Ministry of Agriculture of the Russian Federation
Federal State Budgetary Educational Institution
of Higher Education
"St. Petersburg State University of Veterinary Medicine"

APPROVED BY
Vice-Rector for Educational
Work and Youth Policy
_____ Sukhinin A.A.
April 10, 2026

**Department of Biochemistry and Physiology**

# EDUCATIONAL WORK PROGRAM

**For the discipline**
**«CLINICAL ENDOCRINOLOGY»**
The level of higher education
SPECIALIST COURSE
Specialty 36.05.01 Veterinary Medicine
Profile: «General clinical veterinary medicine»
Full-time education
Education starts in 2026

Reviewed and adopted
at the meeting of the department
on April 6, 2026
Protocol No. 17

Head of the dep. of biochemistry and physiology
Doctor of Biological Sciences, professor
_____ L.Y.Karpenko

Saint Petersburg
2026

## 1. AIMS AND OBJECTIVES OF THE DISCIPLINE

The main **purpose** of the discipline «Clinical endocrinology» is giving students theoretical, methodological and practical knowledge, forming modern representations about development, structure and function of endocrine glands, biosynthesis, mechanism of action and exchange of hormones in the organism, secretion of hormones in normal condition of the organism and in case of dysfunction of endocrine glands with concomitant endocrine diseases.

The **objectives** of the discipline «Clinical endocrinology» are presented the following directions of teaching:

- To show the connection of the discipline "Clinical endocrinology" with other disciplines of the specialization curriculum that form the professional knowledge of a veterinarian doctor.
- To study the methods of examination of animals with endocrinological pathologies.
- To provide students with execution of laboratory practice that illustrate the essence and methods of qualitative and quantitative determination of hormones.
- To acquaint students with modern equipment and instrumentation for endocrinological researches, educational and reference literature.

## 2. THE LIST OF THE PLANNED RESULTS OF THE DISCIPLINE (MODULE), CORRELATED WITH THE PLANNED RESULTS OF THE REALISED EDUCATIONAL PROGRAM

As a result of mastering the discipline, the student prepares for the following types of activities, in accordance with the educational standard of the FSE on 05.36.01 "Veterinary Medicine".

The field of professional activity:

13 Agriculture

**The student's competencies formed as a result of mastering the discipline:**

**a) professional competencies (PC)**

**PC-2.** Development of an animal research program and conduction of clinical study, using special (instrumental) and laboratory methods to clarify the diagnosis

PC-2 ID-4 To be able to take samples of animal biological material for laboratory research.

PC-2 ID-5 To be able to perform analytical preparation, storage of the studied biological material, transportation to the laboratory

PC-2 ID-6 To be able to interpret and analyze data from laboratory animal research methods for diagnosis.

PC-2 ID-7 To know the indication for the use of digital equipment, special (instrumental) and laboratory methods of animal research in accordance with the guidelines, instructions, rules for the diagnosis, prevention and treatment of animals

PC-2 ID-12 To know the methodology of sampling and analytical fullfilment of biological material samples for execution of laboratory analyses in accordance with the instructions and methodological documents, regulating the sampling of biological material

**PC-3.** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods

PC-3 ID-1 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases.

PC-3 ID-2 To possess skills to use specialized information databases for the diagnosis of animal diseases

PC-3 ID-3 To possess skills to document the results of clinical animal studies, using digital technologies.

PC-3 ID-4 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.

PC-3 ID-5 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms.

PC-3 ID-6 To know the etiology and pathogenesis of animal diseases of various species.

PC-3 ID-7 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals disease.

## 3. THE PLACE OF DISCIPLINE IN THE STRUCTURE MPEP

The discipline FTD. 01 «Clinical endocrinology» is the elective discipline of the federal state standard of university education 36.05.01 «Veterinary medicine» (the level of specialization). It is mastered in full-time education in the 5th semesters.

Studying the discipline "Clinical Endocrinology", students use the knowledge and skills of other disciplines: biological physics, inorganic and analytical chemistry, biology with the basics of ecology, organic, physiological and colloidal chemistry, biological chemistry, animal anatomy, cytology, histology and embryology, animal physiology and ethology.

## 4. THE SCOPE OF DISCIPLINE AND TYPES OF ACADEMIC WORK

### 4.1. The scope of the discipline for full-time education

| The type of educational work | Hours | The semester |
|---|---|---|
| | | The 5th semester |
| **Classroom classes(total)** | **36** | **36** |
| Including: | | |
| Lectures, including interactive forms | 18 | 18 |
| Practical lessons (PL), including interactive forms: | 18 | 18 |
| Practical training (PT) | 4 | 4 |
| **Self-study** | **36** | **36** |
| Exam | - | - |
| Type of intermediate certification (test, exam) | **test** | **test** |
| **Total labor intensity hours / credits** | **72/2** | **72/2** |

## 5. THE CONTENT OF THE DISCIPLINE AND TYPES OF CLASSES
## 5.1. THE CONTENT OF THE DISCIPLINE (FULL-TIME EDUCATION)

| № | The title | Achieved competences | The semester | Types of academic work, including students' self-study and labor intensity (in hours) | | | |
|---|---|---|---|---|---|---|---|
| | | | | Lectures | Practical lessons | Practical training | Self-study |
| 1. | General endocrinology | **PC-3:** Diagnosis based on the analysis of anamnesis data, general, special (instrumental) and laboratory research methods<br>**PC-3$_{id-1}$:** Be able to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases<br>**PC-3$_{id-2}$:** Be able to use specialized information databases for the diagnosis of animal diseases<br>**PC-3$_{id-3}$:** Be able to document the results of clinical animal studies using digital technologies | 5 | 4 | 4 | 2 | 10 |
| 2. | Methods of endocrinological research | **PC-2:** Development of an animal research program and conducting a clinical research of animals using special (instrumental) and laboratory methods, including to clarify the diagnosis.<br>**PC-2$_{id-4}$:** Be able to take samples of animal biological material for laboratory research<br>**PC-2$_{id-5}$:** Be able to perform analytical preparation, storage of the studied biological material, transportation to the laboratory<br>**PC-2$_{id-6}$:** Be able to interpret and analyze data from laboratory animal research methods to establish a diagnosis<br>**PC-2$_{id-7}$:** To know the indications for using digital equipment and special (instrumental) and laboratory methods of animal research in accordance with the guidelines, instructions, rules for the diagnosis, prevention and treatment of animals<br>**PC-2$_{id-12}$:** To know the methodology of sampling and analytical preparation of samples of biological material for performing laboratory analyses in accordance with the instructional and methodological documents regulating the sampling of biological material | 5 | 2 | 2 | 2 | 10 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3. | Clinical endocrinology of the thyroid, parathyroid, pancreas | **PC-3:** Diagnosis based on the analysis of anamnesis data, general, special (instrumental) and laboratory research methods<br>**PC-3$_{id-4}$:** To know the methods of interpretation and data analysis of special (instrumental) methods of animal research<br>**PC-3$_{id-5}$:** To know the norms of indicators of the state of biological material of animals of different species and the reasons that cause deviations from the norms of indicators<br>**PC-3$_{id-6}$:** To know the etiology and pathogenesis of animal diseases of various species<br>**PC-3$_{id-7}$:** Know the generally accepted criteria and classifications of animal diseases, approved lists of animal diseases. | 5 | 6 | 4 | | 8 |
| 4 | Clinical endocrinology of the adrenal glands and reproductive system | | 5 | 6 | 4 | | 8 |
| **TOTAL FOR THE 5TH SEMESTER** | | | | **18** | **14** | **4** | **36** |

## 6. THE LIST OF EDUCATIONAL AND METHODOLOGICAL SUPPORT FOR STUDENTS' SELF WORK

### 6.1. Guidelines for self -work

1. Klinicheskaya endokrinologiya : uchebnoe posobie [Clinical endocrinology: a textbook] / author-comp.: L. Y. Karpenko [et al.]; SPbGAVM. - Saint Petersburg : Publishing House of SPbGAVM, 2018. - 126 p. – URL: https://search.spbguvm.informsystema.ru/viewer.jsp?aWQ9MjM4JnBzPTEyOA (accessed: 03/01/2026). - Access mode: for authors. EB SPbGUVM users. - Text : electronic.

### 6.2. Literature for self-work

1. Karpenko, Larisa Yurievna. Clinical endocrinology : an educational and methodical manual for independent work of students in the specialty 36.05.01- "Veterinary Medicine" / L. Y. Karpenko, A. A. Bakhta, A. B. Balykina ; Ministry of Agriculture of the Russian Federation, St. Petersburg State University. - Saint Petersburg : SPbGAVM, 2019. - 17 p. URL: https://search.spbguvm.informsystema.ru/viewer.jsp?aWQ9Njc1JnBzPTE3 (accessed: 03/01/2026). - Access mode: for authorization. EB SPbGUVM users. - Text : electronic.

## 7. THE LIST OF BASIC AND ADDITIONAL LITERATURE NECESSARY FOR THE EDUCATION OF THE DISCIPLINE

**a) Basic literature:**

1. Klinicheskaya endokrinologiya : uchebnoe posobie [Clinical endocrinology: a textbook] / author-comp.: L. Y. Karpenko [et al.]; SPbGAVM. - Saint Petersburg : SPbGAVM Publishing House, 2018. 126 p. - Text (visual) : direct.

**b) Additional literature:**

1. Smirnova, O.O. Endocrinology in dermatology, or dermatology in endocrinology / O.O. Smirnova. - Text (visual) : direct // Veterinary Petersburg. - 2018. - N 5. - pp.14-17 : color. ill. - Bibliogr.: 7 titles. – URL: https://search.spbguvm.informsystema.ru/viewer.jsp?aWQ9MTE2NjImcHM9NTM (accessed: 06/25/2025). - Access mode: for authorization. EB SPbGUVM users. - Text : electronic.

## 8. THE LIST OF RESOURCES OF THE INFORMATION AND TELECOMMUNICATION NETWORK "INTERNET" NECESSARY FOR EDUCATION OF THE DISCIPLINE

1. https://meduniver.com –Medical information site
2. https://www.twirpx.com – Anything for a student
3. http://www.drau.ru –Biochemistry for Students

**Electronic library systems:**

1. ELS «SPBGUVM»
2. ELS «Student Consultant»
3. The legal reference system of «ConsultPlace»
4. University Information System «RUSSIA»

5. POLPRED.COMFull-text database POLPRED.COM
6. Scientific electronic library ELIBRARY.RU
7. Russian Scientific Network
8. Electronic library system IQlib
9. Full-text interdisciplinary database on agricultural and environmental sciences ProQuest AGRICULTURAL AND ENVIRONMENTAL SCIENCE DATABASE
10. Electronic books of the publishing house «Prospectus of Science» http://prospektnauki.ru/ebooks/
11. Collection «Agriculture. Veterinary» of «Quadro» publishing house http://www.iprbookshop.ru/586.html

## 9. METHODOLOGICAL GUIDELINES FOR STUDENTS ON EDUCATION OF THE DISCIPLINE

Methodological recommendations for students are a set of recommendations and explanations that allow them organize the process of studying this discipline optimally.

The content of methodological recommendations, as a rule, may include:

• Tips on planning and organizing the time needed to study the discipline. Description of the sequence of actions of the student, or the "scenario of studying the discipline".

Morning time is the most effective for academic work (from 8-14 hours), followed by afternoon time (from 16-19 hours) and evening time (from 20-24 hours). The most difficult material is recommended to be studied at the beginning of each time interval after rest. After 1.5 hours of work, a break is required (10-15 minutes), after 4 hours of work, the break should be 1 hour. Part of the scientific organization of labor is the master of the technique of mental labor. Normally, a student should devote about 10 hours a day to studying (6 hours at university, 4 hours at home).

The methodology of work when taking notes of oral presentations differs significantly from the methodology of work when taking notes of written sources.

By taking notes of written sources, the student has the opportunity to read again the desired passage of the text, reflect on it, highlight the main thoughts of the author, briefly formulate them, and then write them down. If necessary, he can also note his attitude to this point of view. Listening to the lecture, the student should transist most of the complexity of the above–mentioned works for another time, trying to use every minute to record the lecture, and not to comprehend it - there is no time left for this. Therefore, when taking notes of a lecture, it is recommended, to leave separate fields on each page for subsequent entries in addition to the summary.

After recording a lecture or making a summary of it, you should not leave work on the lecture material before preparing for the test. It is necessary to do as early as possible the work that accompanies takimg notes of written sources, the last could not be done during the recording of the lecture - read your notes, deciphering individual abbreviations, analyze the text, establish logical connections between its elements, in some cases show them graphically, highlight the main thoughts, mark issues, requiring additional processing, in particular, the teacher's consultations.

When working on the text of the lecture, the student should pay special attention to the problematic issues, raised by the teacher, during the lecture, as well as to his assignments and recommendations.

For each lecture, practical lesson and laboratory work, classification cod, topic, list of issues under consideration, volume in hours and links to recommended literature are provided. For

classes conducted in interactive forms, its organizational form should be indicated: computer simulation, business or role-playing game, analysis of a specific situation, etc.

• Recommendations for preparing for practical classes

Practical (seminar) classes are an important part of the professional training of students. The main purpose of conducting practical (seminar) classes is to form students' analytical, creative thinking through the acquisition of practical skills. Practical classes are also conducted in order to deepen and consolidate the knowledge gained in lectures and in the process of independent work on normative documents, educational and scientific literature. For student, it is necessary, to study or repeat theoretical material on a given topic when preparing for a practical lesson for students.

When preparing for a practical lesson, the student is recommended to follow the following algorithm;

1) get acquainted with the plan of the upcoming lesson;

2) study the literature sources that have been recommended and familiarize yourself with the introductory notes to the relevant sections.

Methodological guidelines for practical (seminar) classes in the discipline, along with the work program and schedule of the educational process, refer to methodological documents that determine the level of organization and quality of the educational process.

The content of practical (seminar) classes is recorded in the working curricula of the disciplines in the sections "List of topics of practical (seminar) classes".

The most important component of any form of practical training are tasks. The basis of the task is an example that is understood from the standpoint of the theory developed in the lecture. As a rule, the main attention is paid to the formation of specific skills, which determines the content of students' activities - problem solving, laboratory work, clarification of categories and concepts of science, which are a prerequisite for correct thinking and speech.

•Practical (seminar) classes perform the following tasks:

- stimulate regular study of recommended literature, as well as attentive attitude to the lecture course;
- consolidate the knowledge gained in the process of lecture training and independent work on literature;
- expand the scope of professionally significant knowledge, skills, and abilities;
- allow you to verify the correctness of previously acquired knowledge;
- initiate skills of independent self-thinking, oral presentation;
- contribute to the free use of terminology;
-provide the teacher with the opportunity to systematically monitor the level of independent work of students.

Methodological guidelines for practical (seminar) classes on the discipline should be focused on modern business conditions, current regulatory documents, advanced technologies, the latest achievements of science, technology and practice, modern ideas about certain phenomena, the studied reality.

• Recommendations for working with literature.

Working with literature is an important stage of the student's self-work on mastering the subject, contributing not only to the consolidation of knowledge, but also to the expansion of horizons, mental abilities, memory, the ability to think, express and confirm personal hypotheses and ideas. In addition, the skills of research work necessary for further professional activityare developed.

When starting to study the literature on the topic, it is necessary to make notes, extracts, notes. It is mandatory to take notes of the works of theorists, which allow us to comprehend the theoretical basis of the study. For the rest, you can limit yourself to summary from the studied sources. All summaries and quotations must have the exact "return address" (author, title of the work, year of publication, page, etc.). It is advisable to write an abbreviated title of the question to which the extract or quotation refers. In addition, it is necessary to learn how to immediately

compile a file of special literature and publications of sources, both proposed by the teacher and identified independently, as well as refer to bibliographic reference books, chronicles of journal articles, book chronicles, abstract journals. At the same time, publications of sources (articles, book titles, etc.) should be written on separate cards, which must be filled in according to the rules of bibliographic description (surname, initials of the author, title of the work. Place of publication, publisher, year of publication, number of pages, and for journal articles – the name of the journal, year of publication, page numbers). On each card, it is advisable to record the thought of the author of the book or a fact from this book on only one specific issue. If the work, even in the same paragraph or phrase, contains more judgments or facts on another issue, then they should be written out on a separate card. The presentation should be concise, accurate, without subjective assessments. On the back of the card, you can make your own notes about this book or article, its content, structure, on which sources it is written, etc.

• Explanations about working with control and test materials for the course, recommendations for completing homework.

Testing is a conrol that allows you to determine whether the actual behavior of the program corresponds to the expected one by performing a specially selected set of tests. A test is the fulfillment of certain conditions and actions necessary to verify the operation of the function under test or part of it. Each question in the discipline must be answered correctly by choosing one option.

## 10. EDUCATIONAL WORK

As part of the implementation of the discipline, educational work is carried out to form a modern scientific worldview and a system of basic values, the formation and development of spiritual and moral, civil and patriotic values, a system of aesthetic and ethical knowledge and values, attitudes of tolerant consciousness in society, the formation of students' need for work as the first vital necessity, the highest value and the main way to achieve success in life, to realize the social significance of your future profession.

## 11. THE LIST OF INFORMATION TECHNOLOGIES USED IN THE IMPLEMENTATION OF THE EDUCATIONAL PROCESS

### 11.1 Information technologies

**For the educational process of the discipline is previewed the use of information technologies:**

- **practical classes using multimedia;**
- **interactive technologies (dialogues, collective discussion on various topics for realization a particular educational and professional task);**
- **interaction with students via e - mail;**
- **community work in the electronic information and educational environment of St. Petersburg State University: https://spbguvm.ru/academy/eios/**

### 11.2. Software

**The list of licensed and free- distributed software, including national programs**

| p/p | Title of technical and computer-based training modules recommended by section and module | License |
|---|---|---|
| 1 | MS PowerPoint | 67580828 |
| 2 | LibreOffice | free SW |
| 3 | OS Alt Education 8 | AAO.0022.00 |
| 4 | ABIS "MARK-SQL" | 02102014155 |

| | | |
|---|---|---|
| 5 | MS Windows 10 | 67580828 |
| 6 | KonsultantPluse System | 503/KL |
| 7 | Android OC | free SW |

## 12.THE MATERIAL AND TECHNICAL BASIS NECESSARY FOR THE IMPLEMENTATION OF THE EDUCATIONAL PROCESS ON DYSCI-PLIN

| The title of the discipline (module), practice in accordance with the curriculum | The title of special rooms and rooms for self-work | Equipment of special rooms and rooms for self-work |
|---|---|---|
| Clinical endocrinology | **103** (99 Moskovsky Prospekt, St. Petersburg, 196084) 43,1 м$^2$/ 30seats. A classroom for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification | *Specialized furniture:* desks, chairs, tabouret, educational board. *Technical training tools:* Samsung interactive display (model WM85R). |
| | **104** (99 Moskovsky Prospekt, St. Petersburg, 196084) 43,1 м$^2$/ 30seats. A classroom for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification | *Specialized furniture:* desks, chairs, tabouret, educational board. *Technical training tools:* fume hood, thermostat, CPC-3 «ZOMP» |
| | **105** (99 Moskovsky Prospekt, St. Petersburg, 196084) 30,1м$^2$/ 30 seats. A classroom for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification | *Specialized furniture:* desks, chairs, tabouret, educational board. *Technical training tools:* fume hood, thermostat, CPC-3 «ZOMP» |
| | **106a** (99 Moskovsky Prospekt, St. Petersburg, 196084) 50,2 m$^2$/ 30 seats. A classroom for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification | *Specialized furniture:* desks, chairs, tabouret, educational board. *Technical training tools:* The fume hood, thermostat |
| | **106б** (99 Moskovsky Prospekt, St. Petersburg, 196084) 30,5 м$^2$/ 30 seats. A classroom for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification | *Specialized furniture:* desks, chairs, tabouret, educational board. *Technical training tools:* fume hood, thermostat |
| | **112** (99 Moskovsky Prospekt, St. Petersburg, 196084) 29,4 м$^2$/ 30 seats. A classroom for conducting seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification | *Specialized furniture:* desks, chairs, tabouret, educational board. |
| | **101** (99 Moskovsky Prospekt, St. Petersburg, 196084) | *Specialized furniture:* столы, chairs, closets. |

| | | |
|---|---|---|
| | Laboratory of the Department 14,4 м$^2$ | *Technical training tools:* table scales, centrifuge, PC CPC-3. |
| | **010** (99 Moskovsky Prospekt, St. Petersburg, 196084) Washing of the Department 14 м$^2$ | *Specialized furniture:* столы, chairs, shelving, closets. *Technical training tools:* electric stove, double sink with drain, drying cabinet, electric water heater. |
| | 206 Large reading room (196084, St. Petersburg, Chernigovskaya str., 5) Room for self-work | *Specialized furniture:* tables, chairs *Technical means of education:* computers connected to the Internet and access to an electronic information and educational environment |
| | 214 Small reading room (196084, St. Petersburg, Chernigovskaya str., 5) Room for self-work | *Specialized furniture:* tables, chairs *Technical means of education:* computers connected to the Internet and access to an electronic information and educational environment |
| | 324 Information Technology Department (196084, St. Petersburg, Chernigovskaya str., 5) Room for storage and preventive maintenance of educational equipment | *Specialized furniture: tables,* chairs, special equipment, materials and spare parts for preventive maintenance of technical training facilities |
| | Box No. 3 Carpentry workshop (196084, St. Petersburg, Chernigovsaya str., 5) Room for storage and preventive maintenance of educational equipment | *Specialized furniture: tables,* chairs, special equipment, materials and spare parts for preventive maintenance of technical training facilities |

**Developers:**

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Annex 1

Ministry of Agriculture of the Russian Federation
Federal State Budgetary Educational Institution
of Higher Education
«St. Petersburg State University of Veterinary Medicine»

**Department of Biochemistry and Physiology**

# FUND OF ASSESMENT TOOLS
**for the discipline**
# "CLINICAL ENDOCRINOLOGY "

Level of higher education
SPECIALIST COURSE

Specialty 36.05.01 Veterinary Medicine
Profile: «General clinical veterinary medicine»
Full-time education

Education starts in 2026

Saint Petersburg
2026

## 1. PASSPORT OF THE FUND OF ASSESMENT TOOLS

table 1

| № | Acquired competence | Assessed modules of a discipline | Assesment tool |
|---|---|---|---|
| 1 | **PC-3.** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods<br>PC-3 ID-1 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases.<br>PC-3 ID-2 To possess skills to use specialized information databases for the diagnosis of animal diseases<br>PC-3 ID-3 To possess skills to document the results of clinical animal studies, using digital technologies. | General endocrinology | Tests |
| 2 | **PC-2.** Development of an animal research program and conduction of clinical study, using special (instrumental) and laboratory methods to clarify the diagnosis<br>PC-2 ID-4 To be able to take samples of animal biological material for laboratory research.<br>PC-2 ID-5 To be able to perform analytical preparation, storage of the studied biological material, transportation to the laboratory<br>PC-2 ID-6 To be able to interpret and analyze data from laboratory animal research methods for diagnosis.<br>PC-2 ID-7 To know the indication for the use of digital equipment, special (instrumental) and laboratory methods of animal research in accordance with the guidelines, instructions, rules for the diagnosis, prevention and treatment of animals | Methods of endocrinological research | Tests |

| | | | |
|---|---|---|---|
| | PC-2 ID-12 To know the methodology of sampling and analytical fullfilment of biological material samples for execution of laboratory analyses in accordance with the instructions and methodological documents, regulating the sampling of biological material | | |
| 3 | **PC-3.** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods | Clinical endocrinology of the thyroid, parathyroid, pancreas | Tests |
| 4 | PC-3 ID-4 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination.<br>PC-3 ID-5 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms.<br>PC-3 ID-6 To know the etiology and pathogenesis of animal diseases of various species.<br>PC-3 ID-7 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals disease. | Clinical endocrinology of the adrenal and reproductive system | Tests |

**List of assessment tools**

**Table 2**

| # | **Name of the valuation tool** | **Brief description of the valuation tool** | **Presentation of the valuation tool in the fund** |
|---|---|---|---|
| 1. | Test | A system of standardized tasks that allows you to automate the procedure for measuring the level of knowledge and skills of a student | A fund of test assignments |

## 2. 2. INDICATORS AND CRITERIA FOR ASSESSING COMPETENCIES AT VARIOUS STAGES OF ITS FORMATION, DESCRIPTION OF ASSESSMENT SCALES

Table 3

| Planned results of mastering the competence | Level of development | | | | Assessment tool |
|---|---|---|---|---|---|
| | unsatisfactory | satisfactory | good | excellent | |
| **PC-2. Development of an animal research program and conduction of clinical study, using special (instrumental) and laboratory methods to clarify the diagnosis** | | | | | |
| **PC-2 ID-7** To know the indication for the use of digital equipment, special (instrumental) and laboratory methods of animal research in accordance with the guidelines, instructions, rules for the diagnosis, prevention and treatment of animals | Level of knowledge below the minimum requirements, there were gross errors | Minimum permissible level of knowledge, many non-rough errors | were made Level of knowledge in the amount corresponding the program to the training program, allowed several non-rough errors | were made Level of knowledge in the amount corresponding the program to the training program, no errors. | tests |
| **PC-2 ID-12** To know the methodology of sampling and analytical fullfilment of biological material samples for execution of laboratory analyses in accordance with the instructions and methodological documents, regulating the sampling of biological material | Level of knowledge below the minimum requirements, there were gross mistakes | Minimum permissible level of knowledge, many minor mistakes | were made Level of knowledge in the amount corresponding to the program training, allowed a few rough ones errors | level of knowledge in the volume corresponding the program to the training program, without errors . | tests |
| **PC-2** ID-4 To be able to take samples of animal biological material for laboratory research. | in solving standard problems | has Demonstrated the basic | Demonstrated all the basic | Demonstrated all the basic | tests |

| | | | | | |
|---|---|---|---|---|---|
| | not demonstrated the basic skills, there has been a gross error | skills, solved common tasks with stable errors, performed all tasks, but not fully | skills, solved all basic tasks with stable errors, performed all tasks in a complete volume, but with some shortcomings | skills solved all basic tasks with separate immaterial defects performed all tasks in full volume | |
| PC-2 ID-5 To be able to perform analytical preparation, storage of the studied biological material, transportation to the laboratory | in solving standard problems not demonstrated the basic skills, there has been a gross error | has Demonstrated the basic skills, solved common tasks with structurally unstable mistakes, made all of the task but not fully | Demonstrated all the basic skills, solved all basic tasks with stable errors, performed all tasks in a complete volume, but with some shortcomings | Demonstrated all the basic skills, solved all basic tasks with separate immaterial defects performed all tasks in full volume | tests |
| PC-2 ID-6 To be able to interpret and analyze data from laboratory animal research methods for diagnosis. | in solving standard problems not demonstrated the basic skills, there has been a gross error | has Demonstrated the basic skills, solved common tasks with stable errors, performed all tasks, but not fully | Demonstrated all the basic skills, solved all basic tasks with stable errors, performed all the tasks in full volume but with some | Demonstrated all the basic skills, solved all basic tasks with separate immaterial defects performed all tasks in full volume | tests |

| | | | | | |
|---|---|---|---|---|---|
| | | | shortcomings | | |
| **PC-3:** To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods | | | | | |
| **PC-3 ID-4** To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination | the Level of knowledge is below the minimum requirements had gross errors | Minimally acceptable level of knowledge made many mistakes structurally unstable | Level of knowledge to the extent appropriate to the program of training approved several structurally unstable error | Level of knowledge to the extent appropriate to the program of training, with no mistakes. | tests |
| **PC-3 ID-5** To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms | Level of knowledge below the minimum requirements, there were gross errors | Minimum permissible level of knowledge, many non-rough errors | were made Level of knowledge in the amount corresponding the program to the training program, allowed several non-rough errors | were made Level of knowledge in the amount corresponding the program to the training program, without errors. | tests |
| **PC-3 ID-6** To know the etiology and pathogenesis of animal diseases of various species | Level of knowledge below the minimum requirements, there were | Minimum permissible level of knowledge, many non-rough errors | were made Level of knowledge in the amount corresponding the program to the training | were made Level of knowledge in the amount corresponding the program to the training | tests |

| | | | | | |
|---|---|---|---|---|---|
| | gross errors | | program, allowed several non-rough errors | program, without errors. | |
| **PC-3and id-7 tests:**Know generally accepted criteria and classifications of animal diseases, approved lists of animal diseases. | The level of knowledge is below the minimum requirements, there were gross mistakes | The minimum allowable level of knowledge, many non-rough mistakes | were made The level of knowledge in the amount corresponding the program to the training program, allowed several non-rough mistakes | were made The level of knowledge in the amount corresponding the program to the training program,without errors. | tests |
| **PC-3 ID-7** To know the generally accepted criteria and classifications of animal diseases, approved lists of animals disease | in solving standard problems not demonstrated the basic skills, there has been a gross error | has Demonstrated the basic skills, solved common tasks with stable errors, performed all tasks, but not fully | Demonstrated all the basic skills, solved all basic tasks with stable errors performed all tasks in a complete volume, but with some shortcomings | Demonstrated all the basic skills, solved all basic tasks with separate immaterial defects performed all tasks in full volume | tests |
| **PC-3 ID-2** To possess skills to use specialized information databases for the diagnosis of animal diseases | in solving standard problems not | has Demonstrated the basic skills solved | Demonstrated all the basic skills, solved all | Demonstrated all the basic skills, solved all | tests |

| | | | | | |
|---|---|---|---|---|---|
| | demonstrated the basic skills, there has been a gross error | a problem with stable errors, completed all the tasks, but not fully | basic tasks with stable errors, performed all tasks in a complete volume, but with some shortcomings | basic tasks with separate immaterial defects performed all tasks in full volume | |
| **PC-3 ID-3** To possess skills to document the results of clinical animal studies, using digital technologies | When solving standard tasks not , basic skills were not demonstrated,there were gross errors | , basic skills were demonstrated, standard tasks with non-rough errors were solved, all tasks were completed, but not in full | all basic skills were fully demonstrated , all basic tasks with non-rough errors were solved, all tasks were completed in accordance with the in terms of volume, but some with shortcomings | All basic skills were demonstrated, all basic tasks were solved with some minor shortcomings, and all tasks were completed in full. by volume | tests |

# 3. A LIST OF CONTROL TASKS AND OTHER MATERIALS, NECESSARY FOR THE ASSESSMENT OF KNOWLEDGE, SKILLS AND WORK EXPERIENCE

## 3.1. Typical tasks for the current control of academic progress

### 3.1.1. Tests

Competency assessment tests:

***PC-2: Development of an animal research program and conduction of clinical study, using special (instrumental) and laboratory methods to clarify the diagnosis.***

*PC-2 ID-7 To know the indication for the use of digital equipment, special (instrumental) and laboratory methods of animal research in accordance with the guidelines, instructions, rules for the diagnosis, prevention and treatment of animals*

1. What changes in thyroid hormone and TSH levels are characteristic of subclinical thyrotoxicosis?
    1. $T_{T3}$ — elevated;$_{T4}$-normal; TSH-normal
    2. $T_{T3}$ — normal;$_{T4}$-normal; TSH-suppressed (reduced)
    3. $T_{T3}$ — elevated;$T_4$ — elevated; TSH-suppressed (reduced)
    4. $T_{T3}$ — elevated;$_{T4}$-elevated; TSH-normal
2. Which regions are not endemic for iodine deficiency in the environment?
    1. Moscow and the Moscow region
    2. Japan
    3. Germany
    4. Austria and Germany
3. What method will allow the most accurate differentiation of similar steroid hormones?
    1. tandem mass spectrometry method
    2. immunofluorescence analysis
    3. radioimmune analysis
    4. enzyme-linked immunosorbent assay
4. Which of the methods is immunochemical?
    1. Immunochemiluminescence analysis
    2. Complement binding reaction
    3. Erythrocyte sedimentation rate
    4. Colorimetric method of determination
5. Which of the methods is considered immunochemical?
    1. Immunochromatography method
    2. Thymol test
    3. Agglutination reaction
    4. Tuberculin test
6. Which of the methods is immunochemical?
    1. Immunofluorescence analysis
    2. Precipitation reaction
    3. Atomic absorption spectrophotometry
    4. Using Litmus paper

*PC-2 ID-12 To know the methodology of sampling and analytical fullfilment of biological material samples for execution of laboratory analyses in accordance with the instructions and methodological documents, regulating the sampling of biological material*

7. Which of the following is a first-level test in the diagnosis of primary hypothyroidism?
    1. Determination of free thyroxine levels
    2. Determination of total thyroxine levels

3. Determination of TSH level
4. Determination of the level of thyroxine-binding globulin

8. Which of the following is a diagnostic test for evaluating the iodine supply to the population?
   1. Determination of TSH level
   2. Determining the size of the thyroid gland
   3. Determination of the median of ioduria
   4. Determination of the arithmetic mean value of urinary iodine excretion in the study group
9. Which method uses radioactive iodine or tritium as a label?
   1. Radioimmune analysis
   2. Immunofluorescence analysis
   3. Enzyme-linked immunosorbent assay
   4. Immunochemiluminescence analysis
10. Which method uses the enzyme peroxidase as a label?
    1. Enzyme-linked immunosorbent assay
    2. Radioimmune analysis
    3. Immunofluorescence analysis
    4. Immunochemiluminescence analysis
11. What is a vertical microplate photometer used for?
    1. Enzyme-linked immunosorbent assay
    2. Radioimmune analysis
    3. Immunofluorescence analysis
    4. Immunochromatography method
12. What reagent is not used as a label for chemiluminescence analysis?
    1. nitrosinium tetrazolium
    2. isoluminol
    3. succinated luminol
    4. acridium esters
13. Can a test system developed for medical use be used to determine cortisol in animals?
    1. Yes, because cortisol in all mammals has the same structure
    2. Yes, because it is possible to test all animal hormones with human test systems
    3. No, because animals and humans have different cortisol structures
    4. No, because the system recognizes that it is the blood of an animal

***PC-2 ID-4*** *To be able to take samples of animal biological material for laboratory research*

14. What biological fluids can be used to study the concentration of hormones?
    1. In urine, serum, and plasma
    2. in the urine and blood plasma
    3. only in blood serum
    4. in tear fluid and sweat
15. The test with $^{1-24}$ACTH (synacten) is performed for what purpose?
    1. Detection of ACTH deficiency
    2. Diagnosis of primary hyperaldosteronism
    3. Diagnosis of primary hypocorticism
    4. Differential diagnosis of pituitary and adrenal Cushing's syndrome

***PC-2 ID-5*** *To be able to perform analytical preparation, storage of the studied biological material, transportation to the laboratory*

16. Testing the level of triiodothyronine is most justified under what circumstances?
    1. Suspected subclinical hypothyroidism
    2. Suspected malignancy of nodular goiter
    3. Detection of the severity of tyreotoxicosis

4. Detection of reduced TSH and normal $_{T4 \text{ levels}}$

17. To determine the concentration of what hormones is an enzyme-linked immunosorbent assay used?
    1. only for those hormones for which test systems are developed
    2. only for steroid hormones
    3. only for thyroid hormones
    4. only for sex hormones

***PC-2 ID-6*** *To be able to interpret and analyze data from laboratory animal research methods for diagnosis*

18. Which of the following is the most common pituitary adenoma?
    1. Somatotropinoma
    2. Thyrotropinoma
    3. Gonadotropinoma
    4. Corticotropinoma
19. Osteoarticular damage in total hypercorticism includes all but?
    1. Pain syndrome
    2. Growth delays
    3. Hyperostosis
    4. Osteoporosis
20. The diagnosis of autoimmune thyroiditis can be made on the basis of what?
    1. ultrasound of the thyroid gland
    2. Determination of the level of antibodies to thyroglobulin and microsomal fraction
    3. Thyroid scintigraphy
    4. Studies of thyroid hormone and TSH levels
21. What group of organic substances does insulin belong to?
    1. vitamins;
    2. proteins.
    3. fatty acids;
    4. carbohydrates.
22. Prolactin secretion is inhibited...?
    1. Stress
    2. Tyroliberin
    3. Dopamine
    4. Prolonged fasting
23. What effect does STH not have?
    1. Hyperglycemic
    2. Zhiromobiliziruyuschim
    3. Anabolic
    4. Catabolic
24. What is a Goiter?
    1. Well palpable thyroid gland
    2. Thyroid disease that occurs with a violation of its function
    3. Thyroid disease complicated by tracheal compression
    4. Increased thyroid volume
25. What is the evidence of an enlarged thyroid gland?
    1. About the presence of thyrotoxicosis in the patient
    2. About the presence of diffuse toxic goiter in the patient
    3. About the need to prescribe prophylactic doses of iodine preparations to the patient
    4. About the need to prescribe levothyroxine therapy to the patient
26. What is most important in the pathogenesis of goiter formation in case of iodine deficiency in the body?
    1. An increase in TSH levels above normal

2. Stimulation of antithyroid antibody production
3. Increased sensitivity of thyrocytes to TSH and activation of tissue growth factors of thyrocytes
4. Development of hypothyroidism with compensatory hyperplasia of thyrocytes

27. With primary hypocorticism, all the listed changes are detected, with the exception of what?
    1. Hyperkalemia
    2. Increased circulating plasma volume
    3. Increased plasma renin activity
    4. Hyponatremia
28. What is the main reason for developing diabetes in Cushing's disease or syndrome?
    1. Stimulation of lipolysis
    2. Activation of gluconeogenesis
    3. Activation of glycogenolysis
    4. Activation of proteolysis
29. What causes the pathogenesis of clinical manifestations in corticosteroids?
    1. Increased ACTH secretion
    2. Increased CRH secretion
    3. Isolated hyperproduction of glucocorticoids
    4. Reduced androgen production
30. Which of the following is the effect of insulin?
    1. Inhibition of gluconeogenesis
    2. Inhibition of lipolysis and ketogenesis
    3. Reduced glycogenolysis
    4. Increased protein synthesis
31. What biological substance is not an insulin antagonist?
    1. Glucagon
    2. Somatostatin
    3. Thyroxine
    4. Cortisol
32. What does an animal develop with a lack of insulin?
    1. diabetes mellitus
    2. bazedova's disease
    3. dystrophy
    4. addison's disease
33. What thyroid disease is characterized by an increase in the level of thyroxine and triiodothyronine with a simultaneous decrease in the level of thyroid-stimulating hormone?
    1. hyperthyroidism
    2. euthyroid condition
    3. hypothyroidism
    4. diabetes mellitus
34. Choose which diseases and changes in the body's activity are associated with a violation of the pancreas?
    1. Diabetes mellitus
    2. Dwarfism
    3. Hypertension
    4. Myxedema
35. Progestogens have the following effects?
    1. all of the above is incorrect
    2. determine the development of primary and secondary sexual characteristics
    3. reduce cholesterol in the blood

4. increase the tone of the uterus

36. Which of these substances is the hormone synthesized by the adrenal cortex?
    1. aldosterone
    2. adrenaline rush
    3. prednisone
    4. synapse
37. What happens during a positive xanthoprotein reaction?
    1. formation of yellow-orange coloration
    2. formation of purple-blue staining
    3. formation of blue-green coloration
    4. toxic gas release
38. What happens during a positive diazoreaction?
    1. formation of red staining
    2. formation of purple-blue staining
    3. formation of crimson-purple staining
    4. toxic gas release
39. What is a biuretic reaction?
    1. Qualitative reaction to protein
    2. Qualitative response to carbohydrate
    3. Qualitative reaction to an amino acid
    4. Qualitative reaction to lipid
40. What happens during a negative biuretic reaction?
    1. No color changes are observed
    2. formation of purple-blue staining
    3. formation of crimson-purple staining
    4. toxic gas release

Competency assessment tests:

***PC-3: To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods***

*PC-3 ID-4 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination*

1. What hormone contains iodine?
    1. glucagon;
    2. thyroxine;
    3. calcitonin;
    4. parathormone.
2. Which of the following factors leads to the development of acromegaly?
    1. Increased IGF-1 formation and activity
    2. STH-producing tumors of extrahypophytic origin
    3. Hypothalamic tumors that produce GH
    4. Reduced somatostatin production
3. Diabetic microangiopathy is characterized by everything but what?
    1. Thickening of the basement membrane
    2. Endothelial proliferation
    3. Thinning of the basement membrane
    4. Degenerative changes in endothelial cells and pericytes

***PC-3 ID-5*** *To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms*

4. What group of hormones is responsible for the reproduction and rearing of offspring?

1. FSH, LH, estradiol, progesterone, oxytocin, prolactin
2. ACTH, thyroxine, somatotropin, testosterone, vasopressin, progesterone
3. Epinephrine, glucagon, thyrocalcitonone, somatostatin, aldosterone, TSH
4. Insulin, triiodothyronine, dopamine, parathyroid hormone, melanocyte stimulating hormone

5. What is the main cause of hypothyroidism in dogs?
   1. Lack of iodine in the body
   2. Lack of iron in the body
   3. Lack of vitamin C in the body
   4. Lack of sleep
6. What symptoms of gastrointestinal and CNS damage are not typical for thyrotoxicosis?
   1. "Clay" chair with a putrid smell
   2. Plentiful unformed stools
   3. Pain along the bowel
   4. Jaundice of the skin and mucous membranes

*PC-3 ID-6 To know the etiology and pathogenesis of animal diseases of various species*

7. Which animals develop acromegaly more often?
   1. Young animals
   2. In adult animals
   3. Young and adult patients
   4. Only in males
8. What breeds are most likely to develop hypothyroidism?
   1. Dachshund, sharpey, cocker spaniel
   2. Husky, collie, husky
   3. Toy Terrier, Yorkshire Terrier, chihuahua
   4. Mastino, dog, SAO

***PC-3 ID-7** To know the generally accepted criteria and classifications of animal diseases, approved lists of animals disease.*

9. What changes in thyroid hormone and TSH levels are characteristic of subclinical hypothyroidism?
   1. $T_{T3}$ — elevated;$_{T4}$-normal; TSH-normal
   2. $T_{T3}$ — normal;$_{T4}$-normal; TSH-elevated
   3. $T_{T3}$ — increased;$_{T4}$ — increased; TSH-increased
   4. $T_{T3}$-suppressed( reduced);$_{T4}$-suppressed (reduced); TSH-significantly increased
10. When the concentration of adrenaline in the blood increases, what happens to the work of the heart?
    1. Slowing down
    2. Weakened
    3. Doesn't change
    4. Getting stronger
11. What is characteristic of secondary hypocorticism?
    1. Significantly more severe course compared to primary hypocorticism
    2. No mineralocorticoid deficiency develops
    3. Characteristic clinical signs are melasma and addiction to salty foods
    4. It is the most common complication of traumatic brain injuries

***PC-3 ID-1** To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases*

12. What hormone corresponds to this description: nonapeptide, synthesized in the cells of the hypothalamic nucleus, increases the reabsorption of water in the collecting tubes, is secreted during dehydration?
    1. Vasopressin
    2. Aldosterone

3. ACTG
4. Oxytocin

13. Which option is not true?
    1. Hormones are produced in all the glands of external secretion
    2. Hormones are biologically active substances
    3. Hormones are produced in the endocrine glands
    4. Hormones have a regulating effect on organs and tissues
14. What are target cells?
    1. Cells with special hormone receptors
    2. Cells that produce hormones
    3. Cells in which hormones are destroyed
    4. Cells that are destroyed under the influence of hormones
15. Which of these hormones belongs to glycoproteins?
    1. Luteinizing Hormone
    2. Insulin
    3. Somatotropic hormone
    4. Vasopressin
16. Which of these hormones affects carbohydrate metabolism?
    1. Adrenaline rush
    2. Vasopressin
    3. Aldosterone
    4. Calcitriol
17. What is the main stimulator of insulin secretion?
    1. Adrenaline rush
    2. Norepinephrine
    3. Glucose
    4. Prolactin
18. Signs of decompensation of diabetes mellitus include everything, except what?
    1. Thirst
    2. Hyperglycemia
    3. Ketoacidosis
    4. Weight gain
19. Polydipsia in diabetes mellitus is caused by all of the above, except for what?
    1. Dehydration of the body
    2. Polyuria
    3. Increased blood uric acid levels
    4. Hyperglycemia
20. Diabetic macroangiopathy can include the following lesions, in addition to what?
    1. Damage to the peripheral vessels of the extremities
    2. Diabetic retinopathy
    3. Damage to the brain vessels
    4. Damage to the heart vessels
21. The reasons for the development of insulin resistance to insulin are all but what?
    1. Excessive glucose intake
    2. Autoantibodies to insulin
    3. Pathology of insulin receptors
    4. Increased production of insulin antagonists
22. What hormone is insulin?
    1. A steroid hormone
    2. A hormone with hyperglycemic action
    3. Polypeptide hormone weighing 58.00 kDa
    4. Protein hormone weighing 23.00 kDa

23. Which of the substances listed below is not a hormone?
    1. pepsin.
    2. somatotropin;
    3. glucagon;
    4. adrenaline;

*PC-3 ID-2 To possess skills to use specialized information databases for the diagnosis of animal diseases*

24. Which of these hormones does not affect mineral metabolism?
    1. Adrenaline rush
    2. Parathormone
    3. Thyrocalcitnin
    4. Calcitriol
25. What hormones are characterized by an intracellular mechanism of action?
    1. Hormones whose receptors are located in the cytoplasm or nucleus
    2. Hydrophilic hormones
    3. Epinephrine, norepinephrine, and dopamine
    4. For hormones with a small molecular weight
26. What hormone corresponds to the brief description: steroid hormone, secreted in the adrenal cortex, has an intracellular mechanism of action, regulates water-salt metabolism?
    1. Aldosterone
    2. Cortisol
    3. Testosterone
    4. Parathormone
27. What is the name of pancreatic hormone?
    1. insulin
    2. atiroxine
    3. norepinephrine
    4. thyroxine
28. Which of the following applies to glucocorticoid medications?
    1. Propranolol
    2. Doxazosin
    3. 9α- fluorocortisol
    4. Dexamethasone
29. The pathogenesis of diabetic microangiopathy is due to everything but what?
    1. Deposits of immune complexes in the basement membrane
    2. Lowering the permeability of the vascular wall for plasma proteins
    3. Disorders of mucopolysaccharide and polysaccharide metabolism in the basal capillary membrane
    4. Poor blood flow, hypoxia, and endothelial nutrition

***PC-3 ID-3** To possess skills to document the results of clinical animal studies, using digital technologies*

30. Which of the suggested hormones are synthesized in the hypothalamus?
    1. Insulin and Glucagon
    2. Estradiol and progesterone
    3. Vasopressin and oxytocin
    4. Triiodothyronine, tetraiodothyronine
31. Which of the proposed hormones is synthesized in the pituitary gland?
    1. STG
    2. Aldesterone
    3. Vasopressin
    4. Testosterone

32. Which of the following hormones is considered a steroid?
    1. Aldosterone
    2. Norepinephrine
    3. Oxytocin
    4. Prolactin
33. Please indicate a statement related to the concept of "hormone" and "hormone regulation"?
    1. Produced by the endocrine gland
    2. It has a distance of influence
    3. Availability of a special target organ
    4. Ability to have a biological effect in negligible concentrations
34. Which of the following hormones is protein?
    1. Cortisol
    2. Serotonin
    3. Prolactin
    4. Oxytocin
35. What gland secretes the hormone thyroxine?
    1. thyroid gland;
    2. the pancreas.
    3. the adrenal gland.
    4. epiphysis.
36. What hormone is synthesized in the adrenal glands?
    1. aldosterone
    2. thyroxine
    3. oxytocin
    4. vasopressin
37. What is the secret of estrogens?
    1. Yellow body, adrenal cortex, cells of the inner lining of the follicle
    2. Only the yellow body
    3. Only the adrenal cortex
    4. with your brain
38. What is the most characteristic clinical manifestation of thyrotoxicosis?
    1. persistent tachycardia
    2. drowsiness
    3. constipation
    4. lower blood pressure
39. Violation of the function of what gland is accompanied by convulsions of the lower and upper extremities, mainly flexor muscles, changes in the calcium balance?
    1. parathyroid glands
    2. thymus
    3. the adrenal glands
    4. pituitary gland
40. Which of the suggested hormones are synthesized in the hypothalamus?
    1. Glucagon and Insulin
    2. Estradiol and progesterone
    3. Vasopressin and oxytocin
    4. Triiodothyronine, tetraiodothyronine

## 3.2. Typical tasks for intermediate certification

### 3.2.1. Questions for the test

Questions for assessing competence:

***PC-2: Development of an animal research program and conduction of clinical study, using special (instrumental) and laboratory methods to clarify the diagnosis***

*PC-2 ID-4 To be able to take samples of animal biological material for laboratory research*

1. Rules for collecting samples for testing for hormones
2. Rules for storing samples for testing for hormones

*PC-2 ID-5 To be able to perform analytical preparation, storage of the studied biological material, transportation to the laboratory*

3. Rules for transporting samples for testing for hormones.

*PC-2 ID-6 To be able to interpret and analyze data from laboratory animal research methods for diagnosis*

4. Modern methods of laboratory testing of hormones.

*PC-2 ID-7 To know the indication for the use of digital equipment, special (instrumental) and laboratory methods of animal research in accordance with the guidelines, instructions, rules for the diagnosis, prevention and treatment of animals*

5. Performing functional tests.

*PC-2 ID-12 To know the methodology of sampling and analytical fullfilment of biological material samples for execution of laboratory analyses in accordance with the instructions and methodological documents, regulating the sampling of biological material*

6. Hypothyroidism: etiology, pathogenesis, clinical signs, standard laboratory tests. Differential diagnosis.
7. Hyperthyroidism: etiology, pathogenesis, clinical signs, standard laboratory tests. Differential diagnosis.
8. Features of the course of thyroid gland pathologies in different animal species.

Questions for assessing competence:

***PC-3. To set the diagnose based on the analysis of anamnesis, general, special (instrumental) and laboratory research methods***

*PC-3 ID-1 To possess skills to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases*

9. What are hormones?
10. The structure of hormones
11. Mechanism of action of hormones.
12. History of the development of the science of "Clinical endocrinology".
13. Determination of the endocrine gland and hormone.
14. Properties of hormones.

*PC-3 ID-2 To possess skills to use specialized information databases for the diagnosis of animal diseases*

15. General characteristics of hypothalamic hormones.
16. General characteristics of pituitary hormones.
17. General characteristics of thyroid hormones.
18. General characteristics of parathyroid hormones.
19. General characteristics of pancreatic hormones.
20. General characteristics of adrenal hormones.
21. General characteristics of hormones of the reproductive system.

*PC-3 ID-3 To possess skills to document the results of clinical animal studies, using digital technologies*

22. Mechanism of action of hormones.
23. Classification of hormones by place of production
24. Classification of hormones by structure
25. Classification of hormones by mechanism of action.

*PC-3 ID-4 To know the methods of interpretation and data analysis of special (instrumental) methods of animal examination*

26. Hypoadrenocorticism: etiology.
27. Hypoadrenocorticism: pathogenesis
28. Hyperadnerocorticism: etiology, pathogenesis, clinical signs, standard laboratory tests. Differential diagnosis.
29. Hypoadrenocorticism: clinical signs,
30. Hypoadrenocorticism : standard laboratory tests.
31. Hypoadrenocorticism.Differential diagnosis.
32. Hypoadrenocorticism. Features of the course of pathologies of the adrenal glands in different animal species.

*PC-3 ID-5 To know the norms of indicators of the status of animals' biological material of different species and the reasons that cause deviations from the norms*

33. Diabetes insipidus: etiology
34. Diabetes insipidus: pathogenesis
35. Diabetes insipidus: clinical signs
36. Diabetes insipidus: standard laboratory tests.
37. Diabetes insipidus. Differential diagnosis.
38. Diabetes insipidus. Features of the course of these pathologies in different animal species.

*PC-3 ID-6 To know the etiology and pathogenesis of animal diseases of various species*

39. Diabetes mellitus: etiology
40. Diabetes mellitus: pathogenesis
41. Diabetes mellitus: clinical signs
42. Diabetes mellitus: standard laboratory tests
43. Diabetes mellitus: a differential diagnosis.
44. Diabetes mellitus: features of the course of these pathologies in different animal species.

*PC-3 ID-7 To know the generally accepted criteria and classifications of animal diseases, approved lists of animals disease.*

45. Violation of mineral metabolism in animals.
46. Violation of calcium metabolism.
47. Violation of water and electrolyte metabolism.
48. False pregnancy
49. Prevention of breeding bitches and cats
50. Optimal mating time
51. Unwanted bindings
52. Hypothyroidism in cats
53. Pituitary dwarfism
54. Acromegaly. Features

## 4. METHODOLOGICAL MATERIALS DEFINING THE PROCEDURES FOR ASSESSING KNOWLEDGE, SKILLS AND ABILITIES AND WORK EXPERIENCE CHARACTERIZING THE STAGES OF COMPETENCE FORMATION

### 4.1. Criteria for evaluating students' knowledge during testing

The test result is evaluated on a percentage rating scale. Each student is offered a set of test tasks of 25 questions:
The mark "**excellent**" is 25-22 correct answers.
The mark "**good**" is 21-18 correct answers.
The mark "**satisfactory**" is 17-13 correct answers.
The mark "**unsatisfactory**" is less than 13 correct answers

### 4.2. Criteria of knowledge during the test

The mark "**accepted** " must correspond to the parameters of any of the positive ratings ("excellent", "good", "satisfactory").

The mark "**not accepted** " rating should correspond to the parameters of the "unsatisfactory" rating.

**The mark "excellent"** – all types of educational work provided for in the curriculum have been completed. The student demonstrates the compliance of knowledge, skills, and abilities with the indicators given in the tables, operates with acquired knowledge, skills, and applies them in situations of increased complexity. At the same time, inaccuracies, difficulties in analytical operations, transfer of knowledge and skills to new, non-standard situations may be allowed.

**The mark "good"** – all types of educational work provided for in the curriculum have been completed. The student demonstrates the compliance of knowledge, skills, and abilities with the indicators given in the tables, operates with acquired knowledge, skills, and applies them in standard situations. At the same time, minor errors, inaccuracies, difficulties in analytical operations, transfer of knowledge and skills to new, non-standard situations may be made.

**Mark "satisfactory"** – one or more types of educational work provided for in the curriculum have not been completed. The student demonstrates incomplete compliance of knowledge, skills, and abilities with the indicators given in the tables, significant errors are made, a partial lack of knowledge, skills, and skills is manifested in a number of indicators, the student experiences significant difficulties in operating with knowledge and skills when transferring them to new situations. –

**The mark «unsatisfactory"** – the types of educational work provided for in the curriculum have not been completed. demonstrates incomplete compliance of knowledge, skills, and abilities given in the tables of indicators, significant errors are made, a lack of knowledge, skills, and skills is manifested for a large number of indicators, the student experiences significant difficulties in operating knowledge and skills when transferring them to new situations

## 5. ACCESSIBILITY AND QUALITY OF EDUCATION FOR DISABLED PEOPLE

If necessary, persons with disabilities and persons with disabilities are given additional, time to prepare an answer for the test.
When conducting the procedure for evaluating the learning outcomes of disabled people and persons with disabilities, their own technical means can be used.

The procedure for evaluating the learning outcomes of disabled people and persons with disabilities in the discipline provides for the provision of information in forms adapted to the limitations of their health and perception of information:

| | |
|---|---|
| For people with visual impairments: | – in printed form in enlarged font;<br>– in the form of an electronic document. |
| For people with hearing impairments: | – in printed form;<br>– in the form of an electronic document. |
| For people with disorders of the musculoskeletal system: | – in printed form, the device;<br>– in the form of an electronic document. |

When conducting the procedure for evaluating the learning outcomes of disabled people and persons with disabilities in the discipline, it ensures that the following additional requirements are met, depending on the individual characteristics of the students:

a) instructions on the procedure for conducting the assessment procedure are provided in an accessible form (orally, in writing);

b) an accessible form of assignment of assessment tools (in printed form, in printed form in enlarged font, in the form of an electronic document, assignments are read out by the teacher);

c) an accessible form of providing answers to tasks (written on paper, a set of answers on a computer, orally).

If necessary, for students with disabilities and the disabled, the procedure for evaluating the results of training in the discipline can be carried out in several stages.

The procedure for evaluating the learning outcomes of disabled people and persons with disabilities is allowed using distant learning technologies.

**Program abstract of the discipline**
**FTD. 01 «Clinical endocrinology»**
**specialty 36.05.01 Veterinary Medicine**
**Profile: «General clinical veterinary medicine»**

**The purpose of studying the discipline:** to give students theoretical, methodological and practical knowledge, forming modern representations about development, structure and function of endocrine glands, biosynthesis, mechanism of action and exchange of hormones in the organism, secretion of hormones in normal condition of the organism and in case of dysfunction of endocrine glands with concomitant endocrine diseases.

**The objectives** of the discipline «Clinical endocrinology» are presented the following directions of teaching:

- To show the connection of the discipline "Clinical endocrinology" with other disciplines of the specialization curriculum that form the professional knowledge of a veterinarian doctor.
- To study the methods of examination of animals with endocrinological pathologies.
- To provide students with execution of laboratory practice that illustrate the essence and methods of qualitative and quantitative determination of hormones.
- To acquaint students with modern equipment and instrumentation for endocrinological researches, educational and reference literature.

**The position of the discipline in the curriculum:** FTD. 01 «Clinical endocrinology» is the elective discipline of the federal state standard of university education 36.05.01 «Veterinary medicine» (the level of specialization), is mastered in full-time education in the 5th semester.

**Requirements for the results of studying the discipline:** as a result of studying the discipline, the following competencies are formed:

**PC-2**: Development of an animal research program and conducting a clinical research of animals using special (instrumental) and laboratory methods, including to clarify the diagnosis.

**PC-2$_{id-4}$:** Be able to take samples of animal biological material for laboratory research

**PC-2$_{id-5}$:** Be able to perform analytical preparation, storage of the studied biological material, transportation to the laboratory

**PC-2$_{id-6}$:** Be able to interpret and analyze data from laboratory animal research methods to establish a diagnosis

**PC-2$_{id-7}$:** To know the indications for using digital equipment and special (instrumental) and laboratory methods of animal research in accordance with the guidelines, instructions, rules for the diagnosis, prevention and treatment of animals

**PC-2$_{id-12}$:** To know the methodology of sampling and analytical preparation of samples of biological material for performing laboratory analyses in accordance with the instructional and methodological documents regulating the sampling of biological material

**PC-3:** Diagnosis based on the analysis of anamnesis data, general, special (instrumental) and laboratory research methods

**PC-3$_{id-1}$:** Be able to make a diagnosis in accordance with generally accepted criteria and classifications, lists of animal diseases

**PC-3$_{id-2}$:** Be able to use specialized information databases for the diagnosis of animal diseases

**PC-3$_{id-3}$:** Be able to document the results of clinical animal studies using digital technologies

**PC-3$_{id-4}$:** To know the methods of interpretation and data analysis of special (instrumental) methods of animal research

**PC-3$_{id-5}$:** To know the norms of indicators of the state of biological material of animals of different species and the reasons that cause deviations from the norms of indicators

**PC-3$_{id-6}$:** To know the etiology and pathogenesis of animal diseases of various species

**PC-3**$_{id-7}$**:** Know the generally accepted criteria and classifications of animal diseases, approved lists of animal diseases.

**Summary of the discipline:** FTD. 01 «Clinical endocrinology» includes the following sections: general endocrinology, methods of endocrinological research, clinical endocrinology of the thyroid, parathyroid, pancreas, clinical endocrinology of the adrenal glands and reproductive system.

**Total laboriousness of the discipline:** 2 credits, 72 academic hours.

**Final control of the discipline:** test