Study course "Physiology II"
CECA development guidelines

Study course developer: Preclinical Institute professor, Dr.med.vet. Aija Ilgaža,

assistant professor, PhD Sintija Jonova

Aim.

The main objective of the CECA is to provide students with the opportunity to summarize and deepen their knowledge about the morphological and functional characteristics of a particular animal species, as well as to improve their skills in determining, interpreting, and evaluating physiological parameters in animals of this species. Students should learn to relate these parameters to specific animal housing conditions, physiological state, and species-specific and/or individual characteristics.

Tasks.

Within the study course *Physiology*, the CECA tasks that must be reflected in the submitted printed work and its defense are as follows:

1. Literature review.

Physiological characteristics of the functioning of various organ systems in the selected animal species (may be related to anatomical and histological features), determination of basic physiological parameters, and physiological norms.

2. Individual task.

Each student receives an individual assignment for the development of the individual task from the responsible lecturer. The student may also choose the topic independently, based on their interests and possibilities, in agreement with the lecturer.

Individual task may be:

- **theoretical**, involving an in-depth study of a topic related to animal physiology using recent literature sources.
- **practical**, involving the investigation of a practical issue, task, or statement related to animal physiology.

The student completes the individual task during the time allocated for independent work in the study course *Physiology II*. Analysis of the obtained results is carried out independently, in consultation with physiology lecturers, and using personal resources as well as specialized and scientific literature available in the LBTU and VMF libraries or elsewhere.

Selection of CECA topics.

The course leader offers CECA topics, which include: the analyzed animal species (e.g., sheep) or a group of animals with shared properties and characteristics (e.g., small ruminants), or animals at a certain age or physiological state (e.g., lambs in the first month of life; or pregnant sheep). The student selects and specifies the CECA topic depending on his/her interests and capabilities. The student, after coordination with the responsible personnel, can carry out the development of the practical part of CECA in the structures of

LBTU: VMF Stationary, University Veterinary Clinic, MPS "Vecauce", LBTU Equestrian Learning Center "Mušķi".

Although CECA must be developed, submitted and defended during the 4th semester, students may start working on it earlier. Therefore, the first information about general rules for performing and defending CECA is provided already in the first lecture of the 3rdsemester. The CECA topic may be refined or changed until the submission of the first stage.

Methodology for developing the work.

CECA must be designed in accordance with the general CECA requirements developed and approved by the VMF.
The student must formulate the title of the work by clearly indicating the analyzed animal species and supplementing it with additional information about the animals' age, housing conditions, and other characteristics analyzed in the work. The first part of the title reflects the animal species (age, breed, etc.) about which CECA is written, adding the word "physiology". The second part of the title reflects the topic of the individual task (essentially a shortened aim). For example, "Sheep physiology. Physiological characteristics of the digestive organs of lambs.", or "Cow physiology. Physiological characteristics of pregnant cows."

CECA structure.
Introduction. (brief description of the selected species)
The chapter "Introduction" should provide general information about the CECA animal species and why this species was chosen.

Chapter 1. Literature review.

This chapter is prepared in stages throughout the semester, as the student summarizes the information found in the literature and describes the physiological characteristics of the selected species of animal, gradually mastering the physiology of the relevant organ system in the study course Physiology II. Chapters: blood and circulatory system, respiratory system (submitted in stage 1), digestive system (in stage 2) and urogenital system (in stage 3) must be reflected in detail, but descriptions (chapters) of other organ systems (motor, sensory, glandular, nervous systems, etc.) may be included at the student's initiative.

Chapter 2. Individual task.

When starting the chapter, the student must justify the relevance of the individual task and why such a topic was chosen, formulate the aim, tasks, as well as the hypothesis of the individual task. The tasks should be formulated in such a way that a very specific answer can be given to each of them in the conclusions, and so that in general they provide an answer to the set aim. Therefore, it is recommended to include the words: find out, determine, study, compare, check, investigate, etc. in the formulation of the tasks.

The chapter "Materials and Methods" describes the methodology for performing the individual task and the necessary materials. At the end of the chapter, information must be provided about the statistical processing of the data (what program was used, what indicators (arithmetic mean, standard deviation, analysis of variance, t-test for comparing two means or others) etc.) or methods used to analyze specific indicators, etc.

In the section "Results and Discussion", the execution and analysis of a theoretical individual task should be carried out by referring to and literature sources. In turn, the numerical output data obtained during the execution of a practical individual task should be included in CECA only after statistical processing. So, statistical processing of the data should be carried out, grouping and summarizing the results in the form of tables, diagrams, graphs or images. It

is desirable to illustrate the obtained descriptive results in the work with photographs, and a video can also be used in the presentation. All the obtained data should be compared with each other, the differences and changes found should be explained, as well as compared with the information found in the literature, thus forming a part of the discussion.

CECA concludes with brief conclusions that answer the objectives and arise from the results obtained. The final conclusion either confirms or rejects the hypothesis proposed in the introduction, or provides an answer to the question set in the introduction. Overall, the conclusions must reflect the achievement of the stated aim.

The reference list must be formatted according to general CECA requirements. In the literature review and discussion, "reliable" specialized and popular science sources (at least 5 sources) can be used, but scientific (at least 5 sources) must be used (at least 10 literature sources must be used in total). The list of used literature should also be divided into two parts: "Scientific literature", which includes the scientific articles (sources) used in the work, and "Other literature sources", which lists the rest of the literature used, including resources found on the Internet.

If necessary, a "Appendix" section should be added at the end of the work, including forms, questionnaires, photographs, raw data, etc.

Mandatory CECA sections:
Introduction. (*brief description of the selected species*)

1. Literature review.
1.1. Physiological characteristics of the blood and circulatory system .... *(e.g., cows).* 1.2. Physiological characteristics of the respiratory system ....
1.3. Physiological characteristics of the digestive system …
1.4. Physiological characteristics of the urogenital system …

2. Individual task.
2.1. Justification for topic selection.
2.2. Materials and methods.
2.3. Results and discussion.
Conclusions.
References.

- Scientific literature *(at least 5 sources).*
- Other literature sources *(at least 5 sources).*

CECA defence.

CECA must be submitted and defended before the Physiology II exam within a strictly defined time, as its grade is taken into account in the exam evaluation. Without a CECA evaluation, the student is not allowed to take the exam. CECA defence is organized in the last weeks of the semester. During the defence, the student must inform fellow students and lecturers about the individual assignment, briefly describing the justification for its selection, aims and tasks, main results, and the most interesting findings and conclusions. At the end of the presentation, fellow students and lecturers ask questions, and the answers are also taken into account when evaluating the presentation.

CECA assessment.

CECA is graded in points (on a scale of 1-10). The final grade is formed by evaluating:

1. Completion of CECA stages (average score of stages)
2. Assessment of CECA Part 1 (Literature review)
3. Assessment of CECA Part 2 (Individual task)
4. Compliance of references with requirements and CECA topic
5. Assessment of CECA defence (oral defence)

Integration of CECA into the course assessment.

The CECA grade is taken into account in the Physiology II exam, although the exam grade itself is decisive. The CECA grade must be passing. If the Physiology II exam is passed, the CECA grade may either increase or decrease the exam grade by one point.

Study course "Pathology and Forensic Veterinary Medicine I"
CECA guidelines

Study course leader: Dr. Ilze Matīse – Van Houtana

The aim of CECA: to gain an understanding of the basic reactions to tissue damage in animals by addressing the pathogenesis, etiology, and gross and microscopic lesions characteristic to these processes in the context of the analysis of a specific example (case) of the disease.

CECA tasks: to teach students to collect information about the disease using professional sources, to describe and understand the main morphological changes (gross and microscopic), to analyze and draw conclusions about pathological changes in a particular example of the disease.

CECA topic selection: a topic -- a specific disease that illustrates one of the basic tissue reactions, students choose from the list given by the course leader.

CECA methodology

Content:

- Detailed description of the disease
  Explanation of the disease and its characteristics (etiology, predisposing factors, species characteristics, pathogenesis, etc.; c. 1500 words (approx. 2-3 pp. "clean" text without images and tables).
- Gross and microscopic changes
  - *Theoretical part:* a review of literature about gross and microscopic lesions characteristic of the disease; about 1000 words (approx. 2 pp. "clean" text without images and tables).
  - *Practical part:* analyze and describe histological images assigned in e-studies under the specific topic of CECA. Histological images should be inserted into CECA; arrows should be added to indicate the types of changes, their localization and other diagnostically important details; there is no word limit for this section.
- Analysis and interpretation of the assigned case
  Analysis of microscopic changes in the specific case of the disease example and comparison with that described in the literature; up to 1000 words (up to 2 pp. "clean" text without images and tables).
- Summary and conclusions
  What pathological processes occur during the particular disease, how can lesions vary from case to case, what gross and microscopic changes help and/or complicate diagnosis of the particular disease; up to 700 words (approx. 1-1.5 pp. "clean" text without images and tables).
- References
  List in alphabetical order. You must use at least 2 books in English or German, published no later than 2007 and at least 3 scientific or professional articles from a peer-reviewed journal. Need 7 or more references; indicate your references in the text!

CECA Defense/Presentation: Each student prepares and gives 5-7 min. presentation.

Presentation:

- Description of the disease (1-2 slides)
- Gross lesions (images)
- Microscopic lesions (images)
- Diagram of pathogenesis (1 slide)
- Summary (1 slide)
- What did I learn? (1 slide)
- What is important to remember? (1 slide)

CECA evaluation guidelines: the maximum number of points for a work is 30, of which 2 = timeliness of written submission; 5 = grammar, style, formatting; 15 = content of the written work; 5 = content of the presentation; 2 = visual quality of the presentation; 1 = presentation style, effectiveness (including answers to questions).

Integration of CECA into the assessment of the study course: The number of points obtained for CECA are added to the total number of points for the semester (Pathology and Forensic Veterinary Medicine I). CECA is not passed if the score is less than 15. In this case, the student must redo the work and defend it repeatedly.

Study course "Bacteriology, Mycology, Virology II"

CECA guidelines

Study course supervisor: IFEH professor Anda Valdovska

CECA purpose: to master the use of theoretical knowledge in practical cases demonstrating skills in organizing microbiological examination plan for isolation and identification of potentially pathogenic bacteria from clinical samples.

CECA objectives:

1. Fill out the sample submission form with asked information about the test sample.
2. Compose a precise and detailed laboratory examination plan for the sent sample and be able to justify it;
3. Perform bacteriological examination of the sample;
4. Compose the CECA according to the methodical guidelines and submit it electronically until a specified due date.

Selection of the topic:
CECA is done during the study course "Bacteriology, mycology, virology II" in bacteriology. Samples for bacteriological examination can be obtained by the student (consulting with the CECA supervisor beforehand) from clinically sick animals (with suspicion of bacteriological disease), dead animals, aswell as from animal feed and housing. Samples for testing can also be provided by the CECA supervisor in cooperation with veterinary clinics and practicing veterinarians.

Methodology:
In order to start the CECA, the study course "Bacteriology, mycology, virology I" has to be passed. CECA can be performed starting week 10 of the study course "Bacteriology, mycology, virology II" and if the first two theoretical tests in BMV II are passed. During laboratory work times, bacteriological examination of samples is done, but during independent studies the bacterial identification protocol (see picture A of description) and sample submission form is filled. Filled identification protocol and sample submission form is submitted electronically in e-studies together with correctly formatted CECA (see the CECA structure in picture B of description).

Defence of the CECA:
CCRA is submitted in e-studies until a due date specified by the CECA supervisor. Students are responsible for sending their work for review in a timely manner.

Evaluation:
The CECA is evaluated in accordance with the criteria of the 10-point system scale indicated in the LBTU Study Regulation. The following is taken into account when evaluating the CECA:

1) CECA formatting according to the requirements;
2) Whether the sample submission form and identification protocol are filled correctly and as required;
3) The ability to describe the chosen bacteriological examination plan and the obtained conclusion.

Integrating the CECA in the evaluation of the study course

The grade of CECA makes up a part of the final grade of the study course “Bacteriology, mycology, virology II” exam. If the CECA is graded with “not passed”, the student is not allowed to do the exam in study course “Bacteriology, mycology, virology II”.

Picture A of description

FVM 2nd year student's

_____

(NAME, SURNAME)

BACTERIAL IDENTIFICATION PROTOCOL

(TO BE COMPLETED ONLY HANDWRITTEN IN CAPITAL LETTERS)

SAMPLE nr. _____/ 2023

SAMPLE, ANIMAL SPECIES_____

_

TECHNIQUE OF PRIM. ISOLATION

_____

ASSESMENT OF COLONIES OF DIFFERENT MEDIA: (in a descriptive way, including general information on all types of colonies, their approximate number, most significant morphological characteristics and evaluation of the possible pathogenic bacteria. Haemolytic colonies must be marked)

_____

_____

_____

_____

_____

_____

_____

_____

PURE CULTURE ISOLATION: (is / is not required) (*underline the necessary*)

COLONY EVALUATION ON N AGAR/BLOOD AGAR (*underline the necessary*):

Color

_____

_____

Size (mm)

_____

_____

Consistency

_____

_____

Surface

_____

_____

Other essential properties

_____

GRAM STAINING:

(color, shape, arrangement, Gram's reaction)

_____

_____

_____

OTHER STAINING:

Spores: Schaeffer-Fulton method (visible / not visibe / not required) (*underline the necessary*)

Capsules: Anthony's method (visible / not visibe / not required) (*underline the necessary*)

Acid fastness: Ziehl-Neelsen method (visible / not visibe / not required) (*underline the necessary*)

DESCRIPTION OF COLONIES (AND MEDIA) ON USED SELECTIVE, SELCTIVE-DIFFERENTIAL MEDIA:

_____

_____

_____

_____

_____

BIOCHEMICAL PROPERTIES: (positive / negative / ---)

Catalase _____ H2S _____
Oxidase _____ Urease _____
Indole _____ VP test _____
MR test _____ Glucose fermentation _____
Haemolysis _____ Lactose fermentation _____
Motility _____ Coagulase _____
Citrate utilization _____ KOH test _____
Lysine decarboxylase _____
Other tests
_____
_____
Growth in nutrient broth
_____

OXYGEN REQUIREMENTS: (*underline the necessary*)

Aerobe Microaerophilic Facultative anaerobe
Not determined

CONCLUSION:

_____
____
(genus, species)

_____

_____
End date
Signature

Picture B of description

TITLE PAGE

CONTENTS

INTRODUCTION

Actuality of the identified pathogenic genus in veterinary medicine

1. LITERATURE REVIEW

~2-3 pages of general characteristics of the identified pathogen, it's distribution in nature/natural habitat, virulence factors and their role in pathogenesis of the disease; pathogenesis and caused pathology/diseases in different animal species.

2. MATERIALS AND METHODS

2.1. Materials

CCRA sample ID nr. _____/ 2023
SAMPLE, SPECIES -
_____

2.2. Methods

PRIMARY ISOLATION TECHNIQUE:
ASSESSMENT OF COLONIES ON DIFFERENT MEDIA: (in a descriptive way, including general information on all types of colonies, their approximate number, most significant morphological characteristics and evaluation of the possible pathogenic bacteria. Haemolytic colonies must be marked)

Photo of bacterial growth after primary isolation

PURE CULTURE ISOLATION: (*is / is not required*) (*underline the necessary*)

COLONY CHARACTERISTICS	**ON BLOOD AGAR / ON NUTRIENT AGAR** (*underline the necessary*)	**ON MACCONKEY AGAR**	**ON …… AGAR**
Color			
Size (mm)			
Consistency			
Surface			
Margins			
Other essential properties			

Photo of pure culture

GRAM STAINING:
(color, form, arrangement)

OTHER STAINING:
Spores: Schaeffer-Fulton method (visible / not visibe / not required) (underline the necessary)
Capsules: Hiss method / Anthony's method (visible / not visibe / not required) (underline the necessary)
Acid fastness: Ziehl-Neelsen method (visible / not visibe / not required) (underline the necessary)

DESCRIPTION OF COLONIES AND MEDIUM OF USED SELECTIVE, SELECTIVE-DIFFERENTIAL MEDIA:

BIOCHEMICAL TESTS: (*positive / negative /* ---)

Catalase	_____
Oxidase	_____
Indole	_____
MR	_____
Haemolysis	_____
Motility	_____
Citrates	_____
H_2S	_____
Urease	_____
VP	_____
Glucose	_____
Lactose	_____
Coagulase	_____
KOH test	_____
Lysine decarboxilation	_____

Other tests:
_____
Changes in nutrient broth:
_____

OXYGEN REQUIREMENTS (*underline the necessary)*
Aerobic Microaerophilic Facultative anaerobic was not determined

3. RESULTS AND DISCUSSION

CONCLUSION:
_____
___
(genus, species)

Obtained result; prevalence of identified pathogen in the given animal species (information from scientific studies and research), ~1 page.

4. CONCLUSIONS

5. REFERENCES

A list of literature and information resources used – no older than year 2005.

APPENDIX (if necessary)

Study course “Clinical and Laboratory Diagnostics II”
CECA guidelines

Head of the study course: Professor of the Clinical Institute: Ilmārs Dūrītis.

The aim of the work/Objective

Theoretically and practically learn the full clinical examination of the animal, the method of recording the obtained data, the method of analysis of symptoms, methods of differential diagnostics and diagnostics competencies.

Tasks.

Within the framework of the work, the student must complete the following tasks:

- conduct a full clinical examination of a sick animal;
- make a record of the *Status praesens* using a clinical examination scheme;
- perform additional diagnostic examinations, as necessary;
- conduct an in-depth, independent analysis of the symptoms found;
- set a suspicious diagnoses, differential diagnosis;
- set and confirm the diagnosis, briefly describe it.

The choice of topics of work.

The topics of the work are created about sick animals, which are selected in the Veterinary Clinic of the LBTU, MPS "Vecauce" or in the surveyed private animal housing, coordinating it with the responsible lecturer of the study course.

Methodology of work.

The following sections should be written in the work:

- Cover sheet.
- Contents.
- Patient registration.
- *Status praesens.*
- Additional diagnostic results (if any).
- Symptoms found and their analysis.
- Diagnosis.
- Literary sources.

Defense of work.

The work must be submitted to the responsible lecturer no later than two weeks before the end of the semester and presented during the lesson/lecture.

Evaluation of work.

The work is evaluated by the lecturer responsible with a mark, taking into account the quality of work performance, the accuracy of the symptom analysis and the diagnosis made, as well as compliance with the deadline for submission.

Integration of the work in the assessment of the study course.

The development of the work and the successful receipt of the assessment is a mandatory prerequisite for admission to the exam. The score of work accounts for 30% of the weighted average score in the study course Clinical and Laboratory Diagnostics

Study course "Surgery Techniques and Topographical Anatomy II" CECA guidelines

Head of study course: Gusts Indāns

Aim of the assignment.

To expand the knowledge about the development, diagnosis and differential diagnosis of surgical pathologies. To compare the application of different treatment methods and manipulations when treating surgical diseases. To compare the application of methods and materials described in the literature with real practice, evaluating (if possible) different clinical cases.

Assignment tasks.

Students must perform the following tasks in the development of the work:

• work with scientific and professional literature;

• compile and present a report on the selected topic or clinical case;

• analyze the results of a theoretical or practical topic;

• be able to discuss the chosen work topic and present reasonable conclusions.

Selection of assignment topics.

The student chooses the topic of CECA for the development of a theoretical or practical paper according to the cases at the LBTU Veterinary Clinic during the practical lessons of the study course, using the topic of the work proposed by the lecturer or chosen by himself in coordination with the head of the subject.

Assignment methodology.

A student may choose to write a paper on:

- **Surgical pathology**: the assignment should include the following sections - Content, Introduction (why this topic was chosen, what was the purpose and task), Literature review (collected data found in the literature on the relevant pathology), Clinical case (a real case where this pathology was observed is described), Discussion (compared the data found in the literature on this pathology with the clinical case), Conclusions (conclusions resulting from the discussion), Literature used (at least 10 cited literature sources must be used), Appendix (add additional images, graphs, tables, instructions, etc.);
- **Surgical manipulation technique:** the assignment should include the following chapters - Content, Introduction (why this topic was chosen, what was the purpose and task), Literature review (collected data found in the literature on the relevant surgical manipulation), Research results and discussion (compared the data found in the literature on this surgical manipulation technique with techniques used in real practice), Conclusions (conclusions arising from the discussion), Literature used (at least 10 cited literature sources must be used), Appendix (add additional images, graphs, tables, instructions, etc.);

- **Group of materials used in surgery:** the work should include the following chapters - Content, Introduction (why this topic was chosen, what was the purpose and task), Literature review (collected data found in the literature on the relevant materials, historical aspect, pros and cons), Research results and discussion (data found in the literature on the relevant group of materials used in surgery and the materials used in real practice, pluses and minuses are compared). Conclusions (conclusions arising from the discussion), Literature used (at least 10 cited literature sources must be used), Appendix (add additional images, graphs, tables, instructions, etc.).
- **Surgical clinical case:** the work should include the following chapters - Content, Introduction (why this topic was chosen, what was the purpose and task), Literature review (summarized data found in the literature that are relevant to the selected clinical case), Clinical case review (anamnesis, clinical signs, diagnostic methods and performed surgery, outcome) Research results and discussion (compared data found in the literature with the clinical case), Conclusions (conclusions resulting from the discussion), Literature used (at least 10 cited literature sources must be used), Appendix (add additional images, schedules, tables, instructions, etc.);
-

Completion of assignment.

The work must be submitted electronically in the unified system *estudijas.lbtu.lv*. The deadline for submitting work is April 1. Each missed day automatically counts -1 point from the work evaluation. The work is presented during the practical work in the last week of the 6th semester. The presentation should be visually perceptible and its duration should not exceed 10 minutes.

Evaluation of assignment.

The assignment is evaluated with points (from 1 to 10). In order for the assignment to be considered as passed, the student must obtain at least 5 points. The presentation of the assignment is also evaluated by the point system - the maximum number of points to be obtained for the presentation is 5 points. For the presentation to be considered successful, the student must score at least 1 point.

Integration of the assignment in the assessment of the study course.

KEGA assignment must be submitted and presented in order for the student to be admitted to the exam of the study course. If the assignment is evaluated with at least 7 points, and at least 3 points are obtained in the presentation, then the student can apply for the cumulative exam. If the work is not written and presented by the end of the sixth semester, the student is not allowed to take the final exam.

Study course "Animal Welfare, Environmental Hygiene II"
CECA guidelines

Head of study course: doc. Iveta Kociņa

Purpose of the work

To be able to apply learned theory in practice. To carry out an assessment of the animal holding places (farm animal barns, shelters, animal trading places etc.) in accordance with the requirements and criteria for animal protection, welfare and hygiene, using regulatory acts, recommendations, quidelines, publications, professional, scientific and popular scientific literature.

Selection of the Topic

Students, in accordance with their individual interests and opportunities, choose animal holding place, according to the direction of animal use, e.g., farm animal (laying hens, dairy cows etc.) sheds; places for keeping of exotic or entertainment animals (zoo, etc.); pet animal shelter or hotel; animal slaughterhouse etc., to visit and carry out an assessment of animal welfare and hygiene.

The lecturer of the study course can also offer the main topic of CECA.

Assignments

Choose a appropriate animal species and holding place for the animal welfare and hygiene assessment.

Study, analyse and summarize relevant literature, creating a literature description.

Develop a research/investigation plan and methodology for the development of CECA.

Prepare a protocol with the species specific criteria and indicators (input/output) to be assessed.

Carry out an assessment of the animals and their holding place, using before prepared protocol. Attach photos, video.

Use the obtained information and assessment data for the dvelopment of CECA.

Planing and methodology

The CECA consists of the following sections:

"Introduction" – justifies the choice and importance of your research topic, provides an insight into the problematic and actuality of chosen topic.

The purpose of the research (CECA) should be clearly formulated in the Introduction part, as well as the tasks set to achieve this purpose (goal).

The chosen Topic, purpose and tasks should be coordinated with the supervisor before the CECA is developed.

The formulation of the purpose should be short, clear and precise. It provides an opportunity to correctly identify and understand the object of research.

There should be several tasks which should indicate what will be done in the course of the research in order to achieve the predefined purpose of the study.

"Literature review" – it is develop according to the selected research Topic. It provides a theoretical description and analysis in a systematized manner, indicates references to the previously conducted similar studies and study results.

Personal, professional, special literature (at least 4 sources) and scientific literature (at least 4 sources) available e.g. in the LBTU library could be used.

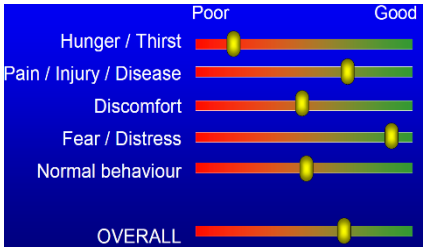
"Material and Methods" – describe the specific methods and activities that will be used to condact the research and perform the study tasks.
This section provides indications of what/where/how and how often will be done and assessed, according to the criteria and indicators specified in the assessment protocol. Describes the selected evaluation specifity and evaluation gradation for each group of the indicators included in the assessment protocol.
In order to systematize the assessment process, before the visit to the animal holding, an assessment or inspection protocol, which includes the criteria and indicators to be checked as well as marks on the evaluation results, should be developed.
It is possible to use protocols that have been developed and approved in advance, but adapted and modified to the purpose and tasks for your CECA.

"Results and conclusions" – initially, a general, informative description of the selected animal holding place, animal keeping conditions/management as well as of animal should be provided, e.g., type of accommodation/management (incl., direction of animal use), animal species, number, age, general observations about animals and their living environment.
This is followed by the specific evaluation of input and output indicators, presentation and description of assessment results, according to the assessment protocol.
Adds pictures, videos, obtained by evaluating animals and their living environment.

- Performs an analysis of the provision of each criterion, based on the evaluation of the inducators characterizing it; compares the obtained results and conclusions with research results/conclusions and the information provided by literature sources,
- Identifies the possible relationship between indicators of "poor welfare" (input and output indicators),
- The evaluation of each criterion should be concluded with a summary paragraph, which indicates the main results of the evaluation and the insights obtained as a result of the indicator analysis,
- The overall grade of each freedom provision must be specified.

Based on the assessment results and their analysis, formulate personal conclusions:

- or the pre-defined CECA purpose have been achieved and tasks completed;
- what does the obtained results indicate on the provision of the five freedoms of animal welfare in particular animal holding place,
- indicate the average provision of each freedom as well as overall welfare grade:



- concludes how identified welfare deficiencies can potentially affect animal health, behavior and productivity.

"Proposals and recommendations"

- Formulate specific recommendations and proposals for improving animal keeping and care conditions in particular keeping place.

Submission and defending of CECA

Students submit their CECA (print and electronic version) during the current semester, but no later than four weeks before the end of the semester, present it during clases and answer the questions asked.

The defense of CECA is organised during the last month of the semester. Student must present the CECA topic, its importance, the metodology chosen for the work, the obtained results, conclusions and proposals within 15 minutes. At the end of the presentation, group members and teaching staff ask questions.

The CECA must be submitted and defended before the exam in a strictly defined time, as its grade taken into account in the exam evaluation. Without the CECA assessment, the student is not admitted to the exam.

CECA assessment

The CECA rating in points (grade) is formed by calculating the average number of points for:

- The ability to use theoretical knowledge, incl., development of protocols for welfare assessment, in practice,
- The ability to find and assess welfare indicators, perform their analysis, based on the evaluation results and draw appropriate conclusions,
- The quality of CECA task performance,
- CECA defending skills, incl., answers to questions.

Integration of CECA in the assessment of the study course

- The CECA rating is taken into account in the exam evaluation,
- If the CECA work is not credited, the student must correct or revise it,
- If the CECA has not been submitted or not submitted within the above-mentioned deadline, the student is not admitted to the exam,
- If the CECA has not been defended within a certain period of time, it can be done only after the session of the 6^{th} semester, by individually agreeing with a teaching staff on the time of submission and defense.

Animal postmortem necropsies I
CECA guidelines

Head of study course: Dace Stankeviča

Aim: to learn to perform a pathological anatomical section of an animal, analyze and interpret the detected changes, prepare a section protocol, describing the etiology, pathogenesis, macroscopic and microscopic picture and differential diagnosis of these pathological processes in the context of the analysis of a specific disease case.

Objective:

The work consists of the following sections: practical part (section protocol) and theoretical part (detailed description of the disease, pathogenesis of pathological changes, analysis of the latest research), bibliography and presentation (figures and tables).

In the practical part, a pathoanatomical section must be performed, the identified agonal, postmortem and pathological changes must be described in the protocol of the animal pathoanatomical section (see Appendix 1), morphological diagnoses must be formulated, an epicrisis and a conclusion must be written regarding the cause of the disease/death.

In the theoretical part, using scientific literature, a detailed description of the underlying disease of the sectioned case, etiology, clinical picture, pathogenesis of pathological changes, macroscopic and microscopic picture of the disease, discussion of the correspondence of the changes detected in the section to literature data and differential diagnostics, analysis of the latest research should be written.

Selection of the Topic :
The CECA topic is one underlying disease or one of the most severe morphological diagnoses of a sectioned case for a specific animal species, identified in one of the sections performed by the student (not the entire sectioned case). The topic must be agreed with the instructor of your group.

Methodology:
The CECA must be prepared according to the guidelines developed by the Methodological Commission of the LBTU Faculty of Veterinary Medicine. The work must include the following sections: pathological section protocol, introduction, detailed description of the disease - etiology, clinical picture, pathogenesis, macroscopic and microscopic changes, discussion, analysis of the latest research, used literature and presentation. The CECA work must be completed in the form (see Appendix 1). The presentation form is available in e-studies.

Defence:
After submitting the written form of the CECA, it must be presented orally at the end with a 10-15 minute illustrated PowerPoint presentation, reflecting the macroscopic and microscopic changes of the selected section case, morphological diagnoses, epicrisis, pathogenesis, conclusion and literature review of the selected topic, expressing the most important information about your topic, answering questions and justifying the information provided. The thesis must be submitted and defended within the deadline set by the course supervisor.

Evaluation:
The necropsy protocol (CECA practical part) must be submitted to e-studies within 1 week after the necropsy lesson and again after the teacher's corrections. The student can submit the necropsy protocol a maximum of 2 times, taking into account the corrections made by the teaching staff. Both completed parts of the CECA must be submitted to e-studies by the deadline set by the course leader. The CECA presentation must be submitted to e-studies at least 3 days before the CECA oral presentation. CECA is evaluated in points (max 50 p.; min 25 p.): practical part – 25 p., theoretical part – 15 p. The minimum number of points for CECA (without presentation) must be 20 p. to be admitted to the CECA oral presentation. CECA presentation – 10 p.

Integration of CECA in the assessment of the study course:
The final assessment of the study course is “formal test” with the outcome – “passed/failed". To receive a pass, the following components must be completed, successfully presented, and defended: test necropsy, CECA work with the report and theoretical part, and assigned necropsy case(s).
The formal test result is based on total number of points earned (minimum 48 p., maximum 80 p.), it includes the work of CECA (min. 18 p., max. 30 p.), points for necropsy cases presentation (or avarage points if there are more necropsie cases) (min. 6 p., max. 10 p.) and test necropsy (min. 24 p., max. 40 p.). The evaluation procedure is in accordance with the LBTU Study Regulations.

LATVIA UNIVERSITY OF LIFE SCIENCES AND TECHNOLOGIES
FACULTY OF VETERINARY MEDICINE
PRECLINICAL INSTITUTE

COMPARATIVE PATHOLOGY LABORATORY

K. Helmaņa street 8, LV-3004, Jelgava. Tel.: 29252037; Fax: 630 27344; e-mail: s.pat.lab@llu.lv

Animal necropsy report Nr.___-N-2_

__.__.202_.
/necropsy date/

LBTU FVM PREKL
Comparative pathology laboratory
Necropsy hall
/necropsy place/

Specimen Identification: _____. Before necropsy specimen was kept in LBTU refrigerator.

Unit accountable for animal:

Contributor's data: LBTU Faculty of Veterinary Medicine Preclinical institute guest lecturer Kristīne Liepa and students….

Anamnesis:

GROSS CHANGES

Postmortem changes

Obligatory elements of description: *Algor mortis*, *rigor mortis* (which muscles), *livor mortis* (localization), putrefaction etc. Postmortal injuries, tissue deficit. General postmortal condition is good, moderate, poor.

General description

Obligatory elements of description: body condition in 1 – 5 point scale (1 – anorexic, 3 – norm and 5 – obesity). In young animals – development degree. Body weight in kg and body length from crown to rump cm, chest circuit behind the scapula cm, forelimb length in withers cm, belly circuit in umbilical region.

Body openings

Obligatory elements of description: mouth, nostrils, conjunctiva, eyes, ears, anus, external sex organs.

Exterior

Hair coat, skin, claws, horns, mammary glands: lactation state, +/- size of mass, form, consistence, cut surface (parenchyma, stroma, milk ducts). Young animals – umbilicus (size, appearance).
Subcutis (obligatory elements of description): fat tissue (quantity, quality), blood vessels (filling, blood quality), hemorrhagic infiltrates (size, location) etc.

Muscles (obligatory element of description), development, color, gloss, moisture, consistency, cut surface. For joints, bones, diaphragm describe only changes structures; if there are no changes, write „no remarkable alterations were noted".

Body cavities
Thoracic cavity – organ location (obligatory element of description), cavity content (obligatory element of description), mediastinum, pleura.
Abdominal cavity – organ location (obligatory element of description), cavity content (obligatory element of description), wall shape, serous membrane.
Describe only changes structures; if there are no changes, write „no remarkable alterations were noted".

Blood circulatory system
Heart (obligatory elements of description): heart filling, blood appearance in heart; heart length, width / circuit or mass after blood/ blood clot removal; thickness of right and left ventricular wall, left and right ventricular wall thickness proportion and septum thickness.
Pericardium, epicardium, myocardium (obligatory element of description), endocardium, including valves.
Blood vessels – filling, blood quality, wall elasticity, interior smoothness; describe only changes structures; if there are no changes, write „no remarkable alterations were noted".

Respiratory system
Nose cavity, conchae, sinuses (maxillary, frontal), larynx. Describe only changes structures; if there are no changes, write „no remarkable alterations were noted".
Trachea, bronchus, lungs (obligatory elements of description): form, color, margins, consistency, content, cut surface, blood vessels, parenchyma, stroma, visceral pleura.

Blood-forming system
Spleen (obligatory elements of description): mass and/or measurement, form, color, surface, margins, consistency, cut surface (red, white pulp).
Thymus (obligatory elements of description, if it is present): measurement, form, color, surface, margins, consistency.
Lymph nodes and bone marrow: describe only changes structures; if there are no changes, write „no remarkable alterations were noted".

Gastrointestinal tract
Throat, esophagus, salivary glands: describe only changes structures; if there are no changes, write „no remarkable alterations were noted".
Forestomach (rumen, reticulum, omasum) and abomasum or stomach (obligatory elements of description): size, shape, content and filling, wall thickness.
Intestines (obligatory elements of description): content (quantity, quality), wall thickness.
Liver (obligatory elements of description): mass and/or size, shape, color, surface, margins, consistency, cut surface, bile ducts and gall bladder.
Pancreas: describe only changes structures; if there are no changes, write „no remarkable alterations were noted".

Urinary system
Kidneys (obligatory elements of description): mass and/or size, shape, fibrous capsule, surface, color, consistency, cut surface (medulla and cortex), renal pelvis.
Urinary bladder (obligatory elements of description): filling, content (quantity, description),

walls.
Ureter, urethra: describe only changes structures; if there are no changes, write „no remarkable alterations were noted".

Reproductive system
Scrotum, testis, epididymitis, accessory glands, spermatic cord, inguinal canal, penis: describe only changes structures; if there are no changes, write „no remarkable alterations were noted". If needed, mention testis size, consistency, cut surface.

Ovaries: if needed, mention ovary +/- mass and/or size, shape, consistency, cut surface.
Oviducts, uterus, vagina: describe only changes structures; if there are no changes, write „no remarkable alterations were noted".

Endocrine system
Adrenal glands (obligatory elements of description): +/- size, mass, shape; consistency, cut surface.
Thyroid, parathyroid glands, hipofīze (obligatory elements of description): describe only changes structures; if there are no changes, write „no remarkable alterations were noted".

Nervous system
Eyes, hearing organs, *bulla tymphanica*, meninges (dura mater, arachnoid and pia mater - color, smoothness, moisture, gloss, thickness, blood vessels, etc.), brain and spinal cord (shape, symmetry, surface, consistency, cut surface, ventricles), describe only changes structures; if there are no changes, write „no remarkable alterations were noted".

MICROSCOPIC CHANGES
…..

PARASITOLOGYCAL EXAMINATION
…..

MICROBILOGYCAL EXAMINATION
…..

MORPHOLOGYCAL DIAGNOSES

Start with the most essential/ severe pathology. Agonal changes should be the last in the list. All tissue/ organ changes should be present in morphological diagnosis list.

Example:
1. Intestine – duodenitis, multifocal, moderate, acute.
2. Abomasum – abomasitis, multifocal, minimal, acute.
3. Subcutis – serous-hemorrhagic infiltration, multiple, extensive.
4. General changes – anemia in mucous membranes.
5. Agonal changes – lung edema and heart right-sized dilatation, moderate, acute.

INTERPRETATIVE SUMMARY

This section should include the clinical-pathologic correlations, significance of lesions and association among lesions.

Widely describe main changes/ morphological diagnoses, causes and pathogenesis; name differential diagnoses, explain connection between all changes.

Start with the main (primary) process, continue with secondary changes and end with the incidental changes.

Name extra investigations/ test needed for diagnose approval.

Necropsy interpretation is written for owner or veterinarian – it should be logical and understandable, it should connect morphological diagnoses and remember, why necropsy is asked for (clarify death/ illness cause).

CONCLUSION

Write in one sentence animal death/ illness cause. Summary should be clear for owner or/ and another veterinarian.

If there are no essential findings and death/ disease clinical signs cause is unclear, write it in conclusion.

Do not write “death because of euthanasia”, because the aim of necropsy is to clarify death/ illness cause!

00.00.202_.

Prepared by:

Name, surname

CECA case

Clinical and Epidemiological Case Analysis (CECA) is about a specific disease or about the most severe diagnoses found in necropsy (not the entire case of the necropsy). Topic is coordinated with lecturer.

Literature review

1. Detailed description of the disease from the literature (etiology, clinical signs, pathogenesis, macroscopic and microscopic changes
2. Student mus analyze the macroscopic and microscopic changes found in the examined animal, provide information whether the changes found during the necropsy fully correspond to the literature data; diagnostic methods that would be necessary for the case to confirm the diagnosis; name (specify) possible differential diagnoses (also possible causes for infectious diseases), mention what each differential diagnosis has in common with the basic diagnosis you set
3. Analysis of the latest research done in field about the topic (i.e. analysis of scientific articles - officially recognized databases should be used, such as: www.sciencedirect.com, https://onlinelibrary.wiley.com/
   Student should reflect to the latest research data on CECA topic
4. List of literature must be in alphabetical order, at least 2 scientific publications not older than 10 years must be used, with references in the text to the literature used
5. Images, tables and graphs should only be used in the presentation

Study course “Radiology II”
CECA guidelines

Supervisors: KLIN Mg.med.vet. Evija Eihvalde, Dr.med.vet. Armands Vekšins.

Objective: The ability to interpret radiographs, make diagnoses and prepare reports.

Tasks:

- Preparation of a radiographic report
- Analysis of the literature on clinical case diagnoses
- Oral presentation

Selection of the CECA topic

At the beginning of the course "Radiology II" the students are assigned radiographs from a specific anatomical area. The radiographs are selected from the database of the LBTU veterinary hospital in the examined areas of the animals: Thorax, abdomen, head, spine, peripheral skeleton.

Methodology

The form of the report presented by the lecturer should be used. Once the report is prepared, the student must submit the report via the LBTU e-study system. If the submitted report is of good quality, students may begin preparing the oral presentation. If the report is not accepted, students must rewrite the report and submit it a second time. KEGA must include the following: Title Page, Introduction, Report, Theoretical Section, Conclusion, Recommendations and References. In the theoretical part, the case of KEGA should be compared with the information available in the information sources.The KEGA analysis in e-studies must be submitted to the responsible supervisor at least one week before the scheduled defense.

CECA defense.

Oral presentation. The time allowed for a presentation is approximately 10 minutes.

Evaluation criteria:

- Report
- Compliance of the work with the design and content requirements;
- timely submission of the work;
- in the oral presentation, it is assessed whether the analysis of the radiographs includes all the given parts (recognition phase, descriptive part, conclusion, recommendations), that the comparison of the described changes with the literature, the inclusion in the given time, the ability to answer questions are also assessed.

Integration of the work into the assessment of the study course.

- The analysis of clinical cases is equated with the assessment of a test, i.e. the student receives a grade for the work. If the student receives an unsatisfactory grade, he/she will not be admitted to the examination. If the KEGA is not completed within the allotted time, the student will make individual arrangements with the faculty for re-testing or additional time for completion.

Study course **"Parasitology and Invasive diseases II"**
CECA guidelines

Head of the study course: PVHI associate professor Dace Keidāne, lecturer Alina Kļaviņa

Aim:
Students must be able to analyze scientific literature, understand the tasks set in the publications, the chosen methods, analysis of results, discussion.
Be able to independently diagnose disease agents, evaluate pathogenesis, treatment and prevention.

CECA tasks:
There are two variants of KEGA work (the variant of KEGA work is determined by the teaching staff at the start of the study course):

1. Students are given the choice to study parasitosis of disease agents or animal species based on scientific articles. The chosen topic must be developed using at least three scientific publications as a basis.
2. Clinical case analysis. The student draws a description of a clinical case, which is presented after 15 minutes of reflection.

Selection of CECA topics
1. Analysis of scientific articles - the student can choose a topic independently, according to his interests, justifying the relevance of this topic and coordinating it with the teaching staff.
2. Analysis of clinical cases - the student secretly chooses a clinical case previously prepared by the teaching staff.

CECA methodology
The work must be prepared according to the rules developed by the Methodological Commission of the LBTU VMF.
3. In the case of the analysis of scientific articles, the student independently familiarizes himself with the selected publications and performs their analysis. The presentation includes the following sections: title of the topic, introduction (relevance of the topic, purpose), methodology, results, discussion.
4. In the analysis of clinical cases, the student must give an answer about the specific clinical case and answer the questions asked by the instructor.

Defense of work
1. The analysis of scientific articles must be submitted electronically at least one week before the planned defense by uploading it to the studios.
2. Clinical case analysis takes place at the time designated by the teaching staff.

Job evaluation
KEGA's work is evaluated according to the 10-point scale study results evaluation criteria specified in the LBTU Study Regulations.

Integration of the work in the assessment of the study course
The student is admitted to the study course exam only after successfully defending the KEGA.

Study Course "Small Animal Internal Medicine II"
CECA guidelines

Study Course lecturer – Elīna Kaņka

CECA aim: increase and establish the knowledge and practical skills in small animal internal medicine

CECA tasks:

1) Investigation of the clinical case
2) Bibliographic study of the chosen theme
3) Clinical case analysis

CECA clinical themes: clinical case is chosen together with course teacher from Small Animal Veterinary Clinic

CECA methodological guideline:
Content:

1) Introduction (Aim, tasks)
2) Clinical case report – anamnesis, clinical examination, diagnostics, manipulation, diagnosis, treatment, reccomendation about futher diagnostics and possible treatment.
3) Literature review
4) Disscusion – analysis, critical evaluation of the chosen diagnostics, the results, treatment., interpretation of the results.
5) Conclusion

10-15 pages. At least 10 bibliographic studies

CECA must be written in English. The information should be reflected in a precise, clear, logical and concrete fashion. Submitted in printed paper/ or electronic version until the start of clinical practice in spring semester.

CECA Evaluation
Grade 1-10, Pozitive grade is granted if: CECA should be submitted until the end of april. If submited after spring semester ends – CECA has to be presented also orally.

If CECA is not submitted or passed, exam is forbidden.

Study course “Internal Medicine, Herd Health III”
CECA guidelines

Head of study course: KLIN associate professor Laima Liepa.

Purpose of CECA work.
The aim of the work is to teach students to conduct an independent study of the herd health problem of farm animals (dairy cows, beef cows, sheep, goats or pigs) and to create a problem prevention plan.

Work assignments.
To achieve the goal of the work, students must perform the following tasks:

- choose the health or management problem to be investigated in a specific flock;
- choose the health or management problem to be investigated in a specific flock;);
- independently create a questionnaire for investigating the problem during a herd visit; coordinate it with the manager of practical work;
- practical work in an off-site lesson or (excused not participating in an off-site lesson, independently visiting the herd), you must fill out a questionnaire (getting as many answers as possible to the prepared questions);
- Questionnaires will show the causes of the problem, indicating them at the end of the questionnaire;
- analyze (in the discussion section) the causes of herd health or management problems, the possibilities of solving them in a particular farm;
- at the end of the questionnaire, create a problem solving plan in the form of a table: by numbering and clearly formulating the measures to be taken, indicating the deadline for each measure and the person responsible for the implementation;
- CECA work completed and printed on the computer must be submitted to the supervisor of the practical work on the specified date;
- during the practical work, each student must present to CECA the research progress, results and problem’s solving plan of the herd problem analyzed by CECA work.

Selection of work topics.
The list of topics for each group is prepared by the supervisor(s) of laboratory work during the first two weeks of the 9th semester. By the third week of studies, the topic chosen by the student must be coordinated with the supervisor of his/her practical work. Consultations on specific CECA topics can be obtained from the head of practical work, from a teacher's consultation or at another specified time.

Work methodology:
The design of the work is based on the general CECA design rules.
The literature description should contain the latest literature (starting from 2000) on the selected herd health problem, its causes, indicators, connections with other health problems in the herd.
Questionnaires should have the following sections (create in the form of a table - detailed instructions in the practical work):
- Information about the person performing the questionnaire, the time of the herd's visit; there must be the name of the herd, the address, the herd registration number and the name of the research problem;
- General information about the herd (in the form of questionnaire questions);

• For special questions about the study of the problem (the desired performance for each indicator should be indicated in the question table, referring to the source of scientific literature):
    o Obtained from herd specialists;
    o Obtained from herd documentation, database;
    o Obtained during the inspection of the farm's surroundings (including feed storage places, feed preparation equipment and other objects);
    o Obtained at the place where the animals stay (shed/pasture/milking parlor etc.);
• **List of causes of the problem**;
• **Discussion** on the possibilities of eliminating the causes of the problem in a specific herd;
• **Plan of measures to solve** the problem (create in the form of a table):
    o Numbered measures must be listed in order of implementation deadlines;
    o for each planned event, the deadline and the person responsible for the realization of the event must be indicated
• At the end – **the student's signature** on independent completion of the questionnaire.
• **The list of used literature** must contain at least 20 sources of scientific literature (starting from 2000 and newer).

Defense of CECA work.
During the practical lessons, each student must present (with the Power Point program in a 10 minutes long presentation): the progress of the research of the chosen problem, the main results and the problem's solving plan, answer the questions asked by the teacher or members of the student group, which the teaching staff evaluate with a mark.

Assessment and integration of CECA work in the study course.
The student receives a total evaluation in a 10-point system scale criteria (specified in the LBTU Study Regulations) for the quality and presentation of the submitted CECA performance. The grade for the analysis of the herd health problem is 30% of the exam grade (In Internal Medicine, Herd Health III). CECA is not credited if the presentation of the herd problem has not been made in the practical work or if the CECA of the herd problem has not been submitted during the 9th semester. If the student has not successfully passed the CECA, then the student is not allowed to take the study course exam.

Study course "Animal reproduction II"
CECA guidelines

The leader of the study course: KLIN professor *emeritus* Vita Antane, lecturer Guna Ringa-Osleja.

The aim of the research.

To supplement theoretical knowledge using publications on the latest scientific research and to analyze the methods used in current veterinary practice in treating diseases of the genital organs of farm animals and in the control of infertility.

Using the knowledge and skills acquired, the student **independently writes a clinical case report analysis (CECA)**, choosing one case from Large Animal Practice II related to the postpartum period and subsequent reproduction of farm animals or to pathological processes in the mammary glands (mastitis, injuries, milk yield disorders, etc.). The research does not exceed 10 pages.

The objectives of the research.

During the 9th semester, students have to write the research (CECA) describing patient/ts having reproductive disorders, including pathological processes in the udder (mastitis, trauma, problems with milk release, etc.).

Scientific and special literature studies (at least five sources not older than 10 years) must supplement the clinical case analysis.

Research must be submitted in both written and electronic versions to lecturers of the study course.

The choice of the topic.

The student can freely choose the topics of his interest on the reproduction of farm animals. Topics may not be repeated at the course level, and they may also be recommended by the course instructor. CECA can serve as an orientation or basis for a student's scientific work or as a continuation of the development of the 6th-year rotation practice work.

Methods of the research.

Writing CECA in the study course is one of the ways of testing students' knowledge, veterinary medical thinking, analytical abilities, and acquired skills. The description of the chosen topic can be done in the following ways:

- Problem solution. The student studies the spread and manifestation of a disease (mastitis, abortion, etc.) or problem (infertility, etc.) in a certain area or farm and tries to discover possible causes. For this purpose, the student examines documents (feed rations, comparing them with the norm, laboratory examination results of biological substrates on animal metabolism, bacterial contamination of the relevant object, etc.). If necessary, the research object (milk, exudate, aborted fetus or its stomach, etc.) is sent for laboratory examination. Biometric data processing and analysis are performed based on the results obtained. CECA should be designed according to the rules for designing a scientific work (introduction, literature review, the aim and objectives of the research, material and methodology, results and their analysis, and conclusions). The list of references should contain at least 5 sources.
- Medical history. The student chooses one patient whom he clinically examines, diagnoses, and provides the necessary assistance. The pathology of the selected

patient must be related to the reproduction of farm animals. Photos of the specific case are attached to the appendix of the medical history. In this case, the description includes the following sections: introduction, literature review, medical history (following all the requirements for writing a medical history of a clinical diagnostic subject), treatment (all prescribed medications must be written in the form of prescriptions), discussion (must be written in a concentrated, not elaborated way), list of references.

Defense of the research.

A report with a possible visualization (5-10 min.) on the description of the selected clinical and epidemiological cases should be prepared for the audience of their course students.

Evaluation of the research.

The term of CECA submission is taken into account in the evaluation. If the submission deadline is delayed by one week - 1 point less from the overall assessment, if the submission deadline is delayed by more than one week - 2 points less from the overall assessment of CECA.

The CECA evaluation consists of a description (analysis) of the chosen topic and an evaluation of the presentation.

The submission deadline is in the 11th week of the 9th semester. An electronical copy should be submitted to the teaching staff of the relevant group by e-mail: guna.ringavet@gmail.com, mara.mangale@lbtu.lv, eihvalde@lbtu.lv, aiidavanaga@gmail.com, and a printed copy should be submitted as well.

CECA score adds up = CECA + presentation.

Integration of the research in the assessment of the study course.

The CECA grade together with the colloquium grades form the average grade, which will be taken into account when evaluating the final grade in the exam. If the CECA is not evaluated with a passing grade, it must be corrected or redone.

Study Course “Infectious Diseases II”
CECA guidelines

Course Leader: Prof. Kaspars Kovaļenko

The goal of CECA: Is to develop the student's ability to analyse the progression of infectious diseases, identify the causative agents, and choose the most appropriate treatment based on this, as well as to enhance the student's ability to analyse various other aspects of infectious diseases.

CECA tasks: involve utilizing data from infectious disease surveillance systems or cases of infectious diseases treated in animals during practical studies. This includes conducting an analysis of clinical or epidemiological cases, encompassing the clinical picture, evaluating the effectiveness of treatments, and considering the feasibility of alternative treatments and the prevention of infectious diseases.

Selection of CECA Topic: In accordance with the clinical case or in coordination with the teaching staff.

CECA Methodology: The student submits the analysis of the clinical or epidemiological case electronically in the LBTU e-study system.

CECA Defence/Presentation: After submission of the work, and once any necessary corrections are made, the student presents a brief informative overview of the issue addressed in the CECA work during the oral exam. This involves answering questions posed by the examiners.

CECA Grading Rules: The average grade consists of scores from the written work and the presentation.

Integration of KEGA into the course grade (including actions if CECA is not passed): To pass the entire course, a pass in the CECA project is required.

Study course “Pathology and Forensic Veterinary Medicine IV” CECAguidelines

Head of study course: PREK associate professor Dace Gorbačevska.

Aim of the work.
To improve knowledge and skills by analyzing specific cases of forensic veterinary medicine, and to learn to give correct answers to the questions posed to the veterinary medicine expert.

Work assignments.
To achieve the aim of work students should:

- Recognize specific circumstances of a veterinary medical expertise case;
- The data obtained in the results of the veterinary medical examination must be evaluated, conclusions must be drawn about their nature, mechanism of occurrence, degree of severity, pathology and possible cause of death;
- Answers of the opinion to the questions presented in the expertise must be correctly written in accordance with the basic principles of formulation of forensic veterinary medical expertise.

Selection of work topics:
At the beginning of the study course, the course leader assigns to each student individually the topic of a specific case of forensic veterinary medicine with the circumstances of the case, the results obtained during the veterinary medical examination and the questions asked in the expert examination.

Work methodology.
The work consists of the title page formulated in the methodological instructions of CECA, the accounting, analysis and description of the data provided in the veterinary medical expertise materials in the appropriate sequence, which is learned in the Forensic Veterinary Medical Expertise study course in order to draw conclusions and provide reasonable answers to the questions asked in the expertise. If necessary, students can cite the information analyzed in the literature sources about the specific case, indicating the name of the literature sources in the appendix. The structure of the work corresponds to the opinion form of the Veterinary Medicine expert, which is issued during the lessons.

Defense of work.
After submitting the written form of the work, it must be defended in the form of a presentation.

Assessment and integration of work in the study course:
The work must be submitted and defended within the deadline set by the course leader. According to the content and defense of the work, the work is evaluated according to the criteria of a 10-point scale. In case of non-submission or unsuccessfully developed work, the student receives the final grade of the course "not - passed".

Study course “Pharmacology, Pharmacotherapy and Toxicology III”

CECA guidelines

Study course leader: KLIN profesore Līga Kovaļčuka.

Objectives:

The goal of CECA is to learn to analyze, develop and interpret the treatment plan of an individual clinical case and to create a treatment protocol for a specific case.

To achieve the goal of the work, the student:

• chooses a clinical case obtained after clinical examination of an individual animal at the LBTU Veterinary Clinic, in an internal or external practice, in coordination with the course leader;

• compiles and analyses a clinical case treatment course protocol;

• prepares an individualized approach to the treatment protocol;

• analyses the information available about drug interaction, individual suitability, taking into account combinations of drugs in a particular case, individual parameters of the animal and peculiarities of feeding;

• orally present a clinical case.

Selection of work topics.

When starting the study course "Clinical pharmacotherapy", students choose or are assigned a description of a clinical case obtained from the database of clinical cases of the LBTU Veterinary Clinic or from any internal, external practice, in consultation with the lecturer of the study course.

Work methodology.

At the beginning of the work, a clinical record must be prepared according to the description protocol developed by the LBTU Veterinary Clinic (see picture 20 of the description). After preparing the record it must be sent electronically to the responsible teaching staff. If the pharmacotherapy prescription is correct and appropriate, then the teaching staff gives the student permission to start preparing a detailed pharmacotherapy plan, reviewing the used medications and their interactions, possible side effects and individual factors that affect the effect and safety of the medication. If significant inconsistencies are found in the description, the student must improve it and resend it.

The following sections should be included in the analysis: title page, introduction, theoretical part, discussion, conclusions, recommendations, used literature.

The theoretical part should include the following information:

• Brief description of the disease, diagnosis, including the causes of the disease, ethicology, epizootiology, pathogenesis, clinical signs, diagnosis.

• A brief description of the selected medications.

The discussion part should include the following information:

• Analysis of the pharmacotherapy plan, including principles of drug selection, indications, contraindications, side effects, restrictions on use, individual factors

• Description of the interaction of drugs used in pharmacotherapy

A written CECA analysis must be submitted to the responsible faculty member at least two weeks before the scheduled defence.

Defence of work.

The defence of CCRA is carried out orally, during practical classes. Oral defence time per student is up to 10 minutes. The student must orally be able to briefly analyse the disease,

the pharmacotherapy plan and possible drug interactions and topicalities of therapy. The student is informed with detailed information about the progress of the defence at the start of the study course.

CECA assessment is based on the following criteria:

- Analysis of clinical case and pharmacotherapy plan;
- Quality of the written CECA analysis in accordance with the regulations;
- Timely submission of CECA analysis;
- Oral presentation – visual presentation, content, ability to answer questions.

Integration of the work in the assessment of the study course.

Clinical case analysis is graded. If the CECA rules are not met, the student is not allowed to take the test. If the CECA is not developed within the specified time, then the student individually agrees with the teaching staff about a repeated test or additional time for development.

ĀRSTĒŠANAS IZRAKSTS
(forma)

Reģistrācijas datums: *Datums*

Dzīvnieka suga:	XXXX
Vārds:	XXXX
Dzimšanas datums:	XXXXXXXX
Šķirne	XXXXX
Dzimums:	X
Identifikācijas Nr.	XXXXXXXXXXXXXXXXX

***Anamnesis vitae*:**

***Anamnesis morbi*:**

***Status praesens*:** *(aprakstīt būtiskās izmaiņas, simptomus)*

1) Vispārējā izmeklēšana:
2) Speciālā izmeklēšana:
3) Papildus diagnostika: (hematol., asiņu bioķ, RTG, USG uc.) *–raksta tikai slēdziena sadaļu, uzrāda analīžu rezultātus. Analīžu rezultātus var pievienot pielikumā un izrakstā īsumā raksturo izmaiņas, kas redzamas asins, urīna u.c. analīzēs.*

Diagnoze (-s):

Veiktā ārstēšana (norāda pielietoto aktīvo vielu nosaukumus, devas, ievadīšanas veidu un ilgumu):

Stacionārā (ja dzīvnieks stacionēts):
Ambulatorā (ja dzīvnieks nav stacionēts):

Ārstēšanas rezultāts un pacienta stāvoklis izrakstīšanas dienā:

Rekomendācijas: *norāda turpmāk nepieciešamo ārstēšanu, diagnostiku, kontroli, diētu u.c.*

Students:_____/vārds, uzvārds/

Veterinārārsts: _____/vārds, uzvārds/

Datums

Pielikumi:

(Pievieno izmeklējumu stacionāra kartes kopijas, analīzes u.c. dokumentus)

Study course "Organisation of Veterinary Services II"
CECA guidelines

Leader of study course: lecturer Lelde Tītmane

Goal of the work

To improve the student's knowledge and skills with using the legislative acts and the code of ethics of Latvia and The European Union by analysing different cases from veterinary practice.

The objective of the work

To analyse the legal and ethical aspects of the cases offered by the course leader or encountered during practices (infectious diseases control; identification, registration and non-commercial movement of pets; procedure for marking farm animals and reporting events; trade of animals, certification, certification of veterinarians and their right to practice, medicine and its circulation in institutions of veterinary practice; animal feed circulation; waste management in veterinary practice institutions; animal by-products).

Selection of the topic

Students choose the appropriate case for the task, coordinating it with the teaching staff.

Methodology

The work must be developed according to the methodological guidelines approved by the LBTU FVM Methodological commission.

The following sections must be included in the work: title page; contents; introduction; case analysis, developed using legislative acts, action plans of the responsible institutions, code of ethics and other resources; conclusions, references.

Defence of the CECA

The work must be submitted electronically no later than one week before the planned defence date on the e-study platform.

After submitting the work and, if necessary, after making corrections, the defense of the work is organized on the date set by the teaching staff. The student gives an illustrated presentation orally, the length of the presentation should last 5 – 7 minutes. The presentation must contain the most important information about the case, the student must answer questions, justifying the provided information.

Evaluation

The work is evaluated as an average grade from the grade of the evaluation of the written work and the grade of the evaluation of the presentation.

The CECA is evaluated according to the 10-point scale evaluation criteria indicated in the LBTU Study Regulations.

Integrating the CECA in the evaluation of the study course

The student is admitted to the study course exam only after successfully defending the CECA.

Study course “Food Chain Control”
CECA guidelines

Course Leader: Lecturer Alīna Klūga

1. Introduction. Provide basic information about the food company and products. Describe the importance of food circulation control in ensuring the safety and quality of food products.
2. Problem identification. Evaluate customer complaints and specific issues raised, such as product quality, contamination concerns, labeling inconsistencies, etc.
3. Theoretical concepts. The requirements of the regulatory acts governing the food circulation, which apply to the operation of the particular company. Specific rules, requirements.
4. Evaluation and analysis. Describe your evaluation process at the company, including screening, interviews, and document review.
5. Root cause analysis. Determine the risk of food contamination, analyze its causes.
6. To evaluate and determine the stages of the food cycle in which the danger of the relevant risk is possible, i.e. what critical control points are relevant in this case, what are the requirements (limits) for their control parameters.
7. Based on your analysis, propose practical recommendations for solving each identified problem. These suggestions should be relevant to the theoretical concepts you covered in the course. Emphasis on company actions that can significantly affect food safety.
For instance:
    - recommendations for the development of the technological process, which would contribute to avoiding the risk of food contamination;
    - implementation of monitoring procedures in the company;
    - the company's corrective actions;
    - laboratory examination plan and its rationale.
8. Possible positive results and impact of the implementation of the recommendations. How these changes could improve product quality, customer satisfaction and food safety.
9. Conclusions - emphasizing the importance of effective food chain control and how it contributes to public health and the reputation of food-related businesses.
10. References.

Diseases of miscellaneous animals II
CECA guidelines

Leader of study course: associate professor Ruta Medne

Aim of the work:

To develop the student's ability to analyse the course of diseases in fish, exotic animals, birds and bees, to determine the causes and course of the disease and, based on this, to choose the most appropriate treatment.

Objectives:

To achieve the goal of the work, students must complete the following tasks:

- choose cases of fish, exotic animals, birds or bee diseases seen during practical work and independent work, or examinations of pathological material carried out under the guidance of the teaching staff;
- to conduct an analysis of clinical or epidemiological cases, including the clinical picture, the effectiveness of treatment, as well as to assess the possibility of alternative treatment;
- The obtained data and conclusions are described in the work.

Choice of Topic:

Students are informed about the development of the work in the introductory lecture of the Study Course at the beginning of the 10th semester. It is planned that 30% of students will be given a work topic related to fish diseases, 30% - to exotic animal diseases, 20% - to bee diseases and 20% to bird diseases. However, depending on the wishes and capabilities of the students, this distribution may be changed. In some cases, the topics covered may be related to wild bird or crayfish diseases.

Methodology:

The work consists of literature review, methodology development, analysis of a clinical case or pathological material, summary of results and evaluation. After completing the above work, the student summarizes the information obtained, writes a CECA paper, which is designed in accordance with the methodological instructions for the development and design of the Clinical and Epidemiological Cases (CECA) of the Veterinary Medicine study program. The student submits the clinical case analysis electronically in the e-study system.

Defence of the CECA:

Presentation and defence of the thesis are not planned.

Evaluation and integration of the work in the assessment of the study course.

In order for a student to be allowed to take the course exam, the CECA work must be assessed with a passing grade.

Study Course “Food Toxicology”
CECA guidelines

Course Leader: PVHI Professor Anda Valdovska

Objective:

To apply theoretical knowledge of food toxicology in practice.

Task:

Reinforce the practical application of theoretical knowledge in *Food toxicology* course by evaluating specific cases of food contamination from the side of legal acts. Additionally, learn to provide necessary recommendations to food companies for reducing contamination in specific types of food.

Choice of Topic:

Students choose their CECA topic based on the subjects covered in the course, in consultation with the course teacher.

Methodology:

For the selected product and type of contamination, analyze contamination levels and possible causes using cases registered in the RASFF database. Describe the potential impact on human health, outline principles for selecting food samples according to EU regulatory requirements, and provide recommendations for reducing non-compliance. The paper should be submitted within a limit of 10 pages.

Defense of the Work:

The defense of the work occurs through individual discussions with the teaching staff.

Evaluation of the Work:

The CECA paper is assessed with a grade.

Integration of the Work into the Course Evaluation:

The CECA assessment contributes 50% to the overall exam grade. If the CECA paper is "not passed," the student is not allowed to take the exam.

Study course "Foodborne Diseases"

Head of study course: professor Aivars Bērziņš.

Aim of the CECA work:
To strengthen knowledge of the epidemiology of foodborne infections and to develop skills in analyzing outbreaks of diseases caused by foodborne pathogens.

CECA tasks
In order to achieve the goal of the CECA analysis, the following tasks are defined:

- acquire knowledge about the epidemiology of a specific foodborne pathogen;
- analyze the development of epidemiological processes in susceptible populations;
- compare the application of various microbiological and molecular biology methods for testing food, environmental samples from businesses, animals, and clinical samples;
- develop an understanding of the role of the specialists and institutions involved in the epidemiological investigation process.

Selection of work topics
The choice of topics is based on the topics covered in lectures and laboratory works. The CECA must cover a detailed analysis of a single foodborne outbreak. The analysis of the food outbreak must be based on publications in international scientific databases, supplemented by the requirements of regulatory acts. The topics used for CECA cases are as follows:

- The epidemiology of zoonotic agents and the outbreaks they cause:
    - *Salmonella*
    - *Campylobacter*
    - *Yersinia*
    - *Listeria monocytogenes*
    - *E. coli*
- Outbreaks caused by foodborne infections:
    - *Staphylococcus*
    - *Bacillus cereus*
    - *Clostridium perfringens*
    - *Clostridium botilinum et.c.*

Work methodology
A CECA document consists of a title page, an introduction, a section on materials and methods, a section on results and their analysis, a section on conclusions, and a section on references. The introduction provides a general overview of the event, including the geographical region, circumstances of the outbreak, number of patients, clinical symptoms and disease outcome. The materials and methods section describes the sampling and testing methods used for food, clinical and environmental samples. Attention should be paid to the choice of sampling phase and how it contributed to investigating the outbreak. In addition, an overview of the other epidemiological methods used to investigate the outbreak should be provided, such as antimicrobial resistance testing and bacterial culture typing. The results

and analysis section contains an analysis of the results obtained during the epidemiological investigation, including clinical examinations, case-control studies, microbiological testing and bacterial typing results. These results are then compared and interpreted in accordance with the literature data. In the conclusions section, students must express their opinion on how to eliminate the causes of the outbreak and how food production or distribution companies could improve their work. The literature review section should include the standards, regulations and scientific literature used, with a minimum of five references.

Defense of CECA

CECA is submitted to the CECA supervisor via the LBTU e-study module. An oral presentation is not required.

Evaluation of CECA

The CECA receives a passing grade, if the following conditions have been met:

- the work follows the CECA themes;
- the work has followed the correct structure, as well as answers have been provided to the questions;
- one foodborne infection outbreak was reviewed, the epidemiological process of the outbreak and the course of the investigation were analyzed, as well as evaluations and conclusions of the results were expressed;
- CECA analysis is correct, based on literature review and the current legislation.

Integration of the work in the assessment of the study course

If CECA analysis is not submitted and an unsatisfactory grade is received, the student is not allowed to take the exam for Foodborne Diseases study course.

Study course "Food hygiene and inspection II"
CECA guidelines

Head of study course: PVHI associate professor Margarita Terentjeva.

Aim of the CECA analysis.
To create a comprehensive understanding of food safety requirements, their detection methods, as well as decision-making on the fitness of food for consumption.

CECA tasks.
In order to achieve the goal of the CECA analysis, the following tasks are defined:

- strengthen knowledge about food safety requirements, their application justifications;
- highlight the importance of "One Health" approach in ensuring food safety;
- learn the official control methods used in food hygiene (organoleptic,
- chemical, microbiological) for evaluating of food safety;
- evaluate the compliance of a specific food product with hygiene requirements;
- decide on the fitness of a food product for consumption;

Selection of work topics.
Topics should be selected in accordance with the course study program. CECA can be work out experimentally at the laboratory, or student may choose to analyze a theoretical case involving various aspects of food safety. The experimental part of CECA analysis should be based on methodology learned during laboratory classes. CECA theoretical topics should be chosen by students in coordination with
course coordinator and may include:

- meat inspection done by of official veterinarian, including decision-making analysis and sampling;
- food processing technology and hygiene during production of a specific food product;
- justification of HACCP procedures for production of a specific food product;
- food product safety assessment and its analysis;

CECA theoretical case includes the analysis of safety of various food products analysis and consists of:

- assessment of the impact of processing technologies on product contamination;
- analysis of organoleptic properties of the product;
- evaluation of the microbiological tests results of the product;
- food product safety assessment and its analysis;

Work methodology.

CECA analysis based on experimental part
The CECA analysis consists of the title page, introduction, material and method, results and their analysis, conclusions, references and appendices (if any) sections. The introduction is a section that discusses the general requirements for a specific food processing stage (slaughterhouse, production or distribution company), or the safety requirements for a certain food product. Material and methods is a section that describes food sample collection, preparation for examination, laboratory investigation methods. The methods include only those that are accepted in Latvia, as well as internationally recognized (ISO and/or other

international standards). Observations on the food processing and/or official control in slaughterhouses (ante-mortem, post-mortem) is mandatory when CECA analysis describes slaughter or food processing. Results, their analysis is a section where the obtained results are calculated, compared and interpreted according to the literature, industry guidelines and legislative requirements. In the conclusion section, the student must express an opinion on fitness of the product for consumption, as well as propose an action plan, if it is necessary to improve food quality and safety. References section includes used standards, regulatory acts, industry guidelines, as well as scientific literature, the minimum number of sources is 5.

CECA theoretical case analysis

The CECA theoretical analysis consists of a title page, an introduction, a literature review on the topic, results and their analysis, conclusions, references and appendices (if any). The introduction is a section in which the general requirements for the given product are reviewed, justified the present CECA analysis, formulated the aim and tasks of the CECA analysis. The literature review should include information on product production technology and distribution requirements, emphasizing the most important contaminants that may affect the safety of the product. In the results, opinion on the compliance of the organoleptic, physico-chemical and microbiological characteristics of the products with the safety requirements should be provided. Results should be calculated, compared, and interpreted in accordance with the research studies, industry guidelines and legislative requirements. In the conclusion, the student must express an opinion on fitness of the product for food consumption. The references include standards, regulatory acts, industry guidelines, as well as research studies, the minimum number is 5.

Defense of CECA analysis.

CECA is submitted to the course coordinator via the LBTU e-study module. An oral presentation is not required.

Evaluation of CECA analysis.

CECA analysis receives a grade if the following conditions were met:

- the work is written in accordance with the aim and tasks set in the CECA analysis;
- the rules on formatting and the structure of the work are followed;
- case analysis is provided, results are evaluated, conclusions and recommendations (if necessary) are given;
- CECA analysis is correct, based on literature survey and the current legislation.

Integration of the work in the assessment of the study course.

CECA is a mandatory work to assess the student's ability to independently decide on fitness of food for consumption. In CECA analysis is not submitted and received unsatisfactory grade, the student is not allowed to take the exam for Food Hygiene and Inspection II study course.

Study course "Ophthalmology"

CECA Methodological guidelines

Head of the study course: prof. Līga Kovaļčuka

Objective:

Learn to interpret, diagnose and analyse an individual clinical case of ophthalmology.

During the work, students perform the following tasks:

- simulate the role of the doctor and the patient in clarifying the patient's anamnesis, clinical signs and diagnosis;
- prepare a description of an ophthalmological case, establish a diagnosis;
- analyse the information available in information sources about the established diagnosis and treatment;
- orally present a clinical case.

Selection of work topics.

When starting the Ophthalmology study course, students are assigned an individual clinical case image with a brief description of the animal, obtained from the LBTU Veterinary Clinic's clinical case database or ophthalmology practice.

Work methodology.

At the beginning of the work, the student is given a picture of a clinical case, individually with the lecturer, simulating the course of practice, the anamnesis of the disease, the clinical picture, the diagnostic procedures must be evaluated and the diagnosis must be made. After receiving confirmation of the diagnosis from the lecturer, the preparation of the clinical case analysis should be started. The following sections should be included in the analysis: title page, introduction, clinical case description, theoretical part, discussion, conclusions, recommendations, used literature.

The theoretical part should include the following information:

- description of the disease, diagnosis, including the causes of the disease, ethiology, epizootiology, pathogenesis, clinical signs, diagnosis and treatment;

The discussion part should include the following information:

- comparison and analysis of the information available in the literature and the clinical case;
- clinical case treatment plan analysis.

A written CECA analysis must be submitted to the responsible faculty member at least two weeks before the scheduled defence.

Defence of work.

Defence of clinical cases takes place orally, during seminar classes. Oral defence time per student is up to 10 minutes. The student must orally be able to analyse the disease, ophthalmological examination, determination of the course of treatment and the actualities of therapy, as well as the latest literature and clinical studies. The student is informed with detailed information about the progress of the defence at the start of the study course.

Evaluation.
CECA evaluation is based on the following criteria:

- quality of clinical case analysis;
- a written CECA analysis in accordance with the regulations;
- timely submission of CECA analysis;
- oral presentation – visual presentation, content, ability to answer questions.

Integration of the work in the assessment of the study course.
The analysis of clinical cases is equated to the evaluation of the final test, i.e. the student receives a test with a grade. If the CECA rules are not met, the student does not receive an assessment.
If the CECA is not developed within the specified time, then the student individually agrees with the teaching staff about a repeated test or additional time for development.