102–111].

Topic 5. Ketosis in Dairy Cows.

Summary: The topic explains the etiology, pathogenesis, clinical signs, and diagnosis of ketosis in high-producing cows. It describes the role of energy deficiency during the transition period, carbohydrate–lipid metabolism disorders, and the formation of ketone bodies. The main therapeutic approaches (use of glucose, propylene glycol, insulin, B-group vitamins) and preventive measures — balancing the energy ration, body condition monitoring, and smooth transition to lactation — are outlined.

Recommended literature (references): 7. [143–160]; 10. [119–143]; 12. [71–102]; 13. [90–128].

Chapter II — Hepatosis in Dairy Cows. Diseases of Newborn Calves under Intensive Dairy Farming Technologies

Topic 6. Hepatosis in Dairy Cows

Summary: The topic discusses the causes, pathogenesis, and clinical manifestations of hepatosis in high-producing cows, which occurs mainly during the transition period and is often associated with ketosis, obesity, or nutritional imbalances. The mechanisms of hepatic lipid infiltration, disturbances in protein and lipid metabolism, and functional impairment of the liver are explained. The main principles of diagnosis (clinical, biochemical, and ultrasonographic methods), treatment (use of hepatoprotectors, vitamins, and dietary correction), and prevention of metabolic liver disorders in dairy cows are presented.

Recommended literature (references): 2. [181–212]; 9. [82–115]; 11. [102–120]; 12. [76–87]; 13. [41–153];

Topic 7. Diseases of Newborn Calves Caused by High-Intensity Dairy Farming Technologies

Summary: The topic highlights the main pathologies of newborn calves associated with intensive management of high-producing dairy cows, including hypotrophy, diarrheal syndrome, neonatal infections, thermoregulatory and metabolic disorders. It describes the influence of maternal nutrition and condition during the dry period, calving environment, hygiene, and colostrum management. Principles of early diagnosis, treatment, and prevention are provided, taking into account modern veterinary and technological approaches.

Recommended literature (references): 1. [13–32]; 4. [95–119]; 7. [227–250]; 10. [190–199];

4. Structure of the academic discipline

Name of sections and topics	Number of hours			
	Full-time			Selfwork
	Total hours	auditoriums		
		Total	including	

			lectures	laboratory	practical	
1	2	3	4	5	6	7
<i>Chapter 1 Introduction to the Discipline «Ensuring the Health of High-Producing Cows» Diagnosis, Treatment, and Prevention of Metabolic Disorders in High-Producing Cows</i>						
Topic 1. Purpose and Objectives of the Discipline. Features of Digestion in High-Producing Cows, Dispensary Examination of Cattle, Modern Housing and Management Technologies.	14	6	2		4	8
Topic 2. Postpartum Hypocalcemia (Milk Fever, Parturient Paresis).	12	4	2		2	8
Topic 3. Acute and Subclinical Rumen Acidosis (SARA).	12	4	2		2	8
Topic 4. Abomasal Displacement.	8	4	2		2	4
Topic 5. Ketosis in Dairy Cows.	14	8	2		6	6
<i>Together by chapter I</i>	60	26	10		16	34
<i>Chapter II — Hepatosis in Dairy Cows. Diseases of Newborn Calves under Intensive Dairy Farming Technologies</i>						
Topic 6. Hepatosis in Dairy Cows	12	6	2		4	6
Topic 7. Diseases of Newborn Calves Caused by High-Intensity Dairy Farming Technologies	18	12	2		10	6
<i>Together by chapter II</i>	30	18	4		14	12
Total hours	90	44	14		30	46

5. Lecture

№	Topic	Hours
		d f
<i>Chapter 1 Introduction to the Discipline «Ensuring the Health of High-Producing Cows» Diagnosis, Treatment, and Prevention of Metabolic Disorders in High-Producing Cows</i>		
1	Purpose and Objectives of the Discipline. Features of Digestion in High-Producing Cows, Dispensary Examination of Cattle, Modern Housing and Management Technologies.	2
2	Postpartum Hypocalcemia (Milk Fever, Parturient Paresis).	2
3	Acute and Subclinical Rumen Acidosis (SARA).	2
4	Abomasal Displacement.	2
5	Ketosis in Dairy Cows.	2
<i>Chapter II — Hepatosis in Dairy Cows. Diseases of Newborn Calves under Intensive</i>		

Dairy Farming Technologies		
6	Hepatositis in Dairy Cows	2
7	Diseases of Newborn Calves Caused by High-Intensity Dairy Farming Technologies	2
Total		14

6. Practical classes (if provided)

№	Name of the subject of the lesson	Number of hours
		d/f
Chapter 1 Introduction to the Discipline «Ensuring the Health of High-Producing Cows» Diagnosis, Treatment, and Prevention of Metabolic Disorders in High-Producing Cows		
1-2	Purpose and Objectives of the Discipline. Dispensary Examination. Features of Digestion in High-Producing Cows, Modern Technologies of Housing and Management.	4
3	Postpartum Hypocalcemia (Milk Fever, Parturient Paresis).	2
4	Acute and Subclinical Rumen Acidosis (SARA).	2
5	Abomasal Displacement. Diagnostic Features, Treatment, and Preventive Measures for Abomasal Displacement in Cows.	2
6	Ketosis in Dairy Cows. Diagnosis, Treatment, and Prevention of Ketosis in Cows.	2
7	Ketosis in Dairy Cows: Laboratory Diagnostic Methods and Evaluation of Energy Status.	2
8	Solving Production Case Studies	2
Chapter II — Hepatosis in Dairy Cows. Diseases of Newborn Calves under Intensive Dairy Farming Technologies		
9-10	Hepatosis in Dairy Cows. Diagnosis, Treatment, and Prevention of Hepatosis in Cows.	4
11-12	Diseases of Newborn Calves Caused by High-Intensity Dairy Farming Technologies.	4
13	Laboratory Diagnostics of Metabolic Disorders in Newborn Calves Born to High-Producing Cows (Blood of calves: glucose, β-hydroxybutyric acid (BHBA), total protein — assessment of colostral immunity, AST and ALT activity, calcium, phosphorus; Urine of calves: ketone bodies — rapid test; Colostrum of the dam: determination of density and immunoglobulin content.)	2
14	Analysis and Application of Digital Health Monitoring Systems for High-Producing Cows.	2
15	Solving Production Case Studies.	2
	Total	30

7. Selfwork

№	Name of the subject of the lesson	Number of hours
		d/f
<i>Chapter 1 Introduction to the Discipline «Ensuring the Health of High-Producing Cows» Diagnosis, Treatment, and Prevention of Metabolic Disorders in High-Producing Cows</i>		
1	Organization and Analysis of Dispensary Examination Results in High-Producing Cows on Dairy Farms. Planning of Preventive Measures and Microclimate Control in Facilities for High-Producing Cows.	8
2	Biochemical Markers of Calcium–Phosphorus Metabolism in Transition Dairy Cows. Prevention of Postpartum Mineral Metabolism Disorders in High-Producing Cows.	8
3	The Effect of Feeding on the Development of Subclinical Ruminal Acidosis (SARA): The Role of Fiber and Buffer Substances. Determination and Evaluation of Rumen Fluid Parameters in High-Producing Cows.	8
4	Pathogenesis and Prevention of Abomasal Displacement in the Context of Energy Balance in Dairy Cows. Modern Diagnostic and Surgical Methods for the Treatment of Abomasal Displacement in Cattle.	4
5	Methods for Early Diagnosis of Ketosis in Cows: Laboratory, Rapid, and Digital Approaches. Pathogenetic Mechanisms of Ketosis Development in High-Producing Cows.	6
<i>Chapter II — Hepatosis in Dairy Cows. Diseases of Newborn Calves under Intensive Dairy Farming Technologies</i>		
6	The Role of the Liver in the Metabolic Adaptation of High-Producing Cows. Biochemical Indicators of Hepatosis. Prevention of Fatty Liver Degeneration in High-Producing Cows. (Analysis of the effects of feeding, energy balance, and micronutrient supply on liver function; the role of hepatoprotectors, vitamins, antioxidants, and feed additives in the prevention of metabolic liver disorders.)	6
7	Neonatal Diarrhea in Calves: Pathogenesis, Causative Agents, and Preventive Strategies. Evaluation of Colostrum Quality and Immunological Adequacy in the Prevention of Diseases of Newborn Calves.	6
	Together	46

8. Methods teaching

1. Lectures occupation.
2. Practical occupation.
3. Laboratory occupation.
4. Independent occupation.

9. Control methods

- ❖ oral survey;
- ❖ test control;
- ❖ test;

During the current and final control, standardized computer tests are used as a means of assessing the results of learning in the discipline.

The final semester control (credit) is determined by the sum of the actually scored rating points from the current control and the individual educational and research task.

Current control is carried out during the semester by means of surveys (oral or test), as well as checking the quality of mastering the topics of independent work.

When selecting the criteria for assessing the student's mastery of the discipline program, the program implementation and mastery of the material in terms of lecture and laboratory classes, as well as the performance of independent work provided for by the program, were taken into account.

All types of control (oral survey, written survey, test survey) are closely related and are organized in such a way as to stimulate effective independent work of applicants and ensure an objective assessment of the level of their knowledge.

After completing the study of the discipline (part of the discipline), the final control is carried out in the form of an exam (test) and the applicant can score from 60 to 100 points inclusive during the semester at the control points.

10. Distribution of points received by applicants

In the process of studying the course, the success of applicants is determined by conducting current and final controls (credit and exam).

Current testing, answers in class and control of independent work		Total score
Part 1	Part 2	60-100
T__ 1-5	T__ 6-7	
0-100	0-100	

T__, T__... T__ – topics of the sections.

The grade received by a higher education applicant for conducting an ongoing (current) control (Oc) consists of the points that the applicant receives during testing (Tc), which are 30%; the points that the applicant receives during activity in classes (Ca), which are 40% and the points for mastering the independent work block (S), which are 30%.

$$Ts = Oc \times 0.3 + Tc \times 0.4 + Ca \times 0.3$$

In each section of the educational component, a current control is carried out (current control - Cc).

For applicants in the fall (spring) semester, when the final knowledge control is completed with an undifferentiated credit (NC), the final sum of points (Tc Points) is the arithmetic average of the points of four current controls of the fall (spring) semester:

$$NC \text{ Points} = (PC1 + PC2) / 2$$

According to the results of the semester control, the applicant is given a grade of "passed/not passed" on the national scale in the applicant's transcript.

12. Distribution of points received by applicants

Ongoing testing and independent work		Total score	
Part 1	Part 2	Total score of parts (P)	Exam (E)
T_1-5	T_6-7	((T1+T...) /n) x 60 %	E x 40 %
0-100	0-100		
Total reiting score (TRS = Ot+E)		60-100	

T1, T2... - topics of sections,
n - number of topics.

The grade that a higher education applicant receives for conducting an intermediate (current) control (CurC) consists of the points that the applicant receives during testing (T), which are 30%; the points that the applicant receives during activity in classes (Cl), which are 40%; and the points for mastering the independent work block (InW), which are 30%.

$$\text{CurC} = \text{T} \times 0,3 + \text{Cl} \times 0,4 + \text{InW} \times 0,3$$

In each section of the educational component, current control is carried out (**current control** - CurC).

For applicants in the fall (spring) semester, when the final knowledge test is completed with an undifferentiated credit (UDC), the final sum of points (UDC points) is the arithmetic average of the points of the four current tests of the fall (spring) semester:

$$\text{UDC points} = (\text{CurC } 1 + \text{CurC } 2 + \text{CurC } 3 + \dots \text{CurC } 7) / 7$$

Based on the results of the semester control, the applicant's transcript is assigned a "pass/fail" grade on the national scale.

The final control of the academic performance of applicants is carried out in the form of an exam based on the results of computer testing. The exam grade for the educational component (discipline) is determined on a 100-point scale.

The exam grade (EG) is 40% of the total final grade (FG).

$$\text{EG} = \text{ETS} \times 0,4$$

where: ES – exam score; ETS– exam testing scores, which account for 40% of the points scored during exam testing.

The final grade for the discipline is given on a 100-point scale. It is calculated as the average arithmetic value (AAV) of all the grades received by the student from the current control (CurC) of the assimilation of the material of the sections, with their subsequent conversion into points according to the following formula:

$$\begin{aligned} \text{AAV} &= (\text{CurC chapter1}) \\ \text{CurCS} &= \text{AAV} \times 0,6 \end{aligned}$$

where: CurCS – current control scores, which make up 60% of the total final score; AAV is the arithmetic average value of all grades received by the student from the current control

The applicant can score up to 60 points inclusive at the control points of the mastery of the sections within 2 semesters.

Thus, the final grade (FG) is calculated using the formula:

$$FG = EG + CurCS$$

The results of the tests are displayed in the DBTU Moodle system. All forms of control are included in the 100-point assessment scale.

12. Scale: national and ECTS and criteria for assessment to determine the level of knowledge and skills

The control of students' knowledge and skills in the discipline is carried out in accordance with the use of the European system of transfer and accumulation of ECTS credits.

Basic provisions:

The total number of current control measures that a student must pass in the discipline is determined taking into account the number of credits in the discipline.

Based on the results of the current control measure, the student's level of assimilation of the educational material is assessed according to the national scale and the ECTS scale.

The number of points received by the student in the assessment of the final control is correlated with the marks on the national scale and the ECTS scale in accordance with Table 1.

Table 1.

Rating scale			
100-point scale	National scale	interpretation	ECTS scale
90 – 100	excellent	Excellent - excellent answer, the work is fulfilled with only a small number of errors	A
82 – 89	good	Very well - above average with a few errors	B
74 – 81		Well - in general the correct answer, the work with a certain number of serious errors	C
64 – 73	satisfactory	Satisfactorily – not bad, but with big number of errors	D
60 – 63		Quite satisfactorily – the work meets the minimum criteria	E
35 – 59	unsatisfactory	Unsatisfactorily – with the possibility to pass again	FX
0-34		Unsatisfactorily – with compulsory passing of the work once again	F

Passing current tests is mandatory. A section is considered passed if the student has scored the minimum required number of points or more.

The results of the rating for the section are brought to the attention of students no later than the third working day after the control event and, in the absence of claims from the students, are considered final.

If the student does not agree with the decision to assign him rating points for the section, then he must immediately after their announcement file a written appeal to the head of the department and, within the specified period, take an oral attestation for the section before the commission. The composition of the appeal commission in each specific case is determined by the head of the department. The decision of the commission is final.

A student who did not appear for the current test has the right to take the missed

current test during the assessment week.

The final rating of current performance in the discipline is calculated by averaging the ratings from all sections. The semester grade is given to the student taking into account the results of the final and current tests. The maximum number of points that a student can receive when studying a discipline is 100.

The exam involves a final test. If permission is granted for automatic exam enrollment, a student who has passed all current tests on time and has been certified with an "excellent" grade based on their results can receive a credit automatically. The semester grade in this case is the average grade for the sections.

The teacher is required to submit the completed credit and examination report to the academic department within the following deadline: for the exam - no later than the next business day after its completion.

The mastery of the independent work block is assessed on a scale according to the following regulations (Table 2)

Table 2.

Assessment criteria (100-point system, oral interview).

The level of formation of a student's knowledge and skills in the academic discipline, both during the final and current control, is assessed on a 100-point scale with subsequent conversion of grades into the national scale and the ECTS grading scale.

No	Criteria	Maximum number of points	Description
1	Completeness of the answer	30 points	The answer covers all the main aspects of the question, reveals its content in accordance with the curriculum.
2	Correctness and accuracy of presentation	20 points	The answer does not contain factual, logical or terminological errors.
3	Consistency and logic	10 points	The answer is logically structured, without inconsistent or chaotic fragments.
4	Language and style of presentation	10 points	The expression is competent, clear, using professional terminology.
5	Independent thinking	10 points	The student demonstrates the ability to draw his own conclusions, analyze, compare, give examples.
6	Additional knowledge (outside the main program)	10 points	The answer contains references to modern sources, interdisciplinary connections, and the latest data.
7	Ability to answer additional questions	10 points	The student confidently responds to the teacher's clarifying or in-depth questions, provides additional arguments or examples.

The conversion of grades on a 100-point scale to the national scale and ECTS scale is carried out according to the table:

Total points for all types of learning activities	Mark according to ECTS scale	Mark according to national scale
90 – 100	A	excellent
82 – 89	B	good
74 – 81	C	
64 – 73	D	
60 – 63	E	satisfactory
35 – 59	FX	unsatisfactory

0 – 34	F	
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Activity in classes is assessed on a scale with a maximum of 100 points in accordance with the following regulations (Table 3)

Table 3.

ACTIVITY ASSESSMENT SCALE IN CLASSES

ECT scale	National scale	Poin	Score interpretation
A	Excellent	90-100	the student works actively during classes, provides complete answers to the teacher's questions and shows a deep mastery of the material, is able to express his own opinion when discussing situational tasks, demonstrates the ability to independently and reasonably present the material, analyze phenomena and facts, make independent generalizations and conclusions, correctly completes educational tasks, has a full synopsis of theoretical material, regularly visits the Moodle system
B	Very well	82-89	the student works actively during the lessons, the questions are covered in full, the presentation of the material is logical, substantiated by facts, with references to literary sources, the coverage of the questions is completed with conclusions, the student has shown the ability to analyze facts and events, as well as to complete educational tasks. However, there are inaccuracies in the answers, some minor errors, the presence of a full summary of the theoretical material, regular visits to the Moodle system
C	Well	74-81	the student works actively during the lessons, the questions are covered in full, the presentation of the material is logical, substantiated by facts, with references to literary sources, the coverage of the questions is completed with conclusions, the student has shown the ability to analyze facts and events, as well as to complete educational tasks. However, there are inaccuracies in the answers, some minor errors, there is insufficient reasoning when presenting the material, there is an incomplete synopsis of the theoretical material, partial access to the Moodle system
D	Satisfactorily	64-73	The student has generally mastered the essence of the issues on the topic, demonstrates knowledge of the lecture material and educational literature, tries to analyze facts and events, draw conclusions and solve situational problems. However, in class he behaves passively, responds only to the teacher's call, gives incomplete answers to questions, makes gross mistakes when covering theoretical material, incomplete notes on theoretical material, partial access to the Moodle system
E	Quite satisfactorily	60-63	the student lacks understanding of the main essence of the questions, conclusions, generalizations, demonstrated inability to solve situational problems, incomplete note-taking of theoretical material, partial access to the Moodle system
FX, F	Unsatisfactorily	0-59	lack of desire to participate in the discussion of issues, lack of notes, irregular visit to the Moodle system

Example: a student wrote the test tasks of the current control for 85 points. Multiply by 0.3. The result for the tests is 25.5 points. For independent work, the student received 88 points. Multiply by 0.3. The result for it is 26.4 points. For activity in classes - the student received 74 points. Multiply by 0.4. We get 29.6. In total, the number of points for the

current control is 81.5 points. We average towards a larger number and get 82 points, which is equal to good B.

Regarding the final certification of the student, the result obtained for the student's current work (average value for 2 sections, multiplied by 0.6) and the final test work (multiplied by 0.4) is taken into account.

Example: Chapter I – 83 points, Chapter II – 95 points. The sum of the points for the sections is $178 / 2 = 89.0$ points – this is the average value. Next, $89.0 \times 0.6 = 53.4$ points. The student wrote the final exam with 91 points. $91 \times 0.4 = 36.4$ points. Therefore, the total number of points for the discipline is $53.4 + 36.4 = 89.8$. We average towards a larger number and get 90 points, which is equal to a good or A grade.

13. Methodical support

1. Mohilovskyi, V. M., et al. (2024). Laboratory Workbook for the Discipline “EC Ensuring the Health of High-Producing Cows.” Section 1. Introduction to the Discipline “Ensuring the Health of High-Producing Cows.” Diagnosis, Treatment, and Prevention of Metabolic Diseases in High-Producing Cows. Kharkiv: State Biotechnological University, 81 p.
2. Mohilovskyi, V. M., et al. (2024). Laboratory Workbook for the Discipline “EC Ensuring the Health of High-Producing Cows.” Section 2. Hepatosis in Dairy Cows. Diseases of Newborn Calves under Intensive Dairy Farming Technologies. Kharkiv: State Biotechnological University, 53 p.
3. Mohilovskyi, V. M., Matsenko, O. V., Shchepetilnikov, Yu. O., Sobakar, Yu. V., Ilina, O. V., & Makhotina, D. S. (2025). EC “Ensuring the Health of High-Producing Cows”: Methodical Guidelines for Independent Study of the Discipline for Students of the Second (Master's) Level of Higher Education, Full-Time Form, Specialty 211 – “Veterinary Medicine”. Department of Internal Diseases and Clinical Diagnostics of Animals, State Biotechnological University. Kharkiv: Publishing Department of SBU, 16 p.

14. Literature

1. Animal Endocrinology and Medicine Research https://www.mdpi.com/journal/animals/special_issues/Animal_Endocrinology_and_Medicine_Research?utm_source=chatgpt.com
2. Bellwood B., Andrasik-Catton M. Veterinary Technician's Handbook of Laboratory Procedures. – 2014. – 171 p.
3. Bourguignon, E., Guimarães, L. D., Ferreira, T. S., & Favarato, E. S. (2013). Dermatology in dogs and cats. Insights from Veterinary Medicine, 1, 3-34.
4. Clinical Endocrinology of Companion Animals https://download.e-bookshelf.de/download/0000/7124/54/L-G-0000712454-0002365992.pdf?utm_source=chatgpt.com
5. Color Atlas of Farm Animal Dermatology. Danny W. Scott. John Wiley and Sons LTD, 2018. 254 p. <https://www.wiley.com/en-us/Color+Atlas+of+Farm+Animal+Dermatology%2C+2nd+Edition-p-9781119250579>
6. Coyner, K. S. (Ed.). (2019). Clinical atlas of canine and feline dermatology. John Wiley & Sons.

7. Goth, G. M. (2020). Canine and Feline Dermatology Atlas. Grupo Asís Biomedia SL.
8. Heinrich, N. A., Eisenschenk, M., Harvey, R. G., & Nuttall, T. (2018). Skin diseases of the dog and cat. CRC Press.
9. Hnilica, K. A., & Patterson, A. P. (2016). Small Animal Dermatology-E-Book: A Color Atlas and Therapeutic Guide. Elsevier Health Sciences.
10. Kaneko J., Harvey J., Bruss M. Clinical Biochemistry of Domestic Animals, 6th Edition. – Academic Press, 2008. – 928 p.
11. Kerr M.G. Veterinary Laboratory Medicine, second edition. – Blackwell Science, 2002. – 368 p.
12. Scott, D. W. (2018). Color atlas of farm animal dermatology. John Wiley & Sons.
13. Yager, J. A. (2007). Small Animal Dermatology: A Color Atlas and Therapeutic Guide. The Canadian Veterinary Journal, 48(12), 1287.

15. (Link)

To prepare for classes with the aim of more fully mastering the discipline, students can use the following electronic sites:

1. Management of Allergic Skin Diseases in Dogs and Cats Guidelines https://www.aaha.org/wp-content/uploads/globalassets/02-guidelines/2023-aaha-management-of-allergic-skin-diseases-in-dogs-and-cats-guidelines/resources/2023-aaha-management-of-allergic-skin-diseases-guidelines.pdf?utm_source=chatgpt.com
2. Diagnostics and Therapy in Veterinary Dermatology https://www.edu-veterinar.ro/files/download/prezentari/ghiduri-practice/9781119278368.pdf?utm_source=chatgpt.com

16. Changes and additions

(to methodological support and recommended literature)

What is removed from the work program	What is entered in the work program	Date of consideration by the department