Appendix
Self Evaluation Report 2024
for the
European Association of Establishments
for Veterinary Education (EAEVE)

Stiftung Tierärztliche Hochschule Hannover
University of Veterinary Medicine Hannover, Foundation

Standard Operating Procedure (SOP)
Version 08 June 2023
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Content

Information for Full Visitation see also here:

https://www.tiho-hannover.de/visit2024

The translations were made with the help of deepl.com.

1 Appendices for Areas

1.1 Area 1

1.1.1 Mission statement

https://www.tiho-hannover.de/en/university/the-tiho/mission-statement

1.1.2 Publications of the last 3 years

List of scientific publications from the VEE's teaching staff in peer-reviewed journals during the last three academic years:

Download Publication list (https://www.tiho-hannover.de/visit2024).

1.1.3 Strategic Development Plan

Strategic Development Plan of TiHo/VEE 2030

1.2 Area 2

1.3 Area 3

1.3.1 Regulations

1.3.1.1 National veterinary curriculum (TAppV)

Ordinance concerning the Certification of Veterinary Surgeons

(Verordnung zur Approbation von Tierärztinnen und Tierärzten – TAppV) Issue date: 27 July 2006

Full quote:

Ordinance concerning the Certification of Veterinary Surgeons of 27 July 2006 (Federal Law Gazette [BGBl.] Part I p. 1827), amended by Article 37 of the Act of 2 December 2007 (Federal Law Gazette Part I p. 2686)

Version: Amended by Art. 7 G v. 15.8.2019 I 13076

Preamble

On the basis of section 5 sentence 1 of the Federal Veterinary Code (Bundes-Tierärzteordnung) in the version of the promulgation of 20 November 1981 (Federal Law Gazette Part I p. 1193), most recently amended by Article 151 of the Act of 25 November 2003 (Federal Law Gazette Part I p. 2304), in conjunction with section 1 (2) of the Competence Adjustment Act (Zuständigkeitsanpassungsgesetz) of 16 August 2002 (Federal Law Gazette Part I p. 3165) and the order for the establishment of an institution of 22 November 2005 (Federal Law Gazette Part I p. 3197), the Federal Ministry of Heath herewith orders as follows:

CHAPTER 1 VETERINARY TRAINING

Section 1 Objectives and Structure of Veterinary Training

(1) The objective of the training is an academically and practically trained veterinary surgeon who is capable of practising the veterinary profession responsibly and independently within the meaning of Section 1 of the Federal Veterinary Code and of undergoing further training and ongoing advanced training.

1. The fundamental veterinary, scientific, interdisciplinary and methodological skills,
2. practical skills,
3. ethical foundations, and
4. a professional attitude committed to the well-being of humans, animals and the environment

shall be imparted as they are necessary for the entire scope of the veterinary profession to be practised responsibly, taking special account of quality assurance.

(2) Veterinary training shall comprise

1. an academic-theoretical component of studies in veterinary medicine lasting for four and a half years with 3,850 hours of compulsory and optional courses, which must not be exceeded, at a university or at an equivalent higher-education establishment (university) in which the necessary basic knowledge is imparted with a view to its subsequent use in veterinary medicine;
2. a practical component of studies lasting for 1,170 hours, with

a) 70 hours on agriculture, animal breeding and animal husbandry,

b) 150 hours in the therapeutic practice of a veterinary surgeon or in an animal hospital under veterinary supervision,

c) 75 hours in hygiene control and control of foodstuffs,

d) 100 hours in the inspection of animals for slaughter and meat,

e) 75 hours in the public veterinary service,

f) 700 hours in the therapeutic practice of a veterinary surgeon or in an animal hospital under veterinary supervision or an elective placement,

3. the following examinations:

a) the Preliminary Veterinary Examination,

b) the Veterinary Examination.

The standard period of study within the meaning of Section 10 (2) of the Framework Act on Higher Education (Hochschulrahmengesetz) shall be five years and six months for the entire training.

Section 2 Courses

(1) The university shall provide an education that complies with the objectives cited in Section 1 (1) and that allows the students to acquire the knowledge and skills required in the examinations provided for in this Ordinance. The imparting of the fundamentals of natural science and theory is to be concentrated on the training content that is relevant to veterinary medicine. The theoretical and clinical knowledge is to be linked as closely as possible during the entire training. For this purpose the university shall conduct, in particular, lectures, seminars, clinical demonstrations and practicals, including exercises on animals, in the subjects cited at Annex 1. It may replace parts of these courses with appropriate interactive learning programmes. The number of students in the seminars, at the clinical demonstrations and the exercises shall be tailored to the teaching task by the universities. As far as possible and where appropriate, the contents of the teaching shall not be oriented to the individual discipline, but shall be imparted in an interdisciplinary, problem-oriented manner in line with the object of teaching. Interdisciplinary teaching shall be conducted and co-ordinated with the involvement of representatives from several subjects. The regulations for study at each university shall govern this in more detail.

(2) During their studies the students shall participate in at least those teaching events cited in (1) sentence 4 above that the university shall designate as compulsory courses. The compulsory and optional courses shall amount to an average of 30 hours per week in a semester, except during the clinical training and the placements. They must contain the disciplines listed at Annex 1 with the required number of hours.

(3) The university shall offer optional courses in subjects cited at Annex 1, in which the students shall participate with at least 308 hours from the 1st to the 9th semesters, including at least 84 hours in subject areas for the Anatomical-Physiological Stage of the Preliminary Veterinary Examination and at least 126 hours in the subject areas of the Veterinary Examination.

(4) During the 8th and 9th semesters, the students shall participate in the compulsory course in the interdisciplinary subject.

Section 3 Trial Clause

(1) While retaining the total number of hours for the scientific-theoretical part of the course, amounting to 3,850 hours, the universities may make provision for deviations from the number of hours for the subjects listed at Annex 1 by up to 20 per cent of the total number of hours, exceptions (2).

(2) Subjects with 28 hours or fewer, as well as the subjects listed in Annex 1 Nos. 28 to 31, shall be excluded from the possibility of reducing the number of hours.

(3) The deviations in accordance with (1) shall be subject to the proviso that

1. the training objectives in accordance with Section 1 (1) as a foundation of the certification in accordance with Section 4 (1) of the Federal Veterinary Code are not jeopardised,

2. it has been ensured that the requirements of Article 38 of Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications (OJ EC L 178 p. 7) have been satisfied,

3. the conditions under which the university can reverse the deviations have been regulated,

4. it is still possible for the students to change university.

(4) The universities that avail themselves of the deviation in accordance with (1) shall inform the competent authority of this with a description of the objective of the trial and the expected quality improvements for veterinary training. Upon request they shall submit a report to the competent authority on the experience gathered.

Section 4

Model course of studies

(1) For the trial of new models of veterinary training, the competent authority, on request from a university, may introduce a model course derogating from the standard course of studies and may determine the respective contents. The goals of training as defined in Section 1 (1) must remain unaffected.

(2) Approval as a model course of studies shall be contingent on

1. the objective of the trial being described and revealing what qualitative improvements are anticipated for veterinary training to emerge from the model course of studies,

2. there being a special regulations for study issued by the University,

3. it being ensured that the knowledge, skills and abilities to be proven in the Preliminary Veterinary Examination and the Veterinary Examination are examined in the model course of studies in a manner equivalent to the standard course of studies,

4. a proper, accompanying, final evaluation of the model course of studies by the university, using external expertise, is guaranteed,

5. the minimum and maximum duration of the model course of studies has been determined and extension applications are to be reasoned using results of the evaluation,

6. the prerequisites are named subject to which the university can discontinue the model course of studies,

7. the procedure to be followed on transition from the model course of studies to the standard course of studies is to be regulated with regard to further studies, allowance of study times and examinations and other study achievements, and

8. it is determined how the requirements of the standard course of studies as to the Preliminary Veterinary Examination and the Veterinary Examination are met in the model course of studies.

CHAPTER 2 EXAMINATION REGULATIONS

Sub Chapter 1 General Regulations

Section 5 Examination Committees

(1) One state examination committee of the Preliminary Veterinary Examination and one state examination committee for the Veterinary Examination shall be formed at every university.

(2) Every examination committee shall comprise the Chairman, one or more deputies and further members. The members of the examination committee shall be appointed in writing as examiners for specific examination subjects and each for no more than four years after the university has been heard by the competent authority. Professors from the university shall be appointed as Chairman and deputies and professors or other teaching staff from the subjects being examined shall be appointed as other members.

(3) The Chairman shall be responsible for supervision of the examinations and their proper implementation. He or she shall ensure that students who meet all the requirements for admission to the examination can take initial examinations in the respective examination subjects within the deadlines prescribed by the university. In urgent cases, the Chairman may, with the agreement of the competent authority, authorise a member of the teaching staff to temporarily take care of the examination business.

Section 6

Competent Examination Committee

The students shall sit the stages of the Preliminary Veterinary Examination and the Veterinary Examination before the competent examination committee at the university at which they are enrolled on the Veterinary Medicine course at the time they registered for the examination or were most recently enrolled. Resit examinations shall be sat before the examination committee where the examination was failed.

Section 7 Registration for the Examination

(1) For the examinations of the Preliminary Veterinary Examination in accordance with sections 19 and 22, and prior to the examinations of the Veterinary Examination in accordance with section 29, an application for approval shall be made to the Chairman of the examination committee. The following shall be enclosed with the application:

1. personal identification,

2. proof of entitlement to study at a university, in the case of certificates acquired outside the area of application of this Ordinance, also the recognition decision of the competent authority, as well as

3. the required proof of training in accordance with Sections 20, 23 and 31.

The proof under sentence 2 Nos. 1 and 2 shall only be enclosed prior to the first examination at a university.

(2) The proof shall be submitted as originals or as officially certified copies. It may be submitted in another form insofar as this is recognised in the individual case by the Chairman of the examination committee as being equivalent. The proof shall be placed in the examination files until completion of the relevant stage of the examination and then returned.

Section 8 Admission to the Examination

(1) The Chairman shall decide on admission to the examinations on behalf of the examination committee.

(2) Admission shall be refused if the student cannot furnish the required proof or may not resit an examination in accordance with Section 17 (1) sentence 3.

(3) After admission to the examination, the examinations shall be sat within the deadlines set by the university.

Section 9 Sitting the Examination

(1) The examinations shall be held by the members of the examination committee appointed or commissioned for the examination subjects concerned. They may also be held by several examiners.

(2) The Chairman or his deputy may participate in the examinations and set examination questions.

(3) The competent authority may send observers to the oral examinations. After prior registration, the Chairman of the examination committee shall allow up to five students of veterinary medicine who have already been admitted to the same examination or who are in the stage of training prior to the examination concerned, as well as one representative of the competent Chamber of Veterinary Surgeons, to be present at the examination, with the exception of the deliberations and the announcement of the examination results, provided that none of the candidates objects.

Section 10 Form of the Examination

(1) The examination may be conducted in writing, orally, by solving questions set in writing whereby it is to be stated which of the answers proposed with the questions are considered to be correct (multiple choice) or in a combination of these forms of examinations. The university may also derive the examination mark from continuous assessment; the provision of proof about regular and successful participation in the seminars and exercises shall remain unaffected. In individual examination subjects, the examination can be taken in several part examinations.

(2) No more than five students shall be examined together in the oral examination.

(3) If students can demonstrate with a medical certificate that they cannot sit the examination fully or partially in the intended form due to a physical disability, the Chairman shall allow equivalent examination achievements to be demonstrated by different means.

(4) The university shall define the form of the examination for the respective examination subject in accordance with (1), as well as the respectively necessary deviations from Sections 9, 11, 12 and 14, in a supplementary Code of Examination Regulations (Section 16 of the Framework Act on Higher Education).

Section 11 Examination Date

(1) The examinations shall be carried out soon after the lessons. They should be held in the periods free of lectures; they should as a rule be completed by the start of the next period of lectures, with the exception of resits. The Chairman shall set the examination dates in agreement with the examiners involved. The examinations shall be set in such a way that the standard study period pursuant to Section 1 (2) sentence 2 is not exceeded.

(2) The time in which no compulsory courses or placements are to be attended by the students concerned shall be regarded as periods free of lectures.

Section 12 Invitation to Sit the Examination, Failure to Attend

(1) The students shall be informed of the examination date at the latest seven days prior to the examination date. The information shall be served.

(2) If, for good reason, students miss an examination date or miss the deadline for handing in a written protocol of findings, they shall be invited to sit a new examination, which shall not be considered a resit, or a new deadline shall be set for them. The reason for the omission shall also be sent to the Chairman in writing without undue delay and its validity shall be demonstrated upon request. In the event of omission due to illness a medical certificate shall also be submitted. The Chairman may demand that the certificate from a health office be submitted. The achievements of the students in the examination concerned shall be deemed to be “inadequate” in the event of failure to attend without good reason.

(3) If the students discontinue an examination or withdraw from it, (2) above shall apply mutatis mutandis.

(4) Students who have not registered for an examination without good reason at the latest one academic year after the earliest possible date for them or six months before the last possible date for them shall be invited to attend mandatory student counselling ex officio by the Chairman of the examination committee.

Section 13 Objective of the Examination

(1) The examination shall determine whether the students have acquired the knowledge and skills that they need to continue their studies and to perform the veterinary profession. The examination shall also cover whether the students understand how to theoretically and practically apply the basic knowledge they have proved in previous stages of the examination and whether they master the common specialist terminology.

(2) If a patient or another examination object upon which the students are to be examined is not available, the examiner shall decide how the examination shall be conducted properly, where appropriate on a dummy or a model.

Section 14 Examination Marks

(1) The examiner or a record keeper appointed by the Chairman shall in each case keep a written record of the course of the oral examination in accordance with the model in Annex 2, from which the subject matter of the examination and the assessment of the achievements can be seen. The examiners shall use the following examination marks to assess the examination achievements:

1. "very good" (1) = an outstanding achievement,
2. "good" (2) = an achievement that is considerably above the average requirements,
3. "satisfactory" (3) = an achievement that satisfies the average requirements in every respect,
4. "adequate" (4) = an achievement that still meets the requirements in spite of its shortcomings,
5. "inadequate" (5) = an achievement that no longer meets the requirements due to considerable shortcomings.

On proviso of Section 15, the examination mark "inadequate" may be awarded in an oral examination only if the students have been examined for at least 20 minutes; it shall be briefly justified in the written record.

(2) The university shall define a binding evaluation framework prior to the examination for examinations which are carried out by solving questions set in writing whereby it is to be stated which of the answers proposed with the questions are considered to be correct (multiple choice).

(3) The result of the examination shall be announced to the students after completion of the examination in each examination subject.

Section 15 Irregularities

If students disrupt the orderly course of the examination, or if they attempt to perpetrate deception, the examiner may interrupt the examination of these students. The Chairman, in agreement with the examiners concerned, may declare the achievements of these students in the examination concerned to be "inadequate" or, in particularly serious cases, declare the stage of the examination to have been failed.

Section 16 Results of the Examination

(1) The Chairman shall specify the results of the examination and award the certificates in accordance with Annexes 3 to 5. The certificates shall contain a list of the examination marks for the examination subjects as well as the overall results after the Preliminary Veterinary Examination and the Veterinary Examination have been passed. Examinations credited in accordance with Section 65 shall be identified separately on the certificates.

(2) An examination subject shall be deemed to have been passed if the students have received at least the examination mark “adequate”.

(3) A stage of the Preliminary Veterinary Examination or the Veterinary Examination shall be deemed to have been passed if the students have passed all of the examination subjects in the stage concerned.

(4) The overall results of the Preliminary Veterinary Examination and of the Veterinary Examination shall each be made up of the average of the examination marks received for the examination subjects in the relevant stages. The average mark shall be calculated to two decimal places, the third decimal place not being taken into account. The overall mark shall be

1. “very good” for a numerical value of up to 1.49
2. “good” for a numerical value of 1.50 to 2.49
3. “satisfactory” for a numerical value of 2.50 to 3.49
4. “adequate” for a numerical value of 3.50 to 4.00.

(5) A certificate following the model of Annex 4 shall be drawn up to confirm that the Preliminary Veterinary Examination has been passed and a certificate following the model of Annex 5 shall be drawn up to confirm that the Veterinary Examination has been passed, each of which shall contain the numerical value in brackets adjacent to the overall result. If students have not passed the Preliminary Veterinary Examination or the Veterinary Examination, an overall mark shall not be calculated; if examinations have been credited in accordance with Section 65, an overall mark shall not be calculated unless the Chairman of the examination committee ascertains that the other examination marks obtained would permit a meaningful overall mark to be determined.

Section 17 Resitting the Examination

(1) Students may resit the examination twice in examination subjects that they have not passed. Section 20 (2) shall remain unaffected. If an examination subject is not passed when it has been resat twice, the Chairman shall declare that the examination has definitively not been passed. Another resit, even after studying veterinary medicine again, shall not be possible. The Chairman shall inform the other universities, as well as the authorities responsible for crediting students’ achievements, thereof.

(2) A resit examination may be conducted at the earliest three weeks after the failed examination.

(3) Apart from the examiner, the chairperson or a member of the committee designated by him/her shall attend oral examinations at the second resit; they may also ask examination questions. With written examinations, the work of the second resit is to be evaluated, apart from by the examiner, by the chairperson or a member of the committee designated by him/her. At the request of the student, sentences 1 and 2 shall also apply mutatis mutandis to the first resit in accordance with the supplementary Code of Examination Regulations.

Section 18 Notification of the Examination Results

After completion of the Veterinary Examination, the Chairman shall notify the competent authority of the names of the students and the examination results.

Sub Chapter 2

Scientific Stage of the Preliminary Veterinary Examination (Preliminary Physics)

Section 19 Examination Subjects

Preliminary Physics shall comprise the following examination subjects

1. Physics, including the fundamentals of Health Physics,

2. Chemistry,

3. Zoology, and

4. Botany, including Nutritional Science, Toxicology and Herbalism. The examinations shall be sat by the end of the first year of studies.

Section 20 Proof

(1) The following proof shall be necessary for admission to the examinations

1. certification of regular, successful attendance at the seminars or exercises in the subjects set by the university for the examination subject in

a) Physics, including the fundamentals of Health Physics,

b) Chemistry,

c) Zoology, and

d) Botany, including Nutritional Science, Toxicology and Herbalism;

2. certification of regular, successful attendance at a course of medical terminology conducted by the university or recognised as equivalent by the Chairman of the examination committee; this proof may be replaced if a knowledge of Latin or Greek in accordance with the Decision of the Conference of Education Ministers of 26 October 1979 (Joint Ministerial Gazette 1980 p. 642) can be demonstrated.

(2) The university may offer students the opportunity to prove in an oral examination within the first month of starting the first semester of studies that they have sufficient knowledge of the subjects designated in (1) no. (1) (a) to (d) above. Proof of sufficient knowledge in accordance with Section 21 in one or more of these subjects shall be deemed as a passed examination within the meaning of Section 19 and as proof within the meaning of (1) above. If the examination is not passed in one or more subjects in accordance with sentence 1, the examination shall be deemed not to have been passed.

Section 21 Contents of the Examination

The examinations in the examination subjects of Physics, including the fundamentals of Health Physics, Chemistry, Zoology and Botany including Nutritional Science, Toxicology and Herbalism, shall cover the main basic knowledge required to understand natural processes and to subsequently apply them in veterinary medicine.

Sub-Chapter 3

Anatomical-Physiological Stage of the Preliminary Veterinary Examination (Physics)

Section 22 Examination Subjects

Physics shall comprise the following examination subjects

1. Anatomy,

2. Histology and Embryology,

3. Physiology,

4. Biochemistry, and

5. Animal Breeding and Genetics including Livestock Judging.

The examinations should be taken by the end of the second year of studies.

Section 23 Proof

(1) The following proof shall be necessary for admission to the examinations

1. certification of having passed Preliminary Physics no longer than one and a half academic years earlier,

2. certification of having regularly and successfully attended seminars and exercises in subjects set by the university for the respective examination subject in

a) Anatomy,

b) Histology,

c) Embryology,

d) Physiology,

e) Biochemistry, and

f) Animal Breeding and Genetics, including Livestock Judging

3. certification from the university of having attended a 70-hour exercise in two consecutive weeks on Agriculture, Animal Breeding and Animal Husbandry on a teaching farm and

4. certification from the university of having regularly and successfully attended at least 84 hours of optional teaching events in subjects in accordance with no. 2.

(2) The requirements of (1) no. 3 shall be deemed to have been met if an agricultural course with assistants' examination, a four-week agricultural placement on a recognised teaching farm or another comparable course recognised by the university has been completed.

Section 24 Anatomy

In the examination subject of Anatomy, the students shall completely or partially explain the contents of a bodily cavity, where necessary shall also remove it and each prepare a subject on the locomotor system and the organs or organ systems on the basis of existing preparations or preparations to be made up.

Section 25 Histology and Embryology

In the examination subject of Histology and Embryology, the students shall demonstrate their knowledge of cell theory, histology and organology on the microscopic-anatomical preparation as well as in general and specific development theory.

Section 26 Physiology

In the examination subject of Physiology, the students shall solve or evaluate an exercise problem from the field of Physiology and explain it and demonstrate their knowledge of the physiological foundations of living processes and the normal functional course of individual organ systems and their regulation in the organism as a whole. Nutritional physiology shall be considered.

Section 27 Biochemistry

In the examination subject of Biochemistry, the students shall solve or evaluate an exercise problem and explain it and demonstrate their knowledge of the biochemical and molecular-biological foundations of living processes and their management. The particularities of the intermediary metabolism among pet animals and production animals, as well as the biochemistry of nutrition, shall be considered.

Section 28 Animal Breeding and Genetics including Livestock Judging

In the examination subject of Animal Breeding and Genetics, the students shall assess an animal in terms of its commercial or breeding value and prove that they have acquired sufficient knowledge of genetics and in breeding domestic animals.

Sub Chapter 4 Veterinary Examination

Section 29 Examination Subjects

The Veterinary Examination shall comprise the examination subjects

1. Animal Husbandry and Animal Hygiene,
2. Animal Welfare and Ethnology,
3. Animal Nutrition,
4. Clinical Propaedeutics,
5. Virology
5. Bacteriology and Mycology,
7. Parasitology,
8. Control of Animal Epidemics and Infection Epidemiology
9. Pharmacology and Toxicology,
10. Law on Pharmaceuticals and Narcotics,
11. Poultry Diseases,
12. Radiology,
13. Pathology and Histopathology,
14. Food Science including Food Hygiene,
15. Meat Hygiene,
16. Milk Science,
17. Reproductive Medicine,
18. Internal Medicine,
19. Surgery and Anaesthesiology, and
20. Forensic Veterinary Medicine, Law Governing Professional Matters and Professional Conduct.

Section 30 Special regulations for the final examinations

The examinations in the subjects Pathology and Histopathology, Food Hygiene, Meat Hygiene, Milk Hygiene, Internal Medicine, Surgery and Anaesthesiology, Reproductive Medicine, as well as Forensic Veterinary Medicine, Law Governing Professional Matters and Professional Conduct, may not be completed prior to the end of the eighth semester.

Section 31 Proof

(1) The following proof shall be necessary for admission to the examinations

1. certificate relating to the Preliminary Veterinary Examination,

2. certification of having regularly and successfully attended the seminars or exercises set by the university for the respective examination subject of the Veterinary Examination,

3. certification of having attended a practical component of studies necessary for the respective examination subject in accordance with Sections 54 to 62 or another comparable substitute training acknowledged by the university.

(2) Furthermore, the following proof must be provided prior to conclusion of the examinations in accordance with Section 30:

1. certification of having regularly and successfully attended the courses in Biometry, Nutritional Science, Immunology,

2. certification of having studied veterinary medicine for a total of at least five-and-half study years, of which at least three study years after having passed the Preliminary Veterinary Examination, and

3. certification of having regularly and successfully attended for at least 224 hours optional courses, hours from optional courses in accordance with Section 23 (1) no. 4 not being taken into account.

Sub-Chapter 5

Contents of the teaching and study subjects

http://bundesrecht.juris.de/tappv/index.html - BJNR182700006BJNE003300000

Section 32 Animal Husbandry and Animal Hygiene

The examination in the subject of Animal Husbandry and Animal Hygiene shall cover the keeping and care of pet animals and production animals and the importance of environmental influences on the health and performance of the animals as well as the impacts of keeping animals on the environment. In the case of animals that are used to obtain food, the impact of keeping them on the quality of the foodstuffs obtained shall be taken into account.

http://bundesrecht.juris.de/tappv/index.html - BJNR182700006BJNE003400000

Section 33 Animal Welfare and Ethnology

In the examination subject Animal Welfare and Ethnology, students shall prove their knowledge of housing and care of animals that is species-specific and appropriate to their behaviour, as well as of the protection of the animals in animal trade, in animal transport, in slaughtering or killing and in animal testing, as well as their knowledge of animal welfare regulations with their ethical and scientific foundations, and in ethnology.

http://bundesrecht.juris.de/tappv/index.html - BJNR182700006BJNE003500000

Section 34 Animal Nutrition

The examination in the subject of Animal Nutrition shall cover nutrition, taking special account of the pathogenesis of illnesses caused by nutrition, a reduction in fertility and performance, the environmentally relevant effects of nutrition, including the possible introduction of unwanted substances into foodstuffs of animal origin and the foundations of dietetics, taking special account of nutritional science as well as the provisions of fodder legislation that are important in the veterinary field. http://bundesrecht.juris.de/tappv/index.html - BJNR182700006BJNE003600000

Section 35 Clinical Propaedeutics

In the examination subject Clinical Propadeutics, the students shall examine an animal and prove that they have familiarised themselves with the basics of the clinical examination methods.

Section 36 Virology

In the examination subject of Virology, the students shall demonstrate their knowledge of the important types of virus in veterinary medicine, aetiology, the course, diagnosis, prevention and treatment of the illnesses they cause in animals as well as their importance to human health. Questions of immunology, epidemiology and epizoology shall be taken into account in this connection.

Section 37 Bacteriology and Mycology

In the examination subject of Bacteriology and Mycology, the students shall prepare a microbiological preparation, examine it, explain it and demonstrate their knowledge of the important types of bacteria and fungi in veterinary medicine, aetiology, the course, diagnosis, prevention and treatment of the illnesses they cause in animals as well as their importance to human health. In this connection, questions of immunology, epidemiology and epizoology shall be taken into account.

Section 38 Parasitology

In the examination subject of Parasitology, the students shall prepare a parasitological preparation, examine it, explain it and demonstrate their knowledge of the biology of animal parasites and the identification, course, treatment and prevention of parasitic illnesses as well as the importance of animal parasites to human health. In this connection, questions of immunology, epidemiology and epizoology shall be taken into account.

Section 39 Control of Animal Epidemics and Infection Epidemiology

In the examination subject Control of Animal Epidemics and Infection Epidemiology, students shall prove their knowledge of the general principles of the causes, spread, combating and economic impact of animal epidemics, including their prophylaxis, fundamentals of infection epidemiology, the law on animal epidemics, and the regulations on processing animal offal. http://bundesrecht.juris.de/tappv/index.html - BJNR182700006BJNE004100000

Section 40 Pharmacology and Toxicology

The examination in the examination subject of Pharmacology and Toxicology shall above all cover the effects and interactions of pharmaceuticals and other active agents in the healthy and diseased organism, a basic knowledge of the therapeutic use of these substances and the associated risks for animals and humans, as well as Pharmacokinetics, particularly taking into account species-specific biotransformation and the excretion of such substances through an animal's body. The corresponding impact and characteristics of poisons and environmental contaminants in the healthy or diseased organism, as well as the therapy of acute and chronic poisoning, shall also be covered.

Section 41 Law on Pharmaceuticals and Narcotics

In the examination subject of Law on Pharmaceuticals and Narcotics, students shall prove that they can select and prescribe suitable pharmaceuticals based on at least three symptoms, as well as that they have knowledge of the principles of determining maximum residual amounts and on the derivation of waiting periods. Further, they shall prepare two pharmaceuticals in accordance with a prescription and prepare an invoice in accordance with the provisions applicable to pharmaceuticals prices. Over and above this, students shall prove their knowledge of the relevant legal provisions regarding the sale of pharmaceuticals and narcotics, as well as of the provisions and measures to avoid residuals in animal-origin food.

Section 42 Poultry Diseases

In the examination subject of Poultry Diseases, the students shall demonstrate their knowledge of the aetiology, pathogenesis, diagnostics, prophylactics and treatment of diseases of commercial poultry, wild, fancy and zoo birds, taking special account of keeping and feeding with regard to the origin and treatment of diseases.

Section 43 Radiology

(1) The examination in the examination subject of Radiology shall cover

1. the characteristics and impact of ionising rays,
2. the fundamentals of radiobiology,
3. the impact of ionising radiation on people, animals, food, fodder and the environment,

4. methods to prove the impact of radiation and to ascertain doses among employees and persons looking after animals,

5. methods of proving contamination with radioactive substances,

6. physical-technical principles and principles of the application of imaging diagnostic procedures, including the presentation of alternatives to the application of ionising radiation,

7. fundamentals of radiotherapy, as well as

8. the statutory, practical and technical radiological protection of employees and persons looking after animals (content of examinations from nos. 4 to 8 of the Basic Course in Radiological Protection acc. to Annex 1 of the Guideline on Radiological Protection in Veterinary Medicine (Richtlinie Strahlenschutz in der Tierheilkunde); Joint Ministerial Gazette (Gemeinsames Ministerialblatt – GMBl) 2005 p. 666).

(2) The examination successfully passed in accordance with (1) shall be recognised as a Basic Course in Radiological Protection acc. to Annex 1 of the Guideline on Radiological Protection in Veterinary Medicine if the competent agency has previously found that the prerequisites (contents of the teaching from Annex 1 of the Guideline on Radiological Protection in Veterinary Medicine) have been met.

(3) The acquisition of the expertise for the field of X-ray diagnostics cannot be commenced until after the examination has been successfully taken in the examination subject of Radiology during clinical training, and shall be orientated in line with the requirements of the Guideline on Radiological Protection in Veterinary Medicine.

Section 44 Pathology and Histopathology

In the examination subject of Pathology and Histopathology, the students shall demonstrate that they have acquired basic knowledge of the origins and course, the characteristics and the identification of pathological processes. Furthermore, they shall identify and explain pathological-histological preparations, carry out an autopsy on an animal cadaver or examine one organ or several organs, explain the findings and then write them down as well as demonstrate their knowledge of identifiable pathological processes and their pathogenesis.

Section 45 Food Science including Food Hygiene

In the examination subject Food Science including Food Hygiene, students shall examine animal-origin food, with the exception of milk or dairy products, evaluate its characteristics, composition and marketability and note the findings. They shall prove their knowledge of their significance for the food of humans, on production, technology of the manufacture and treatment, as well as on their microbiological, chemical and other qualities. In particular, aspects of quality that are relevant to hygiene and health shall be taken into account in doing so. Furthermore, they shall prove knowledge of the influences exerted on food safety and quality at all levels of the food chain and the animals used for production, food, including the measures for quality assurance, evaluation of residues and of the relevant provisions of the law on food. Over and above this, students shall prove that they can categorise the potential causes of errors and faults, the hazards and the possible risks which can occur at all stages of the food chain, in the context of a risk analysis in accordance with scientific principles and take suitable control and correction measures.

Section 46 Meat hygiene

In the examination subject Meat Hygiene, students shall examine an animal for slaughter in the living state and an animal for slaughter in the slaughtered state or parts of a slaughtered animal or culled furred game in accordance with the valid legal provisions, shall make a statement regarding the suitability of the meat for human consumption and record findings and evaluations. They shall further prove their knowledge of the hygienic production and treatment of the meat, the knowledge underlying examination of the animal for slaughter and meat and of the specific legal foundations of meat hygiene, as well as the

fundamentals of theory on the operation of abattoirs. To a particular degree, they shall prove their knowledge as regards the principles, concepts and methods of good manufacturing practice, of quality management, of risk analysis on a scientific basis and of a system of critical control points (HACCP procedure; Hazard Analysis Critical Control Point) and shall use case examples to examine and evaluate them. The prevention and containment of food-related risks to human health, as well as methods of epidemiology and monitoring and surveillance systems, shall be explored here.

Section 47 Milk Science

In the examination subject of Milk Science, the students shall examine and assess a milk sample (freshly milked sample, untreated milk sample or treated milk sample) or a dairy product and complete a written examination report. Furthermore, they shall demonstrate their knowledge of the physiology and pathology of milk formation, the hygiene and technology of milking and milk processing as well as of their health-hygiene and especially their microbiological and qualitative influence on the production, processing and marketing of milk and dairy products, including measures for quality assurance, as well as of the relevant legal provisions.

Section 48 Reproduction Medicine

In the examination subject of Reproduction Medicine, students shall examine an animal for sexual health or a domestic animal of newborn age, shall make a diagnosis including physical and laboratory diagnostic examination methods, shall evaluate the anticipated course of treatment, shall draw up and explain a therapeutic plan, shall where appropriate initiate or implement treatment and shall draw up a written record of the findings. They shall furthermore prove their knowledge of gynaecology, including the illnesses of the mammary gland, obstetrics including neonatology and obstetric operations, normal reproduction and its disturbances among male domestic animals, as well as reproductive hygiene, artificial insemination and other biotechnical measures, including herd husbandry.

Section 49 Internal Medicine

In the examination subject of Internal Medicine the students shall examine an animal suffering from an internal disease or a skin disease or several such animals, shall make a diagnosis involving physical and laboratory diagnostic investigative methods, shall assess the probable course of the disease, shall draw up and explain a treatment plan, shall where appropriate start or administer the treatment, and shall draw up a written findings record about an examined animal. Furthermore, they shall demonstrate their knowledge of the theory of internal diseases and skin diseases of animals, taking account of general and special therapy as well as herd care.

Section 50 Surgery and Anaesthesiology

In the examination subject of Surgery and Anaesthesiology, students shall examine an animal to be treated surgically or several such animals, shall make a diagnosis, where appropriate including physical and laboratory diagnostic examination methods, shall evaluate the anticipated course of the disease, shall draw up and explain a therapeutic plan, shall where appropriate initiate or implement treatment and shall draw up a written record of the findings with regard to one of the animals to be examined. They shall carry out an operation or several operations on living or dead animals, including the necessary anaesthesiological activity. They shall furthermore prove their knowledge of surgery and anaesthesiology, as well as in particular of eye diseases, dentistry, hoof and claw diseases and hoof and horseshoe theory.

Section 51 Forensic veterinary medicine, law governing professional matters and professional conduct

In the examination subject of Forensic Veterinary Medicine, the Law Governing Professional Matters and Professional Conduct, students shall prove their knowledge of the law of obligations and of its impact on the purchase of animals and the pre-purchase veterinary examination of horses and knowledge regarding veterinary surgeons' duties of care and the law on liability. Furthermore, they shall demonstrate their

knowledge of the provisions of the law on liability and of criminal law that are important for exercising the profession of veterinary surgeon, as well as of the organisation and history of the veterinary profession and of the law governing professional matters and professional conduct regarding veterinaries, including the legal particularities of running a surgery.

Section 52 Special clinics for specific types of animal

(1) Solidungulents, ruminants, pigs, as well as small and domestic animals, shall be considered in the examinations in accordance with Sections 48, 49 and 50.

(2) At universities that have established special clinics for specific types of animal, the examinations may be distributed in accordance with the decision of the examination committee in line with the available clinics.

Section 53 Interdisciplinary Subject

In the interdisciplinary subject, on the basis of the knowledge acquired during the previous studies and those continued in parallel, students shall be familiarised with contents and tasks in the clinical treatment of domestic animals and livestock which are of practical relevance. Here, in particular contents of internal medicine, reproductive medicine, livestock management and surgery shall be portrayed with the participation of pathological anatomy, clinical pharmacology, animal feeding, animal breeding, animal husbandry, law governing professional matters of veterinaries, animal welfare and ethnology, topographical anatomy, epidemiology, infectious diseases and control of animal epidemics in an interdisciplinary manner. Students should be afforded the opportunity to identify and process the development, diagnosis and therapy of diseases using concrete individual cases. Here, the contents of the teaching of clinical veterinary medicine and of other subjects are to be taken into consideration, particularly focussing on the impact of the application of ionising radiation or of radioactive substances, the residue problems and environmental contaminants as well as food, meat and milk hygiene, in particular in the fields of risk evaluation, quality assurance and marketability of the food obtained from animals at all levels of food production at interdisciplinary level. The potential impact of the diseases of animals and the consequences of their therapy on human health and on the environment are also to be taken into consideration.

CHAPTER 3

THE PRACTICAL COMPONENT OF STUDIES

http://bundesrecht.juris.de/tappv/BJNR182700006.html

http://bundesrecht.juris.de/tappv/index.html - BJNR182700006BJNE005500000

Section 54 Training Places

The training in accordance with this chapter shall be completed on all weekdays in the respective facilities outside the lecture periods, and as a rule shall be performed on a full-time basis to a suitable degree in line with the workload. The time of the working off shall be determined by the university.

Sub-chapter 1

The training of control activities, methods and techniques for the field of food, including the examination of fresh meat

Section 55 Training Places, Duration

(1) Training in control activities, methods and techniques for the field of food, including the examination of fresh meat, shall last for 75 hours in at least two weeks, which are to be consecutive. It shall be effected with an authority which is competent for hygiene control in slaughterhouses or food establishments or in

units responsible for monitoring the handling of food or food inspection, in facilities of the food industry which monitor the quality and unobjectionability of food, or in relevant university facilities.

(2) The practical training in examining animals for slaughter and meat at an authority responsible for examining animals for slaughter and meat in an abattoir shall last 100 hours within at least three weeks which are to be consecutive.

(3) Deployment in the context of training in accordance with (2) may only be effected in establishments which have approval and in which full-time official veterinary surgeons work who are responsible for the monitoring activity. If only cattle or only pigs are slaughtered in an establishment, at least 30 hours shall be served in an abattoir with the respectively other type of animal during the training time in accordance with (2).

http://bundesrecht.juris.de/tappv/BJNR182700006.html

Section 56 Contents of the Course

(1) During the training in accordance with Section 55 (1), the students shall familiarise themselves under the close supervision of full-time veterinary surgeons working at the facility responsible for the control activities, control of foodstuffs in the establishments or at the competent authority or other facility, or other qualified persons, with the assessment of the state of hygiene of the premises and the equipment, as well as the methods to control the hygiene status of the plants and shall practice evaluating the treatment and processing technology. The training shall also encompass the control activities, methods and techniques for the food domain. Further, in line with the spectrum of tasks of the authority or of another facility, students are to practice and be given extensive skills in the control of various foodstuffs, to independently carry out an evaluation of the marketability or the industrial hygiene of a control subject on a scientific basis. The points of view of food technology and quality assurance should also be taken into account here.

(2) During the training in accordance with Section 55 (2), under the close supervision of full-time veterinary surgeons working at the authority responsible for the examination of animals for slaughter and meat, students shall practice the examination and assessment of the animal for slaughter and of the meat of various types of animal. Over and above this, students shall learn about treatment of the animal for slaughter in line with animal welfare.

(3) Students shall receive a certificate of the training in accordance with Annexes 6 and 7 in accordance with Section 55 (1) and (2).

Sub-Chapter 2

Training in the Therapeutic Practice of a Veterinary Surgeon or in an Animal Hospital

Section 57 Training Places, Duration

(1) The First Stage of training, which may be completed in the therapeutic practice of a veterinary surgeon or in an animal hospital or equally divided between the two facilities, shall last for 150 hours in at least four weeks, which are to be consecutive. It shall not be completed prior to passing the Preliminary Veterinary Examination.

(2) The Second Stage of training, which may be completed in the therapeutic practice of a veterinary surgeon or in an animal hospital or in a combination of no more than four such facilities, shall last for 700 hours notwithstanding Section 60, and shall be completed in at least 16 weeks, which are to be consecutive, in accordance with the Rules for Study of the University.

(3) The acquisition of the certificate of regular, successful attendance at the courses specified for the examination subject of Radiology shall be a prerequisite for the commencement of training in accordance with (2).

Section 58 Training in the Therapeutic Practice of a Veterinary Surgeon

(1) The training in the therapeutic practice of a veterinary surgeon may be completed only with veterinary surgeons who

1. have been independently running a practice for at least two years,
2. run an in-house veterinary pharmacy, and
3. have not been punished by a professional tribunal in the two years immediately preceding the training.

(2) During the practical training in accordance with Section 57, the students shall inform themselves under the supervision, guidance and responsibility of the owner of the practice in all areas of the veterinary activities concerned.

(3) The students shall receive certificates in accordance with Annexes 8 and 9 for the training.

Section 59 Training in an Animal Hospital

(1) Training shall be completed in a university's hospitals. It may also be completed in other hospitals under veterinary management that have recognition as an animal hospital from the competent Chamber of Veterinary Surgeons.

(2) During the training in accordance with subsection (1) the students shall inform themselves under the supervision, guidance and responsibility of the hospital management in the field of the animal hospital concerned. In this connection they shall adhere to the theoretical-scientific treatment of the fields of knowledge affected by the practical training.

(3) The students shall receive certificates in accordance with Annex 10 for the training.

Sub-Chapter 3 Elective Placement

Section 60 Training Places, Duration

Part of the placement in accordance with Section 57 (2) of a minimum of 75 hours in two weeks and a maximum of 350 hours in eight weeks may be completed

1) in an institute of a university with a scientific-medical discipline,
2) in a Federal State research institute with a scientific-medical purpose,
3) in a veterinary examination institute,
4) in an office of the veterinary administration,
5) at a state or state-sponsored animal health service, in an animal health office or in an insemination station,
6) in the pharmaceutical industry in the development, manufacture and testing of drugs, in the food industry in the manufacture and testing of foods of animal origin or in the fodder industry in the manufacture and testing of mixed fodder, or
7) in scientifically managed zoological gardens.

The students shall receive certificates in accordance with Annex 11 for the training.

Sub-Chapter 4

Practical Training in the Public Veterinary Service

Section 61 Training Places, Duration

The practical training in the public veterinary service shall last for 75 hours in at least two weeks, which are to be consecutive. It shall take place in offices of the veterinary administration.

Section 62 Contents of the Course

(1) The practical training in the public veterinary service in accordance with Section 61 shall give the students the opportunity to deepen and broaden their knowledge and skills. The students shall comprehensively practise the tasks of the veterinary administration. Furthermore, they are to obtain knowledge of administrative and regulatory law, as well as of organisation and administration.

(2) The students shall receive a certificate in accordance with Annex 12 for the successfully completed training.

CHAPTER 4 CERTIFICATION

Section 63 Application for Certification

(1) The application for certification as a veterinary surgeon shall be addressed to the competent authority in the federal state in which the applicant has passed the Veterinary Examination. The following shall be enclosed with the application:

1. the identity card or the passport of the applicant,

2. a declaration as to whether criminal court proceedings or investigations by the public prosecutor are pending over the applicant,

3. a medical certificate, which may not be more than one month old, according to which the applicant is not unsuitable for practising the profession for health reasons, and

4. a birth certificate or an excerpt from the family book of the parents, or in the case of married persons also the wedding certificate or an excerpt from the family book kept for the marriage, and

5. an official police clearance certificate, which may not have been issued more than one month prior to submission,

6. the certificate of the Veterinary Examination.

If an applicant who is not a national of one of the other Member States of the European Union or of another party to the Treaty on the European Economic Area or of a contracting party to which Germany and the European Community or Germany and the European Union have contractually granted such a legal right has been registered with the police in Germany for less than two years, he or she shall also enclose with his or her application a certificate in accordance with (3) sentence 1 or, if a certificate of this kind cannot be provided, a declaration that reveals whether he or she has a criminal record in the state where he or she was previously resident, whether criminal court proceedings or investigations by the public prosecutor are pending on him or her there or whether he or she has been prohibited from practising the veterinary profession there due to disciplinary or administrative measures.

(2) If certification is to be issued in accordance with Section 4 (1), (1a), (2) or (3) or in accordance with Section 15a of the Federal Veterinary Code, the application shall be addressed to the competent authority in the Land where the veterinary profession is to be practised. If the training has not taken place in accordance with the provisions of this Ordinance, the proof in accordance with Section 4

(6) sentence 1 Nos. 2, 5 and 7 of the Federal Veterinary Code shall be submitted instead of the certificate in accordance with (1) sentence 6 no. 6. The competent authority shall confirm the receipt of the documents to the applicant within one month, and shall inform him or her which documents are missing. If the proof has not been issued in German, a certified translation thereof shall also be submitted. The

competent authority may demand the submission of further proof, in particular proof of previous professional activity. In the case of applicants who submit proof in accordance with Section 4 (1a) sentence 1 of the Federal Veterinary Code as nationals of a Member State of the European Union or of another party to the Treaty on the European Economic Area or of a contracting party to which Germany and the European Community or Germany and the European Union have contractually granted such a legal right, further proof, particularly proof of professional activity, may be requested only if the Federal Veterinary Code so provides or this appears to be necessary for particular reasons. In cases falling under sentence 2, the proof demanded in (1) no. 4 cannot be demanded from the applicant unless proof of training issued in a third state has not yet been recognised in another Member State.

(3) Instead of the certificate cited in (1) sentence 2 no. 5, nationals of one of the other Member States of the European Union or of another party to the Treaty of the European Economic Area or of a contracting party to which Germany and the European Community or Germany and the European Union have contractually granted such a legal right may submit documents in accordance with Section 4 (6) no. 3 of the Federal Veterinary Code. If the applicant has already practised the veterinary profession in his or her Member State of origin, the authority responsible for issuing the certification may request information via the Federal Ministry of Food, Agriculture and Consumer Protection from the competent authority of the Member State of origin, for instance about any punishments or other professional or criminal measures imposed on the applicant due to serious and precisely determined unprofessional conduct or punishable actions concerning the practise of the profession in the Member State of origin. If in cases of sentence 1 or 2 the authority responsible for issuing the certification has knowledge of circumstances that have occurred outside the area of application of the Federal Veterinary Code and that could be important with respect to the requirements of Section 4 (1) no. 2 of the Federal Veterinary Code, it shall inform the competent office in the Member State of origin via the Federal Ministry of Food, Agriculture and Consumer Protection and notify it of the result and the conclusions that it draws from the certificates and proof issued by it. The certificates and notifications cited in sentences 1 to 3 shall be treated in confidence. They may be used as a basis for the assessment only if they have been issued no more than three months prior to submission.

(4) Instead of the medical certificate cited in (1) sentence 2 no. 3, nationals of the other Member States of the European Union or of another party to the Treaty on the European Economic Area or of a contracting party to which Germany and the European Community or Germany and the European Union have contractually granted such a legal right may submit an appropriate certificate from the competent authority in their Member State of origin. (3) sentences 4 and 5 shall apply mutatis mutandis.

(5) A decision shall be made on the application of a national of a Member State of the European Union or of another party to the Treaty on the European Economic Area or of a contracting party to which Germany and the European Community or Germany and the European Union have contractually granted such a legal right, at the latest three months after submission of the documents to be submitted by the applicant in accordance with (1) to (4). Insofar as it is a matter of recognition of proof of training in accordance with Section 4 (1a) sentence 3 or Section 4 (2) sentence 2 no. 3 of the Federal Veterinary Code, four instead of three months shall be available for cases in accordance with sentence 1.

Section 64 Certificate

The certificate shall be issued in accordance with the pattern of Annex 13. It shall be served on the applicant.

CHAPTER 5 SUPPLEMENTARY PROVISIONS

Section 65 Crediting Study Periods and Examinations

(1) In the case of people who are Germans within the meaning of Article 116 of the Basic Law, nationals of one of the other Member States of the European Union or of another party to the Treaty on the European Economic Area or of a contracting party to which Germany and the European Community or Germany and the European Union have contractually granted such a legal right or stateless foreigners within the meaning of the Act on the Legal Status of Stateless Foreigners in Federal Territory, the following shall be fully or partially credited provided that they are equivalent

1. periods spent on a course of related study at a university in Germany,

2. periods spent on a course of study of veterinary medicine or a related course of study at a university abroad.

(2) Subject to the proviso of (1), examinations that have been sat within the context of study in accordance with (1) Nos. 1 and 2 shall be recognised.

(3) The crediting cited in (1) and the recognition cited in (2) may take place for other people.

(4) Study periods shall be credited and examinations recognised upon application.

Section 66 Competent Authority

(1) The decisions in accordance with Section 65 shall be made by the competent authority in the federal state in which the applicant in the area of application of this Ordinance

1. is registered or enrolled to study veterinary medicine, or

2. has submitted an application for registration or enrolment for studies in veterinary medicine.

In the case of sentence 1 no. 2, the application in accordance with Section 65 is to be submitted with the application for registration or enrolment; a decision in accordance with Section 65 shall be linked with the decision on registration or enrolment.

(2) The applicant shall receive a certificate about the decision made. The certificate shall be valid as proof within the meaning of Sections 20, 23 and 31 subject to the proviso of its contents.

Section 67 Exceptions

The university at which the student is enrolled may on request allow exceptions to the provisions

1. of Section 6,

2. of Section 20 (2) sentence 1 with regard to the prescribed period to take the examination,

3. of Section 23 (1) no. 1 that the applicant must have passed Preliminary Physics no more than one and a half academic years earlier for admission to the examination,

4. of Section 31 (2) no. 2 that the applicant must have studied veterinary medicine for at least three academic years after passing the Preliminary Veterinary Examination for admission to the examination,

5. of Section 58 (1) no. 1 with respect to the length of independent running of a practice insofar as this is required to avoid an unintended hardship and the goal of the training is not impaired. Exceptions granted in accordance with sentence 1 Nos. 2 to 5 shall also apply as proof for admission to the subsequent examination stages subject to the proviso of their contents.

Section 68 Transitional Provisions

(1) Students who have registered for the Preliminary Veterinary Examination prior to 1 October 2006 shall take the Preliminary Veterinary Examination in accordance with the Ordinance concerning the Certification of Veterinary Surgeons of 10 November 1999 (Federal Law Gazette Part I p. 2162), most recently amended by Article 3 of the Ordinance of 4 December 2002 (Federal Law Gazette Part I p. 4456).

In the case of the further studies after passing the Preliminary Veterinary Examination the present Ordinance shall be applied.

(2) Students who have passed the Preliminary Veterinary Examination after 1 October 2006 but have not yet been admitted to the Veterinary Examination shall be trained and examined in accordance with this Ordinance.

(3) For students who have passed one stage of the Veterinary Examination before 1 October 2006 in accordance with the Ordinance concerning the Certification of Veterinary Surgeons of 10 November 1999 (Federal Law Gazette Part I p. 2162), most recently amended by Article 3 of the Ordinance of 4 December 2002 (Federal Law Gazette Part I p. 4456), the Ordinance concerning the Certification of Veterinary Surgeons of 10 November 1999 (Federal Law Gazette Part I p. 2162), most recently amended by Article 3 of the Ordinance of 4 December 2002 (Federal Law Gazette Part I p. 4456) shall also be applicable to the further studies.

(4) For students at universities which have not adapted their Code of Studies and Examination Regulations to this Ordinance by 1 October 2006, (1) to (3) shall apply on proviso that 1 October 2007 shall replace 1 October 2006.

Section 69

Entry into force, cessation of validity

(1) The present Ordinance shall enter into force on 1 October 2006. http://bundesrecht.juris.de/tappv/index.html - BJNR182700006BJNE007100000

Final formula

The Bundesrat has consented.

Annex 1 (re. Section 2 (1), (2) and (3)) Subject areas and total number of hours*)

(source of the original text: Federal Law Gazette Part I 2006, 1841-1842)

1. Physics, including fundamentals of Radiophysics 56 hours
2. Chemistry 126 hours
3. Zoology 70 hours
4. Botany, including Nutritional Science, Toxicology and Herbalism 70 hours
5. Biometry 28 hours
6. Professional knowledge 42 hours
7. Anatomy 224 hours
8. Histology and Embryology 98 hours

27. Interdisciplinary subject 196 hours

9. Agriculture 28 hours
10. Animal Husbandry and Animal Hygiene 56 hours
11. GeneralRadiology and Clinical Radiology 42 hours
12. Physiology, Biochemistry 280 hours
13. Animal Breeding and Genetics 84 hours
14. Clinical Propaedeutics 98 hours

15. Animal Welfare and ethnology 84 hours
16. Laboratory Animal Science 14 hours
17. Animal Nutrition and Nutritional Science 98 hours
18. Forensic Veterinary Medicine, Veterinary Professional Law 28 hours
19. Poultry Diseases 28 hours
20. Pharmacology and Toxicology, including Clinical Pharmacology, Drug and Anaesthesia Law, Prescription and Drug Preparation Theory, Assessing Risks 126 hours
21. Bacteriology, Mycology, Virology, Parasitology, Immunology, Control of Animal Epidemics,

Epidemiology 266 hours

22. Diseases in Reptiles, Amphibians, Fish and Honey Bees 28 hours
23. Pathology and Histopathology including autopsies 182 hours
24. Internal Medicine including Laboratory Diagnostics, Dietetics, Reproductive Medicine including Obstetric and UdderDiseases, Surgery and Anaesthesiology, Ophthalmic Diseases, Dentistry, Hoof and Claw Diseases Livestock Management and Ambulatory Care 420 hours
25. Food Science, including Food Hygiene, Technology and Quality Assurance, Food-Toxicology, Residue Evaluation, Food Law and Inspection of Foods; Milk Science including Technology and Quality Quality Assurance, Microbiology of Milk and Milk Inspections; Meat and Poultry Hygiene including Technology and Quality Assurance 252 hours
26. Clinical Training in subjects no. 18, 22 and 24 518 hours
28. Exercises in Agriculture, Animal Breeding and Animal Husbandry 70 hours
29. Practical Training in a Veterinary Practice or a Veterinary Hospital 850 hours
30. Practical Training in Hygiene Control and Control of Foodstuffs and in the Inspection of animals for Slaughter and Meat 175 hours
31. Practical Training in the Public Veterinary Service 75 hours
32. Optional Courses 308 hours

Sum 5,020 hours

*) The names of the courses and any merging of various subject areas into combined courses shall not be affected by this Annex.

Annex 2 (re Section 14 (1))

source of the original text: Federal Law Gazette Part I 2006, 1843-1844

Examination Committee for the – Preliminary Veterinary Examination – Veterinary Examination – Examiner: .....

Institute or Hospital .....

Written Record of the Examination

in (examination subject)

The student of veterinary medicine (First name and surname)

was examined in the above-mentioned examination subject on .....
Examiners involved in accordance with Section 9 (2) of the Ordinance concerning the Certification of Veterinary Surgeons:

.....

Subject matter of the examination:*) .....

Assessment of the achievement: ….....

....., (date).....

(Signature of record keeper, (Signature of examiner) unless examiner has produced the written record)

*) This is space for the course of the examination or the contents to be entered in key words.

Resit on .....

Examiners involved in accordance with Section 17 (3) sentence 1 of the Ordinance concerning the Certification of Veterinary Surgeons:

…….....

Students admitted in accordance with Section 9 (3) sentence 2 of the Ordinance concerning the Certification of Veterinary Surgeons – a representative of the competent Chamber of Veterinary Surgeons – were – not – present at the examination (if such people were present: The student gave his or her consent to the presence of these people.)

Subject matter of the examination:*) .....

Assessment of the achievement: ....., (date).....

(Signature of the further committee member) (Signature of examiner)

.....

(Signature of record keeper,

unless examiner has produced the written record)

*) This is space for the course of the examination or the contents to be entered in key words.

Annex 3 (re Section 16 (1))

source of the original text: Federal Law Gazette Part I 2006, 1845

The Chairman of the Examination Committee for the Preliminary Veterinary Examination at (University)

in (City)

Certificate

on the Results

of the Scientific Stage of the Preliminary Veterinary Examination (Preliminary Physics)

The student of veterinary medicine (First name and surname)

born on ..... in .....

was awarded the following marks in the Scientific Stage of the Preliminary Veterinary Examination

1. in Physics including the fundamentals of radiological protection

.....

2. in Chemistry .....

3. in Zoology .....

4. in Botany of Fodder, Toxic and Medicinal Plants.....

and thus passed/failed the Scientific Stage of the Preliminary Veterinary Examination on

. *).

Examinations credited: ....., (date).....

The Chairman

of the Examination Committee (Seal)

.....

(Signature)

*) Date of the last examination (or resit).

**) delete what is not applicable

Annex 4 (re. Section 16 (1) and (4))

source of the original text: Federal Law Gazette Part I 2006, 1846

The Chairman of the Examination Committee for the Preliminary Veterinary Examination at (University)

in (City)

Certificate

on the Results

of the Anatomical-Physiological Stage of the Preliminary Veterinary Examination (Physics) and of the Overall Results of the Preliminary Veterinary Examination

The student of veterinary medicine (First name and surname)

born on ..... in .....

was awarded the following marks in the Anatomical-Physiological Stage of the Preliminary Veterinary Examination

1. in Anatomy .....

2. in Histology and Embryology .....

3. in Physiology .....

4. in Biochemistry .....

5. in Animal Breeding and Genetics, including Livestock Judging ..... and thus – taking account of the examination marks of the Certificate on the Results of the Scientific Stage of the Preliminary Veterinary Examination on *) passed the Preliminary

Veterinary Examination with the overall result ..... – failed the Anatomical-Physiological Stage of the Preliminary Veterinary Examination **).

Examinations credited:

.....

....., (date).....

The Chairman

of the Examination Committee (Seal)

.....

(Signature)

*) Date of the last examination (or resit)

++) delete what is not applicable

Annex 5 (re Section 16 (1))

source of the original text: Federal Law Gazette Part I 2006, 1847-1848

The Chairman of the Examination Committee for the Veterinary Examination at (University)

in (City)

Certificate

on the Results

of the Veterinary Examination and on the Overall Results of the Veterinary Examination The student of veterinary medicine (First name and surname)

born on ..... in …….

was awarded the following marks in the Veterinary Examination

1. in Animal Husbandry and Animal Hygiene
2. in Animal Welfare and Ethnology
3. in Animal Nutrition
4. in Clinical Propaedeutics.
5. in Virology
6. in Bacteriology and Mycology
7. in Parasitology.
8. in Control of Animal Epidemics and Infection Epidemiology
9. in Pharmacology and Toxicology

10. in Law on Pharmaceuticals and Narcotics
11. in Poultry Diseases
12. in Radiology.
13. in Pathology and Histopathology
14. in Food Science including Food Hygiene.....
15. in Meat Hygiene.....
16. in Milk Science.....
17. in Reproductive Medicine
18. in Internal Medicine.....
19. in Surgery and Anaesthesiology.....
20. in Forensic Veterinary Medicine, Law Governing Professional Matters and Professional Conduct .....

and thus passed/failed++) the Veterinary Examination on .....*) with the overall result.

Examinations credited: .....

....., (date).....

The Chairman

of the Examination Committee (Seal)

.....

(Signature)

*) Date of the last examination (or resit).

++) delete what is not applicable

Annex 6 (re Section 53 (3))

(source of the original text: Federal Law Gazette Part I 2006, 1849; or of the individual amendments cf. footnote)

.....

(Name of the authority competent in accordance with Section 55 (1))

Certificate

on Practical Training in monitoring activities, methods and techniques for the food domain

The student of veterinary medicine (First name and surname)

completed the practical training in monitoring activities, methods and techniques for the food domain in the period from ..... to ..... .

During this period in ... hours he/she practised the assessment of the hygienic status of the premises and the installations of the plants as well as the assessment of processing technology under my supervision and guidance. Furthermore, he/she had the opportunity to familiarise himself/herself with methods for

monitoring the hygienic status of the plants. Furthermore, he/she has practiced under my guidance the supervision and examination of food.

....., (date).....

(Seal or stamp)

.....

(Signature of the training veterinary surgeon)

Annex 7 (re Section 53 (3))

source of the original text: Federal Law Gazette Part I 2006, 1850

.....

(Name of the competent authority)

Certificate

on the Practical Training

in the Inspection of Animals for Slaughter and Meat

The student of veterinary medicine (First name and surname) completed practical training in the inspection of animals for slaughter and meat

in the slaughterhouse/s in .....

in the period from ..... to ..... .

During this period in … hours he/she practised the assessment of the animals for slaughter and the meat of various animal species under my supervision and guidance. Furthermore, he/she had the opportunity to familiarise himself/herself with the technical procedures in the slaughterhouse.

The slaughterhouse/s correspond/s to the requirements of Section 55 (3) sentence 1 of the Ordinance concerning the Certification of Veterinary Surgeons.

....., (date).....

(Seal or stamp)

.....

(Signature of the training veterinary surgeon)

Annex 8 (re Section 58 (3))

source of the original text: Federal Law Gazette Part I 2006, 1851

.....

(Name and address of the practice owner)

Certificate

on the First Stage of the Practical Training

in the Therapeutic Practice of a Veterinary Surgeon (Section 57 (1) of the Ordinance concerning the Certification of Veterinary Surgeons)

The student of veterinary medicine (First name and surname)

completed practical training in my practice

in the period from ..... to ..... .

During this period in … hours he/she was instructed in all areas of my veterinary activities and involved in regular participation under my supervision, guidance and responsibility.

I swear that I meet the requirements of Section 58 (1) of the Ordinance concerning the Certification of Veterinary Surgeons.

....., (date).....

(Stamp)

.....

(Signature of practice owner)

Annex 9 (re Section 58 (3))

source of the original text: Federal Law Gazette Part I 2006, 1852

.....

(Name and address of the practice owner)

Certificate

on the Second Stage of the Practical Training

in the Therapeutic Practice of a Veterinary Surgeon (Section 57 (2) of the Ordinance concerning the Certification of Veterinary Surgeons)

The student of veterinary medicine (First name and surname)

completed practical training in accordance with Section 58 in my practice

in the period from ..... to (… hours).

I swear that I meet the requirements of Section 58 (1) of the Ordinance concerning the Certification of Veterinary Surgeons.

....., (date).....

(Stamp)

.....

(Signature of practice owner)

Annex 10 (re Section 59 (3))

source of the original text: Federal Law Gazette Part I 2006, 1853

.....

(Name of the Animal Hospital)

Certificate

on Practical Training in an Animal Hospital

The student of veterinary medicine (First name and surname)

completed practical training in accordance with Section 59 of the Ordinance concerning the Certification of Veterinary Surgeons

in .....

(name of the animal hospital)

in the period from ..... to (… hours).

....., (date).....

(Seal or stamp)

.....

(Signature of the head of the animal hospital)

Annex 11 (re Section 60 sentence 2)

source of the original text: Federal Law Gazette Part I 2006, 1854

.....

(Name of the training institute)

Certificate

on Practical Training in an Elective Placement

The student of veterinary medicine (First name and surname)

completed practical training in the elective placement in accordance with Section 60 of the Ordinance concerning the Certification of Veterinary Surgeons

in .....

(name of the training institute)

in the period from ..... to .....

In particular, the training covered the following activities:

.....

Over … hours in… weeks he/she had the opportunity to deepen, broaden and practically apply his/her knowledge in the above-mentioned fields.

....., (date).....

(Seal or stamp)

.....

(Signature of the training veterinary surgeon)

Annex 12 (re Section 62 (2))

source of the original text: Federal Law Gazette Part I 2006, 1855; or of the individual amendments cf. footnote)

.....

(Name of the unit)

Certificate

on the Practical Training in the public veterinary service

The student of veterinary medicine (First name and surname)

completed practical training in the public veterinary service in our institution……

in the period from ..... to

.....

During this period in … hours over consecutive two weeks he/she was given the opportunity to familiarise him/herself with the fields of public veterinary service under my supervision and guidance.

....., (date).....

(Seal or stamp)

.....

(Signature of trainer)

Annex 13 (re Section 64)

source of the original text: Federal Law Gazette Part I 2006, 1856

Certificate

Mr/Ms

.....

born on .....

in .....

meets the requirements of the Federal Veterinary Code.

With effect from today he/she shall be awarded Certification as a Veterinary Surgeon. Certification shall grant entitlement to bear the professional title of Veterinary Surgeon and to practice the veterinary profession.

....., (date).....

(Seal or stamp)

.....

(Signature)

1.3.1.2 Examination regulations (PO)

Examination regulations for the veterinary medicine degree programme at the University of Veterinary Medicine Hannover Foundation

These examination regulations govern the requirements and procedures of the examinations for the degree programme in Veterinary Medicine at the University of Veterinary Medicine Hannover Foundation - hereinafter referred to as TiHo - on the basis of the Ordinance on the Licensing of Veterinarians of 27 July 2006 (Federal Law Gazette I, p. 1827 ff), hereinafter referred to as TAppV.

A General regulations

§ 1 Examination Committee

1) A state examination board must be formed for the Preliminary Veterinary Examination and for the Veterinary Examination (Section 5 (1) TAppV).

Each of the two examination boards consists of the chairman of the examination board[1], his deputy(s) and the members responsible for the respective examination subject, who are appointed by the competent authority after consultation with the TiHo.

2) The chairperson of the examination board is responsible for the organisation of the examinations and the fulfilment of the tasks according to these examination regulations; he/she decides on appeals against examinations and decisions of individual examiners as well as the recognition of study and examination achievements. The chairperson of the examination board ensures that the provisions of the TAppV and the examination regulations are complied with. The examination board chairpersons are supported by the Examinations Office (Student and Academic Affairs Department). Further details are regulated by the study regulations.

3) The term of office of the members of the examination committee (including the chairman) shall not exceed four years. Reappointment as an examiner by the competent authority is possible.

4) The meetings of the examination committee are not public. Invitations to meetings are sent out in writing two weeks before the meeting. The examination committee is quorate if at least five members are present in addition to the Chairman or one of his deputies. It passes resolutions by simple majority. In the event of a tie, the Chairman has the casting vote.

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[1] *For reasons of better readability, only the masculine form is used for official titles and persons. It is intended to include the feminine form in each case.*

§ 2 Examiners and examination board chairpersons

The chairpersons of the respective examination boards and their deputies (Section 5 (2) TAppV) are proposed by the Senate of the TiHo and appointed in writing by the competent authority for a period of 4 years.

Only professors of the TiHo who teach independently in a subject area of the respective examination board are appointed as chairpersons of an examination board.

After consultation with the TiHo, the members of the examination board are appointed in writing by the competent authority as examiners for certain examination subjects for a maximum of 4 years. The requirements and the university-internal procedure for appointment as an examiner are regulated in Annex 1.

§ 3 Examinations

1) The examinations to be carried out in the Veterinary Medicine degree programme ensure that the knowledge, skills and abilities to be demonstrated by the students meet the requirements of the TAppV.

2) The examinations are part of the standard period of study of five years and six months (3850 hours) of classroom instruction provided for in the TAppV.

3) In accordance with Section 17 (1) TAppV, students can repeat the examination twice in examination subjects that have not been passed.

4) Examinations are prepared, conducted and assessed by the appointed examiners from the institutions responsible for the subject. In order to be able to conduct written or electronic examinations, regular further training is offered on the design of written or electronic examinations. The same applies to oral and practical examinations.

5) Examinations can be conducted as written examinations, examinations using the multiple-choice procedure (§ 5), oral and practical examinations (§ 6). A combination of different forms of examination (written, multiple-choice, oral, practical) is possible in accordance with § 10 TAppV.

6) An examination can also be carried out in several partial examinations.

§ 4 Test certificates

1) Tests are course-related performance assessments that serve to check regular and successful participation in the courses (seminars or exercises) required for the respective examination subject. Regular and successful participation is decisive for admission to the examination.

2) The results of regular and successful participation in courses are reported to the Examinations Office at the end of each semester.

3) The form, procedure, content and assessment of the test reports are governed by regulations for the respective subject. These regulations must be approved by the committee for curricular affairs. Further details are regulated by the study regulations.

4) Regulations for individual courses must be communicated to students and the Examination Office at the beginning of the semester.

§ 5 Written examinations and examinations using the answer-choice procedure

1) Written examinations and examinations using the answer-choice method are prepared and assessed by the institutions responsible for the subject. They can be carried out on paper or on an electronic input device.

2) Written examinations consist of:

- Short-Answer-Questions (SAQ)
- Long text method (Essay-Questions -EQ)

3) Tests using the answer-choice procedure are carried out in the:

- Type A process
- Kprim process
- Image analysis method / image assignment
- Case-based procedure (Key Feature Questions - KFQ)

- Tasks - Groups

4) The definition of the individual procedures is set out in Annex 2. The technical implementation of written examinations on electronic input devices (electronic examination) is regulated in Section C.

5) A combination of different procedures within a written examination is permitted.

§ 6 Oral and practical examinations

1) Oral and practical examinations are administered and assessed by the examiners responsible for the examination subject in accordance with TAppV.

2) Oral examination forms are structured oral examinations (Structured Oral Examination - SOE).

Practical examinations are:

- the Objective Structured Long Examination Record (OSLER)
- the Mini-clinical Evaluation Exercise (MiniCEX)
- the Objective Structured Practical Examination (OSPE)
- the Objective Structured Clinical Examination (OSCE)

3) The definition of these procedures is set out in Appendix 3.

4) A combination of oral and practical examination formats to form an oral-practical examination is permitted.

§ 7 Compensation for disadvantages

1) Students who can provide evidence of a disadvantage in taking examinations must be enabled to take examinations under suitable equivalent examination conditions. Compensation for disadvantages can be claimed on the basis of the General Equal Treatment Act of 14 August 2006 (BGBl. I p. 1897), which was last amended by Article 15 of the Act of 22 December 2023 (BGBl. 2023 I No. 414) and the Maternity Protection Act of 23 May 2017 (BGBl. I p. 1228), which was amended by Article 57 (8) of the Act of 12 December 2019 (BGBl. I p. 2652).

2) The application for modification of the examination conditions must be submitted by the student in writing to the Examinations Office as early as possible, but no later than 14 days before the examination date. This deadline may only be deviated from in justified exceptional cases. The nature of the requested compensation for disadvantages, e.g. extended processing time, must be stated in the application together with a justification.

3) The disadvantages claimed by the student must be substantiated by submitting suitable evidence, such as a specialist medical certificate, maternity certificate and birth certificate or proof of care status. Proof must also be provided that this impairment has a disadvantageous effect on study and/or examination performance. In justified cases, the submission of expert reports or other suitable evidence may be required; the costs will be borne by the Student and Academic Affairs Department.

4) Compensation for disadvantages is generally granted for the current examination semester or for as long as the disadvantage exists. In the case of students with disabilities/impairments and chronic illnesses, an individual assessment is made as to whether a new application is necessary each semester or whether the student requires permanent compensation for disadvantages.

5) The decision to grant the requested compensation for disadvantages is made by the chairperson of the relevant examination board or a representative appointed by them.

§ 8 Practising special examination formats

In good time before a particular examination format is carried out for the first time during the course of study, a general briefing on the nature of the respective task is given by the respective subject representatives of the examination subject.

For electronic tests, additional instruction is given in the operation of the devices.

§ 9 Preparation and planning of examinations

1) The examination tasks are created by the examiners responsible for the examination subject. If several clinics/institutes are involved in an examination, a member of the examination board with primary responsibility must be appointed for this examination. The number of written examination tasks to be prepared is regulated in § 17.

2) Before the examination date, the Examination Office draws up a list of the candidates admitted to the examination, which contains the candidate's matriculation number, name, date and place of birth.

3) Tasks are presented in a random order for each participant or group of participants. For tasks using the answer-choice method, the answer options are also presented in a random order.

4) Examination dates for first examinations and repeat examinations are announced by the Examinations Office at least 4 weeks before the examination section (pre-physical or physical examination) or the first examination following a clinical semester.

§ 10 Registration, admission, cancellation of examinations

1) The registration for the examination for an examination section (pre-physical examination, physical examination or the Veterinary Examination) is carried out by the student at the examination office upon presentation of the required proof of performance (in accordance with § 11 of the study regulations and annex) for the respective examination subject. If a student withdraws from or cancels an examination, the provisions of Section 12 (2) to (4) TappV apply.

2) If the candidate fails to attend the examination for valid reasons, he/she will be invited to the already scheduled repeat examination (Section 9 (4)).

§ 11 Repeat examinations

1) Examinations (individual examination subjects) can be repeated twice in accordance with Section 17 (1) TAppV.

2) Students who do not pass an examination must be informed of this in writing and informed of the dates of the repeat examinations.

3) A repeat examination may be carried out at the earliest three weeks after an unsuccessful examination. Students not passing the first repeat examination will be invited to take the second repeat examination at the end of the following semester.

4) After failing the first repeat examination, a counselling interview with the responsible lecturer must be held promptly at the student's request. A brief record of the counselling session must be kept and sent to the Examinations Office by the examination chairperson.

5) The 2nd repeat examination must be conducted as an oral examination.

6) In the event of cancellation of a repeat examination, the provisions of Section 12 (2) to (4) TappV apply.

§ 12 Performance of the audit

1) Before the start of the examination, the chairperson of the examination board or one of the appointed examiners will randomly check the personal details of the candidates (official photo ID must be carried) and compare them with the examination list (§ 9 (2)). The check can also be carried out by an employee of the examination office. In the case of written or electronic examinations, each candidate shall sign to confirm their presence and their ability to take the examination.

2) The examinee must immediately report problems of any kind that hinder him/her in the processing of his/her tasks. Downtimes due to technical problems must be documented by the examiners. Time disadvantages must be compensated for by extending the examination time accordingly. If this is not possible, the examination will be repeated.

3) Objections to the number and selection of examination tasks, to the course of the examination and to the assessment of the examination performance must be submitted in writing to the chairperson of the respective examination board without delay.

§ 13 Assessment of examination performance and examination result

1) The assessment of the examination results is carried out in accordance with Section 14 (1) TAppV.

2) In accordance with Section 14 (2) TAppV, the examiners assess the performance of written examinations that are carried out using the answer choice procedure with the following examination grades:

Grade	**General definition**	**Binding assessment framework**
"very good" (1)	an outstanding achievement	if 90% or more of all points
"good" (2)	considerably above the average requirements	if 80% to < 90% of all points
"satisfactory" (3)	fulfils the average requirements in every respect	if 70% to < 80% of all points
"sufficient" (4)	still fulfils the requirements despite defects	if 60% to < 70% of all points
"not sufficient" (5)	does not meet the requirements due to significant deficiencies	if < 60% of all points

of the maximum achievable score were achieved.

No decimal place is formed for the binding assessment framework. The calculated percentage value must be rounded.

If the average score achieved by all candidates is below 60%, the examination is also deemed to have been passed if the score achieved is at least 80% of the average score achieved in this examination.

This rule does not apply if the average is below 40%. In this case, the entire examination must be declared invalid and repeated.

This regulation also does not apply to repeat examinations or their assessment.

3) Written and practical examinations are passed if the candidate has achieved at least the grade "sufficient".

4) If an examination consists of several partial examinations, the overall result is determined when each individual examination has been assessed as passed. If a partial examination is not passed, it must be repeated. The partial examinations are only weighted in the examinations listed in § 17. The overall grade is calculated from the average of the individual partial examinations. No decimal point is used in the calculation of the overall grade. The overall grade from the partial examinations is

1. "very good" with a numerical value of up to 1.49
2. "good" with a numerical value of 1.50 to 2.49
3. "satisfactory" with a numerical value of 2.50 to 3.49
4. "sufficient" with a numerical value of 3.50 to 4.00.

5) The Preliminary Veterinary Examination and the Veterinary Examination are passed if the student has passed all examinations. The overall result of the Preliminary Veterinary Examination and the Veterinary Examination is calculated in accordance with Section 16 (4) TAppV.

6) The examination result in an oral examination must be announced to the student after completion of the examination in this subject. The results of written examinations are uploaded to the online portal by the Examinations Office within 21 days and can be accessed by each student individually.

7) The grades calculated in accordance with Section 16 (4) TAppV can be supplemented by an assessment corresponding to the European Credit Transfer System (ECTS). The ECTS grading scale categorises students according to statistical criteria in relation to the previous calendar year. Successful students receive the following ECTS assessment:

A the best 10%,
B the next 25%,
C the next 30%,
D the next 25%,
E the next 10%.

The University issues a Diploma Supplement (DS) in German and English in accordance with international standards, using the text agreed between the German Rectors' Conference and the Standing Conference of the Ministers of Education and Cultural Affairs of the federal states in the currently valid version.

§ 14 Failure to attend, cheating, breach of regulations

1) If students miss an examination date or the deadline for submitting a written record of findings for a valid reason, they must be invited to a new examination, which is not considered a repeat examination, or a new deadline must be set. The examination office must be informed immediately of the absence. The reason for the non-appearance must be reported within three working days, providing appropriate evidence; Saturday is considered a working day. An e-mail is sufficient to meet the deadline. In the event of absence due to illness, a medical certificate must also be submitted. The Chair of the Examination Board may request that a certificate from a health authority has to be submitted. The student's performance in the examination in question is deemed to be "not sufficient" if the examination is missed without a valid reason.

2) If the student attempts to influence the result of the examination by cheating or using unauthorised aids, the examination in question will be assessed as "not sufficient". If there are significant disruptions to the

examination process in a written, electronic or practical examination, Section 15 of the TAppV shall apply accordingly.

3) The student may request a review of the decision by the Examination Board within a period of four weeks following a decision in accordance with paragraph 2. Decisions must be communicated to the student immediately in writing, stating the reasons and providing information on legal remedies.

B Special regulations

§ 15 Examination committees, supervisors and observers

1) In accordance with Section 9 TappV, oral and practical examinations are conducted by the members of the examination board appointed for the relevant examination subject. They can also be conducted by several examiners.

2) The organisation responsible for the examination subject in question is responsible for conducting written examinations (electronic examinations). The invigilator must be a member of the examination board. He or she may be supported by academic staff in the supervision.

3) The chairman of the examination committee or a committee member appointed by him must always be present at the second repeat examination, cf. section 17 (3) TAppV.

4) Observers may be admitted to the tests under the conditions of Section 9 (3) TAppV.

§ 16 Examination conditions and scope

1) If all examinees are tested under identical conditions, the examination is standardised. If this cannot be achieved, e.g. because there are different case histories for the examinees to work on or not every examinee has to answer the same examination questions, a structured examination must be carried out. Structured examinations are characterised by the fact that

a) the total number of examination tasks ensures that all candidates can be questioned on different topics in the same proportion,
b) the procedure is defined before the test,
c) a scoring scheme with a corresponding worksheet has been drawn up in advance
d) there is a comprehensible procedure on how to proceed in the event of different assessments by different examiners.

For examinations with multiple-choice questions, the number of questions should not be less than 30. For examinations using the short answer method, long text method, partial set method or image processing method, the number of items should not be less than 25.

For examinations with multiple-choice questions, 90 seconds should generally be set to complete each question.

§ 17 Examination formats in the individual subjects

Examinations required by the Ordinance on the Licensing of Veterinarians will be conducted exclusively in accordance with the examination formats listed in the schedule below. The examination formats can be changed before the start of the semester by resolution of the Senate.

If an examination is divided into several parts, a specific examination format is assigned to each part of the examination. The weighting of the individual parts of the examination is also listed.

The indication of the most common type of task is for guidance only and does not necessarily exclude other types of tasks.

Examination No. resp. Examination section	**Abbr.**	**Examination format**	**Most common format**	**Number of items in written MC examinations**	**(after) semester**
2111 First preclinical examination (VP)					
2001 Physics	VP	Written (100%)	MC	70	1. Sem.
2002 Chemistry	VP	Written (100%)	MC	60	2. Sem.
2003 Zoology	VP	Written (100%)	MC	60	1. Sem.
2004 Botany	VP	Written (100%)	MC	50	2. Sem.
2222 Second preclinical examination (PH)					
2006 Anatomy	PH	Oral-practical (80%/20%)	SOE		4. Sem.
2007 Histology/Embryology	PH	Written (100%)	MC	60	4. Sem.
2008 Physiology	PH	Oral-practical (70%/30%)	SOE		3. Sem.
2009 Biochemistry I	PH	Written (100%)	MC/MC	50	3. Sem.
Biochemistry II		Written (100%)		60	3. Sem.
2010 Animal Breeding and Genetics	PH	Written/Oral-practical (60%/40%)	MC/SOE	90	4. Sem.
9000 Veterinary Clinical examination (TP)					
2005 Radiology	TP	Written (100%)	MC	70	5. Sem.
2011 Virology	TP	Written (100%)	MC	50	6. Sem.
2012 Bacteriology / Mycology	TP	Written/Oral-practical (80%/20%)	MC/OSLER	60	5. Sem.
2013 Parasitology	TP	Written/Oral-practical (⅔ / ⅓)	MC/OSLER	60	7. Sem.
2014 Animal Nutrition	TP	Written/Practical (100%)	MC	80	7. Sem.
2015 Animal Husbandry / Animal Hygiene	TP	Written (100%)	MC	60	5. Sem.

2016 Pathology	TP	see 2031 to 2033			
2017 Internal Medicine	TP	Written/Oral-practical (40%/60%)	MC/SOE	90	8. and 10. Sem.
2018 Surgery / Anesthesiology	TP	Written/Oral-practical (40 %/60 %)	MC/SOE	90	8. and 10. Sem.
2019 Reproductive Medicine	TP	Written/Oral-practical (40 %/60 %)	MC/SOE	90	8. and 10. Sem.
2020 Poultry diseases	TP	Written (100%)	MC	80	10. Sem.
2021 Pharmacology / Toxicology	TP	Written (100%)	MC	90	6. Sem.
2022 Animal Welfare	TP	Written (100%)	MC	60	6. Sem.
2023 Animal Epidemics	TP	Written (100%)	MC	50	8. Sem.
2024 Food Science / Food Hygiene	TP	Written/Oral-practical (60%/40%)	MC/SOE	60	8. and 10. Sem.
2025 Milk Science	TP	Written/Oral-practical (60%/40%)	MC/SOE	60	8. and 10. Sem.
2026 Meat Hygiene	TP	Written/Oral-practical (60%/40%)	MC/SOE	60	7. and 10. Sem.
2027 Law - Pharmaceuticals and Narcotics	TP	Written/Oral-practical (60%/40%)	MC/SOE	60	7. and 8. Sem.
2028 Forensic Veterinary Medicine	TP	Written (100%)	MC	40	10. Sem.
2029 Clinical Propaedeutics	TP	Oral-practical (100%)	SOE		5. Sem.
2031 Pathology 1	TP	Written (20%)	MC	90	4. Sem.
2032 Histopathology 2	TP	Written (20%)	MC	80	6. Sem.
2033 Pathology 3	TP	Written/Oral-practical (30%/30%)	MC/OSLER	120	10. Sem.

§ 18 Implementation and evaluation of written examinations

1) Before the start of the examination, the invigilators will give a briefing on the examination procedure. The basic structure of the tasks used is explained and attention is drawn to permitted aids, rule violations and their consequences. § Section 14 (2) and (3) apply.

2) The start and end of the examination must be clearly explained by the supervisors, documented and easily visible to each examinee.

3) Candidates remain in their seats until the end of the set examination time. In written examinations lasting longer than 60 minutes, candidates may complete the examination and leave the examination room up to 30 minutes before the end of the specified examination time, provided that the proper conduct of the examination

is not impaired. After this time, candidates must remain in their seats until the end of the set examination time. It is not possible to leave the room early for examinations in which a cohort change is carried out.

4) Before determining the examination result, the clinic/institute shall check the tasks to see whether they are incorrect/correct in relation to the requirements of the individual examination subject. If the review reveals that individual tasks are incorrect, these are not to be taken into account when determining the examination result. The number of examination tasks included in the calculation of the examination result is reduced accordingly for the respective examination. The reduction in the number of examination tasks may not be to the disadvantage of an examinee.

§ 19 Examination documentation

1) In accordance with the provisions of the file regulations for the Lower Saxony state administration, the following examination documents must be kept for five years:

a) the list with the names, titles and subject affiliations of the members of the examination committee,
b) the list with the names of the supervisors appointed by the Chairman of the examination committee,
c) the tasks set in the examination,
d) the minutes of the examination session, including any objections raised,
e) the minutes of the meetings held by the examination committee before or after the examination to examination tasks or to discuss objections.

2) After written examinations, the written examination papers of the candidates must also be kept for five years.

3) After practical examinations, the checklists and answer sheets of the individual candidates must also be kept for five years.

4) An overview of the examination results with the names and matriculation numbers of the candidates and the examination results must be kept for 50 years by the Examinations Office (Department of Student and Academic Affairs).

5) The candidate will be granted access to the complete examination documents upon application to the examination office.

6) The additional requirements for documentation in the case of an electronic inspection are regulated in Section C.

C Written examinations with electronic input devices

§ 20 General description of the examination system

1) Electronic examinations are carried out using a software platform in which the examinees answer examination questions via an input device. The exam is made available, the answers are registered and the results are analysed via a server that is connected to the examinees' input devices via a wireless local area network (WLAN). All answers from the examinees are registered and stored on this and another server. All electronic communication between the examinees' input devices and the servers is registered and saved in parallel in a login file with a time stamp. After completion of the test, a further backup copy is stored on a TiHo server.

2) The members of the examination board have access to a pool of tasks that can be sorted according to various criteria via an online portal. The members of the examination board or an authorised TiHo employee enter the tasks intended for an electronic examination into the input mask or select tasks that have already

been entered. Entry, viewing and correction options for the examination materials are password-protected and only accessible to persons authorised by the examination board.

3) The software platform guarantees the authenticity and integrity of the test results. In particular, it ensures that the solutions entered by the examinee can be unequivocally assigned to their origin and cannot be falsified at any time. The Examinations Office checks and documents the functionality of the software platform at the beginning of each semester and beyond, as required.

§ 21 Planning and creation of electronic examination

1) The Examination Office ensures that the examination list is entered into the system. The Examination Board shall ensure that the required number of tasks is entered into the system no later than 7 days before the scheduled examination date so that the examination can be checked in accordance with Section 9 of these regulations and released for technical review by the examination service provider no later than 5 working days before the examination date.

§ 22 Implementation of electronic examinations

1) During the electronic examination, the number of employees of the company commissioned to conduct the examination required for the number of candidates specified in the examination list and the supervisors appointed by the Chairman of the Examination Committee are present.

2) Before viewing the examination tasks on his/her input device (laptop), the examinee logs in with his/her matriculation number. This ensures that the input device is uniquely assigned to the examinee. After the matriculation number has been entered and compared with the stored examination list, the server reports the surname and first name of the examinee back to the input device for checking purposes. With the identification, the examination tasks of the examination are assigned to each examinee in accordance with § 9 (3).

3) When all test candidates are logged on to their input device, the invigilator starts the test for all test candidates at the same time. Every action (data entry) performed by the examinee during the examination is registered and saved.

4) The task processing is completed when the examinee confirms this via the examination programme or when the specified processing time has expired. Once the specified processing time has expired, the data transfer from the candidate's input devices to the examination servers is switched off. Extended processing times in accordance with § 7 and § 12 (2) are taken into account individually.

5) Sections 12, 18 and 19 apply accordingly. After completing the examination with electronic input devices, candidates will also be given immediate access to the examination questions they have answered upon application to the examination office. The corresponding file is generated at the end of the examination. A file note must be made about this inspection.

§ 23 Evaluation and documentation of electronic examinations

1) The electronically determined examination results are initially only made available to the examination board and the examination office. A set of results statistics must be compiled for all candidates, for the reference group and for the other candidates for each task and for the overall examination.

2) In addition to the retrospective review of the examination results described in § 18 (4), the respective examining institution must assess the results statistics and analyse them for anomalies. The result of the review must be communicated to the chairperson of the respective examination board and the Vice President for Teaching. If the subsequent correction does not result in any changes to the provisional examination result,

the number of points achieved and the examination grade must be published immediately on *TiHoStudIS* in the interactive area with password protection, stating the matriculation number.

3) In addition to the examination documents specified in § 19, which must be stored for five years, the following files must be stored and kept legible for five years in the case of electronic examinations:

a) the examination files created by the contracted company on the mobile examination server and the central security server during the examination must be stored by the contracted company,
b) the copy of the examination files sent to the TiHo Examination Office after completion of the examination must be stored by the TiHo,
c) the results statistics compiled,
d) the minutes of the post-correction meeting of the examination board with the decisions taken to correct individual task evaluations,
e) the file with the final examination results.

D Final regulations

§ 24 Recognition of periods of study and examinations

The crediting of study periods and examinations is governed by Sections 65, 66 and 67 of the TAppV

§ 25 Form of applications

Applications, enquiries and objections by students must be made in writing. This requirement is also met by using the TiHo e-mail address or fax.

§ 26 Quality assurance

Once a year, the Examinations Office compiles an overview of the distribution of grades in the individual examinations for the Examination Board. For written and practical examinations, the item analyses, grade distributions and examination protocols can also be evaluated as part of quality management with the aim of improving future examinations.

§ 27 Entry into force and publication

The regulations come into force on the day after their publication in the official announcements of the University of Veterinary Medicine Hannover.

Annex 1 of the examination regulations for the veterinary medicine degree programme

Requirements for the appointment of a member of the examination board for the Preliminary Veterinary Examination/Veterinary Examination (§ 2 Examination regulations)

Written application from the head of the clinic/institute for the examiner to be appointed, stating the examination subject(s) and a brief explanation. (an online form is designed and a link posted here)

The application must be accompanied by a curriculum vitae, list of publications, etc. of the candidate. As a minimum requirement, the examiner must have a completed doctorate.

Confirmation of sufficient teaching experience in the examination subject(s) is added. The normal qualification period that must be fulfilled for admission as a specialised veterinarian (national specialist) is taken as the basis for the sufficient teaching activity.

The application is addressed to the Chairperson of the Examination Board of the Preliminary Veterinary Examination/Veterinary Examination.

Annex 2 of the examination regulations for the veterinary medicine degree programme

Explanation of the possible written examinations and examinations in the answer-choice procedure
(§ 5 Examination regulations)

Written examinations

Short-Answer-Questions (SAQ)

This refers to questions about a detailed examination content that should be answered with individual responses or short sentences. Up to two main questions can be divided into several sub-questions. Before the examination, the examining institution must draw up a list of correct answers. The exam is then corrected using these keys. Depending on the length of the answers to be provided, this form of examination involves either recall or active judgement of factual knowledge.

Long text method (Essay-Questions-EQ)

In this method, candidates are asked to complete tasks on a rather complex subject by answering freely in several sentences or keywords without any major restrictions. This may result in significantly longer response times than with the first type of task.

Before the examination, the examining institution must draw up a list of important key terms. However, the examination correction is not limited to searching for the occurrence of these key terms, but also includes a check on the recognition of correlations. Tasks of this type are therefore particularly suitable for testing logical/critical thinking and case-based decision-making (reasoning).

Tests in the answer-choice procedure

Type A procedure (single selection)

Here, the candidates are asked to select and judge one of several given answers and select the correct or best answer. The answer is always limited to ticking one of 3-5 given options. In terms of memory psychology, this form of examination is about the recognition of factual knowledge.

Kprim procedure

Here the candidates are asked to evaluate 4 statements for one question. For each statement, it must be determined whether it is correct or incorrect. If all four statements are assessed correctly, the candidate receives 1 point; if 3 of the 4 statements are assessed correctly, 0.5 points are awarded.

This type of task is suitable when dealing with an issue in which several aspects may be significant, or a problem whose correct solution may involve several elements. All answers must be assessable in black and white. The Kprim type should not be misused to cram completely heterogeneous statements on a broad topic into one item.

Image analysis method / image assignment

Here, the candidates are asked to recognise and mark the required structures in an image (e.g. X-ray image) or assign terms to points in an image.

Case-based procedure (Key Feature Questions - KFQ)

In this procedure, the candidates are asked to carry out physical and technical examinations on virtual patients and check the diagnosis. Therapy decisions are made and contrasted with sample solutions.

This is based on realistic, case-based analyses of authentic cases. The aim is to encourage students to work through the content themselves and to impart and practise application-oriented knowledge using simulated examinations and diagnoses.

Task groups

This method is a question group format in which several sub-questions can be asked independently of each other on a practice-relevant case study or problem.

Annex 3 of the examination regulations for the veterinary medicine degree programme

Explanation of possible oral and practical examinations (§ 6 Examination regulations)

Oral examinations

Structured Oral Examination (SOE)

The structured oral examination is characterised by the fact that

a) the total number of examination tasks ensures that all candidates can be questioned on different topics in the same proportion,
b) the procedure for the tests is defined,
c) an evaluation scheme with a corresponding worksheet was created in advance

Practical examinations

Objective Structured Long Examination Record (OSLER)

Here, the examinee takes a medical history and performs a physical examination on the patient or must perform a practical task (e.g. laboratory examination). This form of examination is used to assess knowledge, skills and abilities in a structured manner.

Mini-Clinical Evaluation Exercise (MiniCEX)

In the mini-CEX, the focus is on communicative aspects and the clinical examination.

Students should acquire the following skills: Taking a medical history, clinical examination, education and counselling, clinical judgement, organisation / efficiency, professional conduct.

Objective Structured Practical Examination (OSPE) or the Objective Structured Clinical Examination (OSCE)

This form of examination is consists of a series of stations at which different, partly interrelated tasks are completed, aimed at assessing the candidate's knowledge, skills and abilities.

1.3.1.3 Study Regulations

a) Curriculum Digest

1. Semester: 01.10. – 31.03.	
2nd Monday of October – End of January	End of January – 31.03. // residual time
Lectures and Small group teaching (14 weeks)	First Preclinical Examinations in Physics, Zoology
2. Semester: 01.04. – 30.09.	
2nd Monday of April – Middle of July	Middle of July – 30.09. // residual time
Lectures and Small group teaching (14 weeks)	First Preclinical Examinations in Botany, Chemistry + Practical training (teaching farm)
3. Semester: 01.10. – 31.03.	
2nd Monday of October – End of January	End of January – 31.03. // residual time
Lectures and Small group teaching (14 weeks)	Second Preclinical Examinations in Physiology, Biochemistry + Practical training (teaching farm)
4. Semester: 01.04. – 30.09.	
2nd Monday of April – Middle of July	Middle of July – 30.09. // residual time
Lectures and Small group teaching (14 weeks)	Second Preclinical Examinations in Anatomy, Histology and Embryology, Animal Breeding and Genetics
5. Semester: 01.10. – 31.03.	
2nd Monday of October – End of January	End of January – 31.03. // residual time
Lectures and Small group teaching (14 weeks)	Veterinary Clinical Examinations in Pathology I, Clinical Propaedeutics, Bacteriology and mycology, Radiology, Animal Husbandry/ Animal Hygiene + EPT
6. Semester: 01.04. – 30.09.	
2nd Monday of April – Middle of July	Middle of July – 30.09. // residual time
Lectures and Small group teaching (14 weeks)	Veterinary Clinical Examinations in Virology, Pharmacology and Toxicology, Pathology II + EPT
7. Semester: 01.10. – 31.03.	
2nd Monday of October – End of January	End of January – 31.03. // residual time
Lectures and Small group teaching (14 weeks)	Veterinary Clinical Examinations in Pharmacy, drug and narcotics laws, Animal Nutrition, Parasitology + EPT
8. Semester: 01.04. – 30.09.	
2nd Monday of April – Middle of July	Middle of July – 30.09. // residual time
Lectures and Small group teaching (14 weeks)	Veterinary Clinical Examinations in Animal Epidemics, Epidemiology and Preventive Medicine, Animal Welfare; Written examination in Internal Medicine, Surgery and Anaesthesiology, Reproductive Medicine + EPT
9. + 10. Semester: 01.10. – 30.09.	
Practical Year	
11. Semester: 01.10. – 31.03.	
Veterinary Clinical Examinations in Pathology III, Food Science and Food Hygiene, Milk Hygiene, Meat Hygiene, Poultry diseases, Forensic Veterinary Medicine; Oral and practical Examination in Internal Medicine, Surgery and Anaesthesiology, Reproductive Medicine	

b) Study regulations

Study regulations for the degree program in Veterinary Medicine at the University of Veterinary Medicine Hannover

§ 1 Scope of application

These study regulations describe the objectives, content and course of study for the Veterinary Medicine degree program at the University of Veterinary Medicine Hannover, taking into account the current version of the Ordinance on the Licensing of Veterinarians (TAppV).

§ 2 Study requirements

(1) The aptitude requirement for studying veterinary medicine is proof of a university entrance qualification. In the case of certificates obtained outside the scope of the TAppV, the certificate of recognition from the competent authority must be submitted.
(2) Admission to the 3rd semester is only possible once the pre-physical examination has been passed. Admission to the 5th semester is only possible once the Physikum/physical examination has been passed and the certificates of regular and successful participation in the courses for the surgery logbook (1st to 4th semester) have been submitted. Admission to the 7th semester is only possible if five of the seven subject examinations in the examination subjects *Clinical Propaedeutics, Animal Husbandry and Animal Hygiene, Bacteriology and Mycology, Radiology, Virology, Pharmacology and Toxicology and Animal Welfare*, which must be completed after the 5th and 6th semesters, have been passed. Admission to the 9th semester is only possible if at least eight subject examinations of the examination subjects according to §29 No. 1, 3-10 and 12 TAppV have been passed and the certificates of regular and successful participation in the courses of *biometry, food science, immunology and the surgery logbook* (5th to 8th semester) have been submitted. Admission to the 11th semester is only granted if the subject examinations in accordance with § 29 No. 1, 3 - 10 and 12 TAppV have all been passed.

§ 3 Goals

The aim of the training is to produce scientifically and practically trained veterinarians who are capable of independent and autonomous veterinary practice within the meaning of § 1 of the Federal Veterinary Code, of life-long learning and of continuous further training. The basic veterinary and scientific knowledge, practical skills, intellectual and ethical foundations and a professional attitude committed to the welfare of humans, animals and the environment, which are necessary to practice the veterinary profession responsibly in its entirety with special consideration of quality assurance, should be taught.

§ 4 Start of studies

The course can only be started in the winter semester.

§

5 Enrollment, re-registration and de-registration

Enrolment, re-registration and de-registration are regulated by the Lower Saxony Higher Education Act (NHG) and the enrolment regulations of the University of Veterinary Medicine Hannover.

§ 6 Duration of study

The standard period of study in the sense of § Section 10 (2) of the Higher Education Framework Act (Hochschulrahmengesetz) is five years and six months for the entire course, including practicals and the examination period for the veterinary examination.

§ 7 Offer of courses

(1) The training is carried out in particular within the framework of 1. lectures (V), 2. seminars (S), 3.

education on patients (D) and 4. exercises/practicals and courses (Ü), including on living animals. The focus of the practical part takes place in the 9th and 10th semester and is divided into an intramural and an extramural practical part. Combined courses (V/S/Ü) are also possible, which are offered both as a lecture and as a seminar or exercise. Excursions can also be part of courses. The university can replace parts of these courses with suitable interactive learning programs.
(2) In the compulsory courses (Annex 1 TAppV), students are taught the examination requirements in accordance with TAppV.
(3) The compulsory elective courses serve to intensively deepen knowledge beyond the examination requirements and are mainly held in the form of seminars, courses and exercises. They are offered by the higher education institutions to the extent required in accordance with the compulsory teaching regulations. Routine clinical and institute work should also be used for the intensive training of students, including lecture-free periods. A more detailed description of the teaching content is provided in the form of subject-specific subject catalogs.
(4) The topics of the interdisciplinary classes are determined by mutual agreement between the lecturers involved before the start of the semester.

§ 8 Participation in courses

(1) Proof of study must be provided in the form of a transcript of records, which may also be available electronically.

(2) Regular and successful participation in the compulsory courses listed in § 7 para. 1 no. 2 to 4 (in accordance with the performance requirements specified by the clinics and institutes) must be demonstrated when registering for the individual examination sections. If absences are due to reasons for which the student is not responsible (e.g. own illness or illness of own children, court appointment), the student must be offered the opportunity to catch up if the course instructor deems this necessary. In this case, the course director shall determine the type, scope and time of the services to be provided. The course instructor is free to accept individual excused absences without a substitute instruction. Students who take part in the baccalaureate course taking place during the semester and the prescribed stock trips (proof required) are excused for parallel courses. For the compulsory elective courses and the practical part, sentences 1 and 2 apply accordingly. It is generally possible to register for and withdraw from compulsory courses. Regulations approved by the Central Study Commission must be available for enrolments and withdrawals.
(3) There is no entitlement to participate in certain compulsory elective courses.

§ 9 Examinations

The institutions involved in examinations shall indicate to the examination chairperson the form in which the examination is conducted for each subject to be examined. For examinations in accordance with § 14 Para. 2 TAppV (multiple choice), a binding assessment framework must be defined prior to the examination. If an examination is to be carried out in the form of several partial examinations (§ 10 Para. 3 TAppV), the determination of the examination grade must also be specified.

§ 10 The practical part of the study

The timing of the practicals is determined as follows:

- Education in control activities,

-methods and techniques for the food sector including the inspection of fresh meat, § 55 para. 1 TAppV: after the 5th semester at the earliest.

- First stage of training, which can be completed in a curative veterinary practice or in a veterinary clinic or half in each of the two facilities, Section 57 (1) TAppV: after the 5th semester at the earliest.
- Practical training in ante-mortem and post-mortem inspection (slaughterhouse), § 55 para. 2 TAppV: in the 9th or 10th semester.

- Second stage of training, which can be completed either in a curative veterinary practice or in a veterinary clinic or in a combination of no more than four of these facilities, Section 57 (2) TAppV: in the 9th or 10th semester.
- Practical training in public veterinary services, § 61 TAppV: in the 9th or 10th semester.

§ 11 Curriculum

The compulsory courses required for admission to the individual examination sections or examinations in accordance with TAppV are set out in the curriculum (annex to the study regulations). The curriculum also specifies the sequence of examinations.

§ 12 Study sections

(1) The program is divided into a preclinical and a clinical phase. The course of study is regulated in a legally binding manner by the TAppV, both with regard to the obligatory courses (content) and the sequence and timing of the course of study. According to § 1 Para. 2 No. 3 TAppV, the following examinations are taken: a. the preliminary veterinary examination, which consists of the scientific section (pre-physical course) and the anatomical-physiological section (physical course), and b. the veterinary examination.

(2) The examinations are regulated in the TAppV and are specified by resolutions of the Examination Boards for the Preliminary Veterinary Examination and the Veterinary Examination of the University of Veterinary Medicine Hannover.

(3) Proof of successful completion of the Pharmacology and Toxicology examination is required to register for the examination in Pharmaceutical and Narcotics Law.

(4) Only those courses that are required to meet the admission requirements according to TAppV and have not yet been successfully completed can be attended (§ 8 TAppV). Students are only entitled to participate in those compulsory courses for which regular and successful participation is a prerequisite for admission to the examination at the time of their scheduled completion in the respective semester. The responsible course management decides on exceptions in individual cases.

§ 13 Student advisory service

Study counseling is provided by the liaison lecturers of the University of Veterinary Medicine Hannover. After failing an examination, in the event of a change of university and before choosing a major field of study, students are particularly recommended to undergo study counseling.

Annex to the study regulations (§ 11)
The curriculum contains the compulsory courses that must be completed for admission to the individual examination sections or examinations in accordance with the provisions of the Ordinance on Licensing for Veterinarians (TAppV) of July 27, 2006 (BGBl. I No. 38 p.1827).

Overview of hours (SWS)

1st year/1st semester (winter)							
	Lectures			Small group teaching in			
Lvnr.*		SWS	Lvnr.*		SWS	total hrs.	ECTS points
0001	Anorg. and bioanorg. chemistry	3,00	0002	Chemical exercises I	1,36		**6**
0014	Physics	3,43	0013	Practical course in physics	0,57		**4**
0016	Medical terminology	1,00					**1**

0018	Professional competences	1,00					**1**
0020	General botany	2,00					**2**
0030	General and special zoology	2,00	0031	Zoological exercises	2,00		**4**
0038	Agriculture	2,00					**2**
0040	Anatomy I	2,00	0041	Anatomical dissection exercise I	4,00		**5**
0216	Animal husbandry	2,00					**2**
0218	Ethology	1,00					**1**
			0045	Histology I	2,00		**2**
				Compulsory elective courses	2,00		
	Semester hours per week (SWS)	19,43		Semester hours per week (SWS)	11,93	31,36	**30**
				Total semester hours		439	

* Course number (Lvnr.)

During the lecture-free period after the 1st semester:

Examinations in physics and zoology (scientific section of the veterinary preliminary examination (pre-physical course))

1st **year/2nd** semester (summer)							
	Lectures			Small group teaching in			
Lvnr.		SWS	Lvnr.		SWS	total hrs.	ECTS points
0501	Organ. Chemistry	2,00	0502	Chem. exercises II	1,143		**5**
0520	Special botany	1,86	0520	Special botany	0,14		**3**
0538	Career exploration	1,00					**2**
0540	Anatomy II	2,00	0540	Anatomy II	0,57		**4**
			0542	Histology and Embryology I	2,00		**2**
0543	Embryology	1,00					**1**
0562	Physiology I	4,00	0563	Physiol. and nutrition, practicals	2,50		**6**
0572	Biochemistry I	3,00	0574	Biochemical exercises	1,00		**5**
0711	Ethology	1,00					**2**
			Xxxx	Compulsory elective courses	2,00		
	Semester hours per week (SWS)	15,86		Semester hours per week (SWS)	9,35	25,21	**30**
				Total semester hours		353	
				Total hours first year of study		**792**	

During the lecture-free period after the 2nd semester:

Examinations in chemistry and botany (scientific section of the veterinary preliminary examination (pre-physical course))

In the lecture-free period before the 3rd semester: 14-day course at the Ruthe teaching

and research estate (agriculture and animal housing) and the biochemical practicals as a 5-day seminar

2nd **year/3rd** semester (winter)							
	Lectures			Small group teaching in			
Lvnr.		SWS	Lvnr.		SWS	total hrs.	ECTS points
0042	Anatomy III	1,00	0043	Anatomical dissection exercise II	4,00		**7**
			0046	Situs and exenteration	1,00		**1**
0047	Embryology	2,00					**3**
0063	Physiology II	2,50	0064	Physiol. and nutrition, practicals	3,00		**7**
0079	Biochemistry II	3,00	0076	Biochem. Exercises II	1,00		**5**
0180	Animal Breeding and Genetics I	3,00					**4**
0211	Animal welfare I	2,00					**3**
			Xxxx	Compulsory elective courses	3,00		
	Semester hours per week (SWS)	13,50		Semester hours per week (SWS)	12,00	25,50	**30**
				Total semester hours		357	

During the lecture-free period after the 3rd semester:
Examinations in physiology and biochemistry (anatomical-physiological section of the veterinary preliminary examination (Physikum)). In the lecture-free period before the 4th semester: 14-day course at the Ruthe teaching and research farm (agriculture and animal housing).

2nd **year/4th** semester (summer)							
	Lectures			Small group teaching in			
Lvnr.		SWS	Lvnr.		SWS	total hrs.	ECTS points
0515	Radiology	1,00	0515	Radiology	0,29		**4**
0541	Anatomy IV	1,00	0541	Anatomy IV	0,43		**2**
0588	General pathology	3,29	0589	General pathology	1,00		**4**
0600	Infectious diseases	3,00					**2**
0681	Animal breeding and genetics	1,00	0681	Animal breeding and genetics	2,00		**2**
0700	Animal nutrition	1,29	0702	Animal nutrition	1,71		**4**
0710	Animal welfare	2,00					**1**
0888	Biomathematics	2,00					**1**
			0780	Clinical propaedeutics (ruminants, pigs)	4,00		**10**
			0800	Clinical propaedeutics (horses)			
			0820	Clinical propaedeutics (small animals, small			

				mammals)			
			0840	Clinical propaedeutics (repro.)			
			Xxxx	Compulsory elective courses	3,00		
	Semester hours per week (SWS)	14,57		Semester hours per week (SWS)	12,43	27,00	**30**
				Total semester hours		378	
				Total hours second year of study		**735,00**	

During the lecture-free period after the 4th semester:
Examinations in anatomy, histology and embryology and animal breeding and genetics (anatomical-physiological section of the veterinary preliminary examination (Physikum)); General pathology examination as part of the veterinary examination

3rd **year/5th** semester (winter)							
	Lectures			Small group teaching in			
Lvnr.		SWS	Lvnr.		SWS	total hrs.	ECTS points
0017	Radiology	1,71					**2**
0101	Special infections	2,00	0104	Infection diagnostics course	4,00		**6**
0210	Animal hygiene	2,00					**2**
0227	Food	2,00					**2**
0260	Pharmacology and toxicology	3,00					**3**
0271	Diseases Reptiles, amphibians	1,00					**1**
0282	Internal medicine	2,00					**2**
			0288	Laboratory diagnostics	2,29		**2**
0342	Obstetrics and neonatology	1,00					**1**
0380	Reproductive medicine	1,00					**1**
0319	Clinical endocrinology	0,50					**1**
			0280	Clinical propaedeutics (ruminants, pigs)			
			0300	Clinical propaedeutics (horses)			
			0320	Clinical propaedeutics (small animals, small mammals)	4,00		**7**
			0340	Clinical propaedeutics (repro.)			
			Xxxx	Compulsory elective courses	2,00		
	Semester hours per week (SWS)	16,21		Semester hours per week (SWS)	12,29	28,50	**30**
				Total semester hours		399	

During the lecture-free period after the 5th semester:
Examinations in propaedeutics, microbiology and bacteriology, radiology, animal husbandry (veterinary examination)

The following practicals can be completed after the 5th semester and
should be completed by the end of the 10th semester:

1. according to § 55 Abs.1 TAppV control activities, methods and techniques for the food sector (2 weeks)
2. in accordance with § 57 para. 1 TAppV training in a curative veterinary practice or clinic (4 weeks)

3rd **year/6th** semester (summer)							
	Lectures			Small group teaching in			
Lvnr.		SWS	Lvnr.		SWS	total hrs.	ECTS points
0580	Special pathology	3,00	0581	Histopathology course	2,00		**4**
0621	Virology	3,00					**2**
0651	Poultry diseases	1,00					**1**
0721	Food science and hygiene	1,00					**1**
0722	Food toxicology	1,00					**1**
0742	Milk hygiene and dairy farming	1,00					**2**
0760	Pharmacology and toxicology	3,00					**2**
0776	Diseases Fish	0,50					**0,5**
0777	Diseases bees	0,50					**0,5**
0802	Equine diseases Repro	1,00					**1**
0804	Equine diseases	1,50					**1**
0822	Small animal diseases	1,00					**1**
0842	Repro. med. gynecology	1,00	0886	Repro. med. and biotechnology	0,86		**2**
0862	Bovine diseases I	2,50					**2**
0818	Clinical Immunology	1,00					**1**
			0649	Poultry clinic			
			0779	Pigs and small ruminants			
			0799	Horse clinic			
			0819	Small animal clinic	8,00		**8**
			0839	Bovine repro			
			0859	Bovine clinic			
			0879	Reproduction medicine			
			Xxxx	Compulsory elective Subject	2,00		
	Semester hours per week (SWS)	22,00		Semester hours per week (SWS)	12,86	34,86	**30**

	Total semester hours	488		
	Total hours third year of study	**887,00**		

During the lecture-free period after the 6th semester:
Examinations in virology, pharmacology and toxicology, histopathology [partial pathology examination] (veterinary examination)

The following practicals can be completed after the 6th semester and
should be completed by the end of the 10th semester:

1. according to § 55 Abs.1 TAppV control activities, methods and techniques for the food sector (2 weeks)
2. in accordance with § 57 para. 1 TAppV training in a curative veterinary practice or clinic (4 weeks)

4th academic **year/7th** semester (winter)							
	Lectures			Small group teaching in			
Lvnr.		SWS	Lvnr.		SWS	total hrs.	ECTS points
			0081	Seminar Special Pathology	1,00		**1**
			0084	Necropsies	0,71		**2**
0151	Poultry diseases	1,00					**1**
			0163	Parasitology	4,00		**2**
0203	Animal nutrition	2,00	0204	Animal nutrition	2,00		**3**
0220	Meat and poultry hygiene	2,00	0224	Slaughter animal and meat examination	2,00		**6**
0222	Food science and hygiene	2,00	0250	Cross-sectional teaching	2,00		
0261	Drug and narcotics law	2,00	0263	Preparation of medicines	1,00		**4**
0308	Horse diseases	0,50					**1**
0311	Anesthesiology	0,50					**1**
0324	Small animal diseases	1,00					**1**
			0343	Gyn. and Obstetrics Exerc.	0,86		**1**
0346	Reproductive medicine (udder)	1,00					**1**
0362	Bovine diseases II	1,00					**1**
			0285	Herd health management	0,36		**5**
			0150	Poultry clinic	6,00		
			0281	Pigs and small ruminants			
			0301	Horse clinic			
			0321	Small animal clinic			
			0341	Bovine repro			
			0361	Bovine clinic			
			0382	Reproduction medicine			
			Xxxx	Compulsory elective subject	2,00		

	Semester hours per week (SWS)	13,00		Semester hours per week (SWS)	21,93	34,93	**30**
				Total semester hours		489	

During the lecture-free period after the 7th semester:
Examinations in pharmaceutical and narcotics law, animal nutrition and parasitology (veterinary examination)

The following EPT can be completed after the 7th semester and should be completed by the end of the 10th semester:

1. according to § 55 Abs.1 TAppV control activities, methods and techniques for the food sector (2 weeks)
2. in accordance with § 57 para. 1 TAppV training in a curative veterinary practice or clinic (4 weeks)

4th academic **year/8th** semester (summer)							
	Lectures			Small group teaching in			
Lvnr.		SWS	Lvnr.		SWS	total hrs.	ECTS points
			0583	Pathol. anat. practicals	2,00		**2**
0603	Animal disease control	3,00					**2**
0717	Laboratory animal science	1,00					**1**
0720	Meat and poultry hygiene	1,00	0723	Food hygiene practicals	2,00		**5**
0721	Food science and hygiene	2,00	0750	Cross-sectional teaching	3,00		
			0745	Milk hygiene practicals	2,00		**2**
0783	Swine diseases	2,00					**2**
0784	Sheep diseases	1,00					**1**
0786	Veterinary professional law	2,00					**1**
0791	Herd health management	0,86	0785	Herd health management excursion	0,36		**1**
0805	Horse diseases	2,00					**2**
0823	Small animal diseases	2,00					**2**
0843/0845	Reproduction medicine	0,71	0844/0881	Repro. med. nd biotechnology	0,86		**4**
0864	Bovine diseases III	1,00					**1**
0762	Clinical pharmacology	1,00					**1**
			0650	Poultry clinic	2,00		**3**
			0781	Pigs and small ruminants			
			0801	Horse clinic			
			0821	Small animal clinic			
			0841	Bovine repro			
			0861	Bovine clinic			
			0883	Reproduction Medicine			
			xxxx	Compulsory elective subject	3,00		
	Semester hours per week (SWS)	19,57		Semester hours per week (SWS)	15,21	34,79	**30**

	Total semester hours	487	
	Total hours fourth year of study	**976,00**	

During the lecture-free period after the 8th semester:
Examinations in control of animal epidemics and infection epidemiology, animal welfare,
as partial exam (multiple choice) reproduction medicine, internal medicine, surgery (veterinary exam)

5th academic **year/9th and 10th** semester (winter/summer)	ECTS points
The 5th year of study is carried out as a practical year. During the practical year, 460 hours of clinical teaching (hands-on) are held at the University of Veterinary Medicine Hannover Foundation at various clinics or in paraclinical facilities (practical semester, 460 hours) according to the timetable of the clinics. Within the 9th and 10th semester, the following additional courses take place: 1. Extramural EPT (16 weeks) 2. Practical training in slaughterhouses (3 weeks), possibly together with inspection activities, methods and techniques in food hygiene (2 weeks) 3. Practical training in public veterinary services (two weeks) The following examinations are taken after the practical year (after the 10th semester): Veterinary examination: Special pathology Food science and hygiene Milk hygiene and dairy science Poultry diseases Reproduction medicine Internal medicine Surgery Forensic veterinary medicine	
Sum of the total number of intramural hours for all semesters 3850,00	**30**
Any "special elective" hours taken that exceed the specified target in the semester will be credited as "general electives".	

1.3.1.4 Evaluation regulations

At its meeting on 18 August 2021, the Executive Board of the University of Veterinary Medicine Hannover adopted extensive changes to the procedural guidelines for the implementation of internal evaluations in the areas of study and teaching dated 23 November 2017. The procedural guideline is hereby re-published.

Procedural guidelines for conducting internal evaluations in the areas of teaching and learning

Preamble

The TiHo regards internal evaluations as an important instrument for reviewing its own performance with the aim of developing quality in the areas of study and teaching. The evaluations and their documentation of results thus form the basis for improvement measures and funding opportunities. The personal evaluations are orientated towards the principles of expediency, efficiency and transparency. The requirements for the protection of personal data and information are taken into account in all areas and the requirements of data protection are considered.

I General information

§ 1 Scope and subject matter

(1) In accordance with the "Regulations for Internal Evaluation at the University of Veterinary Medicine Hannover", this guideline regulates the procedure for carrying out internal evaluations in the areas of study and teaching (hereinafter: evaluations).

(2) The evaluations take into account the applicable service agreements on the principles of the introduction and use of data- processing systems at the TiHo as well as the IT procedure description of the evaluation software in the currently valid version.

§ 2 Responsibility and competences

(1) The Executive Board bears overall responsibility for the evaluation procedures in the areas of study and teaching.

(2) The staff representatives and the data protection officer must be involved in the introduction of evaluation procedures and instruments within the scope of their statutory responsibilities.

(3) The Vice President for Teaching and the Dean of Studies for Biology are responsible for the quantitative evaluation survey in accordance with § 6a) in cooperation with the respective study committee.

(4) The relevant committees for each degree programme are responsible for the qualitative evaluation by students and graduates in accordance with § 6b):

Veterinary Medicine: Committee for curricular affairs

MSc Animal Biology and Biomedical Science: Master Committee

PhD programmes: respective PhD committees.

Continuing education programmes: respective committees

§ 3 Participation

(1) All members and affiliates of the TiHo are obliged to participate in internal evaluations. Graduates of TiHo degree programmes are included on a voluntary basis (see Evaluation Regulations § 3).

(2) Students must be involved in the qualitative evaluation of teaching and further development of the

degree programmes in accordance with § 6b). The survey results of the graduates are included in the continuous monitoring and further development of the degree programmes.

(3) Teachers and teaching support staff are obliged to participate in the implementation of the resulting measures.

§ 4 Sustainability

(1) The results of internal evaluations are taken into account in the interests of sustainable quality development in the areas of study and teaching.

(2) The responsible committees in accordance with § 2 assess the results of the evaluations, develop appropriate measures to improve quality and report to the Executive Board.

(3) The Executive Board assesses the results of evaluations, takes into account reporting of results by the responsible committees and, based on this, incorporates goals and requirements into future measures (e.g. target agreements).

(4) The Executive Committee reviews the implementation of the measures at appropriate intervals.

(5) The results of the evaluation procedures are included in accreditation procedures and must be published in accordance with NHG § 5 para. III.

§ 5 Data protection

All persons involved in the implementation of evaluation procedures are obliged to comply with all data protection regulations.

II Procedure

§ 6 Evaluation in studies and teaching

The evaluation refers to teaching activities of all lecturers at the university as well as the organisational and content-related study structure. It is carried out by

a. determining the teaching load of academic staff by the Vice-President for Teaching in collaboration with the Department of Student and Academic Affairs and the respective study committee (quantitative evaluation)

b. assessment of courses and organisational and content-related study structure by the students and graduates (qualitative evaluation).

§ 7 Quantitative evaluation

(1) The quantitative evaluation of academic staff from permanent positions is carried out by comparing the teaching obligation based on the Teaching Obligation Ordinance and the actual capacity utilisation based on the course catalogue and the respective number of students.

(2) The quantitative evaluation takes place regularly at intervals of approx. five years or earlier if necessary.

§ 8 Qualitative evaluation by the students and graduates

(1) The questionnaires for the qualitative evaluation are developed for each degree programme by the responsible committee in accordance with § 2. Content-related and organisational aspects, including the student workload, must be taken into account.

(2) The evaluation by students and graduates is carried out separately for each degree programme. In the case of online surveys by students, the evaluation period extends from the first third of the semester to one month after the end of the lecture period.

Students can access the evaluation forms for the courses of the respective semester with password protection. Alternatively, the survey can be carried out on paper forms during or after the end of the course. Graduates are asked to submit their evaluations online or in paper form at regular intervals after graduation.

(3) The surveys cover all courses of the respective degree programme.

(4) The anonymity of students must be preserved. For events with fewer than 5 participating persons students are free to participate. In these cases, teachers and students should decide together on the use of a questionnaire. In the event that no questionnaire survey is carried out, a structured and recorded discussion about the course should take place, the content of which is orientated towards the questions of the course evaluation. In individual cases, a representative of the responsible committee in accordance with § 2 may be consulted. The procedure is conducted upon request by the lecturer or from the group of students. An anonymous and data protection-compliant online or paper-based procedure is offered for graduates.

(5) Multiple participation of one respondent per survey cycle is not permitted and must be ruled out.

(6) As far as possible, the data collected is automatically processed into a results report. Results on impersonal questions are made available to the Executive Board. In the subject of veterinary medicine, the results relating to specific persons can be viewed by the lecturers concerned and the Vice President for Teaching or a person appointed by him or her from the respective committee in accordance with § 2. In other degree programmes, the results are discussed in the relevant committees.

(7) The responsible committees can make recommendations to the Executive Board on study conditions based on the evaluation results.

§ 9 Entry into force

This guideline replaces the version of 23 November 2017 and comes into force on the day after its publication in the announcement journal of the University of Veterinary Medicine Hannover.

Hannover, 24 September 2021, The President, Dr Dr h. c. mult. Gerhard Greif

1.3.1.5 Agreement for extramural practicals (Core Curriculum and EPT)

An agreement between VEE and supervisors of extramural practicals and extramural EPT and between students and supervisors of extramural practicals and extramural EPT was designed and approved by all 5 german VEEs and can be generated online (VMTF service Centre, service Centre of Association of Veterinary Faculties). See also the original version in German.

Agreement for extramural practicals (VMTF Service Centre) (translation)
Basic data supervisor: .....
Confirmation of 4 hours of didactical training on Day 1 Competences, Code of conduct, Good Clinical Practice, and practical and clinical teaching. (mark)
Basic data practical centre: .....
Basic data student: .....
Agreement:
In order to carry out mandatory practical work prescribed for students in the Veterinary Medicine degree programme in accordance with Sections 54 to 62 and Annexes 6 to 12 of the Ordinance on the Licensing of Veterinarians (TAppV), the following is agreed between supervisor and student
First name/surname: ……
Street: …….
Postcode/city: …….
E-mail: …….
Matriculation number*): 1234567
* Proof of enrolment in the veterinary medicine degree programme was provided by submitting a current certificate of enrolment.
Sent by VEE ..... and the centre providing EPT .....
The following has been agreed:

§ 1 Type and duration of the practical
(1) During the period from ..... to ....., the trainee shall complete a practical in accordance with TAppV, § 55 Para. 1
in conjunction with § 56 Para. 1 and Annex 6
practical training in inspection activities, methods and techniques for the food sector § 55 Para. 2
in conjunction with § 56 Para. 2 and Annex 7
practical training in slaughter houses § 57 Para. 1
in conjunction with § 58 or § 59 and Annex 8
first stage of practical training in curative veterinary practice § 57 para. 2
in conjunction with § 58 and Annex 9
second stage of practical training in curative veterinary practice § 57 para. 2
in conjunction with § 59 and Annex 10
practical training in a veterinary clinic § 57 para. 2
in conjunction with § 60 and Annex 11
practical training in an elective practical § 61
in conjunction with § 62 and Annex 12
practical training in public veterinary services. (one option has to be chosen)
(2) The practical training period is …xx… hours (total)
(3) The training objective and training purpose are derived from the section of the TAppV cited under § 2 (1) and the catalogue of learning objectives/logbook of the sending educational institution.
The VEE appoints the veterinarian ..... with the training of the student during the described extramural EPT.

§ 2 Holidays
The student has no holiday entitlement during the practical

§ 3 Obligations of the centre providing EPT
The centre is obliged
- to provide the trainee with practical knowledge and competences in accordance with the traineeship logbook and the 'ESEVT Day One Competences' (List of subjects and Day One Competences, 08 June 2023)
- to appoint a supervisor as contact person,
- to provide the necessary work equipment free of charge,
- grant the necessary time off to attend a supplementary external training programme.
- issue the student with a certificate of practical in accordance with Annexes 6 to 12 TAppV at the end of the practical.

§ 4 Obligations of the student
The student is obliged to
- to carry out the practical conscientiously,
- to follow the instructions of the contact person of the practical organisation,
- comply with the agreed attendance times,
- comply with the accident prevention regulations and other company regulations,
- to treat the work equipment and other items made available during the practical with care.

§ 5 Documentation / evaluation of the practical
The practical centre and the student agree to provide the VEE with feedback on practical activities in the form of a standardised evaluation. The evaluation at the respective VEE shall be anonymised.

§ 6 Inability to attend
The student is obliged to inform the contact person immediately if he/she is unable to participate in the trainee programme and the expected duration of the absence.

§ 7 Termination / cancellation
(1) The practical shall end at the end of the period agreed in § 1 without the need for cancellation.
(2) A mutually agreed change to the practical period is possible subject to the provisions of the TAppV. It must be in text form.
(3) The right to extraordinary cancellation for good cause remains unaffected for both parties to the contract. The cancellation must be made in writing.

§ 8 Insurance cover
Accident insurance cover for practicals within Germany is provided by the accident insurance provider responsible for the practical company.

§ 9 Confidentiality
The student has to maintain confidentiality about matters whose confidentiality is required by law, even after his/her departure. Upon termination of the practical relationship, all official documents and any transcripts or copies made must be returned to the centre providing EPT.

§ 10 Ancillary agreements
The agreement of collateral agreements must be in writing. There are no further obligations for the centre providing EPT. In particular, the practical does not establish an employment relationship with the centre

providing EPT. No entitlement to employment or training at the practical location is acquired. Free text field for additional agreements ……

§ 11 Training agreement
The terms and conditions of this contract, excluding any ancillary agreements, shall also apply as a training agreement with the sending VEE.
Place and date .....
Signature of the centre providing EPT
Signature of the student
The contracting parties agree that the personal data required for the fulfilment of this practical agreement may be processed electronically. I have taken note of the data protection information.

_____
Signature for the centre providing EPT
Signature of the student

Notes
To § 1 (1) and (2):
In accordance with TAppV (§ 54, sentence 1), the compulsory practicals are carried out outside the lecture period and usually the whole day according to the workload to an appropriate extent on all weekdays in the respective weekdays in the respective institutions. The duration of the practicals is subject to a minimum number of hours and a minimum number of weeks which may be reached at different times depending on the agreed number of hours/week. Both requirements must be met by students.
To § 1 (4):
The regulations of the European accreditation body for veterinary medical education (European Association of Establishments for Veterinary Education, EAEVE) require a total of at least four hours of didactic, professional and ethical training for the veterinarians supervising the practicals. You can find an ATF-recognised training course developed for this purpose here.
To § 2:
Students who are not yet of legal age are entitled to have holidays during their practical. In this case, § 19 of the Youth Labour Protection Act applies. Should leave is agreed in deviation from § 2 under § 10, this shall be deducted from the training period certified in accordance with the TAppV.
to § 5:
In order to ensure high standards in veterinary training and to improve the attainment of first-day competencies by graduates (Day One Competencies), the EAEVE requires European training centres to establish quality assurance measures - both for intramural teaching at the university and for extramural teaching in the form of practicals. The veterinary training centres are therefore obliged to have the practicals evaluated both by the students and by the practical supervisors.
to § 8:
In the case of extramural EPT, the university has no direct influence on the way in which the practical is carried out or on the course of the practical. During the practical, the students integrate themselves into the work process and thus fulfil the requirements for dependent employees in accordance with § 2 Para. 1 No. 1 of the German Social Code (SGB) VII. It is irrelevant for the assessment of the practicals under accident insurance law whether they are mandatory in the study or examination regulations or whether they are voluntary. The accident insurance institution responsible for the company providing EPT is responsible (§ 133 Para. 1 SGB VII). If practical work is carried out abroad in connection with studies or a doctorate, there is no accident insurance cover without a contractual agreement, unless the social insurance law of the host country also provides entitlement to benefits for such activities. Corresponding regulations would have to be agreed under § 10 subsidiary agreements.

Translated with DeepL.com (free version)

1.3.2 Learning objectives

1.3.2.1 Catalogue of learning objectives

Catalogue of learning objectives (pdf.file)

1.3.2.2 Day One competences (D1C)

The contribution of the veterinary curriculum courses towards the development of the ESEVT Day One competences (cf. ESEVT SOP, 2023, Annex 2) are surveyed regularly (see thesis Ehrich 2019) and Table 1.3.

Institutions and clinics were asked whether they support developing the competence in teaching (light blue S = Support), or whether they assess the competence (dark blue A = Assess). All day one competences are taught and most of them are assessed at the TiHo.

Day One competences according to ESEVT SOP -2023 (Table Area 3 Curriculum) (XLS.file)

Please click on the table to enlarge (download the whole table for better readability as xls.file):

1.3.3 Logbooks

1.3.3.1 Surgical Logbook

Surgical Logbook (pdf-file)

Surgical Logbook of the TiHo

Learning stations to be completed in the Clinical Skills Lab (1st to 4th semester):

- Courses can be selected online via 'TiHoStudis'
- Small group courses for up to 4 students
- Learning materials to prepare for courses on 'Moodle'
- Supervised stations in the presence of a tutor from the Clinical Skills Lab
- All courses listed below must be completed by the end of the 4th semester as an admission requirement for the preliminary medical examination

(1) Knotting techniques A.0 (Instrument knotting techniques)
(Content: Suture science | Knot safety | Cross knots | Slip knots | Surgical knots)

(2) Knotting techniques B.0 (Hand knotting techniques)
(Content: One-handed and two-handed knotting technique | Cross knot | Slip knot | Surgical knot)

(3) Suturing techniques A.0 (single sutures)
(Content: Instrument handling | Skin incision | Handling of suture material| Button suture | Interrupted vertical mattress suture according to DONATI | Interrupted horizontal mattress suture (U-shaped suture) | SULTAN diagonal suture))

(4) Suturing techniques B.0 (Continuous sutures)
(Content: Instrument handling | Cushing suture | Cushing suture | Intracutaneous suture)

(5) Hand hygiene
(Content: Surgical hand washing | Wearing surgical scrubs | Surgical hand disinfection | Wearing sterile surgical gloves)

(6) General instrument handling
(Content: Assembling instruments for different surgical procedures | Handling of surgical instruments)

Learning stations to be completed in the Clinical Skills Lab (5th to 8th semester):

- Courses can be selected online via 'TiHoStudis'
- Small group courses for up to 4 students
- Learning materials to prepare for courses on 'Moodle'
- Supervised stations in the presence of a tutor from the Clinical Skills Lab
- All courses listed below must be completed by the end of the 8th semester as an admission requirement for the clinical examinations

(1) Intubation of small animals
(Content: Placement of tracheal tubes in dogs and cats)

(2) Anaesthesia management
(Content: Main components of an anaesthesia device | Learning the operating mode of the

inhalation anaesthesia device | Preparation of a semi-closed inhalation anaesthesia system | Connection of an intubated dog head model for maintenance of anaesthesia)

(3) Positioning techniques for radiography

(Content: Theoretical basics of radiological radiation and legal provisions of veterinary radiation protection | Application of different positioning techniques in small animals)

(4) Resuscitation and Emergency management

(Content: Emergency management | Cardiopulmonary resuscitation using the ABC method in the correct sequence for dogs (basic life support)

(5) Bandaging techniques

(Content: Application and removal of a bandage)

- One of the following courses must be chosen: Horse hoof bandage | Horse toe pad bandage | Small animal head bandage | Small animal abdominal/thoracic bandage | Small animal paw bandage | Small animal high bandage | Cattle claw bandage

(6) Captive bolt gun | Livestock

- Block seminar for max. 8 students

(Content: Legal and theoretical basics | Handling of the captive bolt gun | Correct localisation and application of the device on pigs, sheep, cattle and horses including special features (horned vs. hornless and different head shapes in pigs)

(6) Nerve block anaesthesia in horses

(Content: Performance of the relevant limb conduction anaesthesia in horses)

Learning stations to be completed in the Clinical Skills Lab (5th to 8th semester):

- Block seminar on selected dates which can be selected online via 'TiHoStudis'
- Group courses for up to 4 students/tutor
- Learning materials to prepare for courses on 'Moodle'
- Supervised stations in the presence of a tutor from the Clinical Skills Lab
- All courses listed below must be completed by the end of the 8th semester as an admission requirement for the clinical examinations

(1) Castration of female dogs

(Content: Theoretical Introduction | Surgical Performance)

(2) Castration of male dogs

Content: Theoretical Introduction | Surgical Performance)

(3) Castration of female cats

(Content: Theoretical Introduction | Surgical Performance)

(4) Castration of male cats

(Content: Theoretical Introduction | Surgical Performance)

1.3.3.2 Practical Year logbooks

Please see this logbooks on the website

Patient tracking documentation:	**all species, logbook**
Horses	Logbook, Timetable
Cattle	Logbook, Timetable
Small Animal	Logbook, Case study, Evaluation form
Small Mammals, Reptiles and Bird	Logbook, Timetable
Pigs, Small Ruminants and Forensic Medicine	Logbook
Poultry	Logbook, Timetable
Fish	Case study

1.3.4 Checklists, details and evaluation forms for extramural EPT

1.3.4.1 Checklist for extramural EPT in the curative practice

Checklist for EPT in the curative practice of a veterinary surgeon or in an animal clinic

Name: …….
Registration number: ……
Address: …….
Period of EPT: ……
Name and address of responsible supervisor: ……..

Is the veterinary surgeon supervising a National Board certified veterinary specialist? When YES, please give the title: ……

The practical was carried out in a :
0 Large animal practice (livestock) **0** small animal practice
0 Large animal practice (horses) **0** mixed large animal-/small animal practice
0 At another location, namely (e.g. zoo, laboratory etc.):

How long has the practice of the supervising veterinary surgeon been in existence?
How many veterinary surgeons work in the practice?
Which animal species were presented as patients in the practice in which you completed your practical?

Further special features:
How many hours did you carry out practical activities daily:
Were you integrated in the emergency service? **0** Yes **0** No

The following activities could be carried out in the stipulated time (performed not observed):
Please fill in this table. At least 10 categories should be filled in. Should the activities not be within the spectrum of the practice please describe your other activities.

Type of activity	**Number**	**Confirmation of the supervising veterinarian**

Patient orthopaedics		
Patient cardiology		
Patient with illness of the stomach/intestinal tract		
Patient with skin disease		
Patient with hormonal imbalance		
Patient andrology		
Patient gynaecology		
Patient with neoplastic diseases		
Patient with neurological diseases		
Patient with behavioural disorder		
Other diseases or patients (please define):		
Clinical examination techniques		
Communication with animal owner		
Intravenous injection		
Intramuscular injection		
Subcutaneous injection		
Puncture (type of puncture – please specify):		
Imaging (please define – ultrasound, radiology, CT, MRI):		
Endoscopy (please define):		
Intubation		
Monitoring anaesthesia		
Surgery (observation, involvement as assistant, performed), please describe:		
Inserting a probe (describe which one):		
Rectal examination		
Obstetrical examination		
Obstetrics		
Taking of blood sample		
Assessing blood examinations (blood count, blood chemistry, serology etc.)		
Taking urine		
Assessing urine examination		
Laboratory activity, describe the type of activity:		
Further activities (please define):		

Evaluation of the practical at your chosen location:
Could you carry out a lot of practical activities: **O** Yes **O** No
How do you assess the instruction to the practical activities: **O** Good **O** Not

satisfactory
How do you assess the practical/practical in general: **O** Good **O** Not satisfactory
Miscellaneous: free text
to assess the practical ....

Date/Place Signature: student Signature: veterinarian

Comments of the supervising veterinarian on the practical in the curative practice:
Student: ……..
Registration number:……
Length and place of practical:…….
Comments:…….
…….
Place/date Signature

1.3.4.2 Details concerning practical in food sector

Details concerning practical
"Training in control activities, methods and techniques for the food sector"
according to § 55(1) and § 56(1) of the National Veterinary Curriculum, TAppV
(in brief: hygiene and food inspection practical)

Length: 75 h in at least 2 weeks (should be consecutive)

Date: stipulated by the university

Place:
- for hygiene monitoring - in slaughterhouses or food businesses, responsible veterinary authorities; for monitoring dealings with food - responsible government departments (as a rule a veterinary and food regulatory agency)
- for food monitoring responsible government departments (e.g. state inspection departments)
- private food inspection laboratories
- institutes of food science which control the quality and harmlessness of food (e.g. food businesses with own control laboratory)
- specialist university units (e.g. institutes for food hygiene, meat and milk hygiene)

Supervisor (in accordance with § 56 (1) TappV):
Full-time veterinarian or other qualified persons in the above named establishments for control activities, food monitoring or examination

Contents (in accordance with § 56 (1) TAppV):
- Assessment of hygiene conditions on premises and facilities
- Methods for controlling the hygiene status
- Assessment of processing and manufacturing technology
- Control activities, methods and techniques for the food sector
- Monitoring or examining various foods

- Assessment of marketability of food
- Food technology
- Quality assurance

Due to the broad range of possible training institutions and the contents of the practical it is not expected that all of the listed factors will be completely covered, since this depends on the respective business where the practical takes place and its tasks and also on the two-week period.
To cover the listed tasks in the TAppV and for encouraging the designing of the practical the following main points should be named:

- Familiarisation with structure and tasks of the business where the practical takes place or the quality assurance system of the food businesses
- Tasks of the quality assurance officer of a business
- Certification of businesses, accreditation of investigative laboratory
- Self-checking concepts of businesses and their daily implementation
- Intensive working with food manufacturing technology, technology concerning storage and transport
- Food hygiene border controls
- Investigating potential health hazards and risk evaluation in the manufacturing process
- Rigid control of adherence to respective statutory provisions (VO 178/2002, LFGB (Food, Consumer Goods, and Animal Feed Code), EU-Hygiene package)
- Evaluation of structural appropriateness of premises
- Staff hygiene, separation of clean and dirty sectors
- Information on taking samples, examination and results of food monitoring and the national testing control
- Participation or cooperation in hygiene trainings for staff
- Participation in official government checks on businesses, recording or drafting requirements, taking samples
- Measures in the case of food infections (notification, cooperation with public health department, urgent measures, epidemiological investigations etc.)
- Participation in summary proceedings, ev. court hearings
- Acquirement/consolidation of knowledge on merchandise, checking legally compliant labelling
- Getting to know microbiological, chemical, histological, molecular genetic laboratory methods, sensory investigations, writing reports, assessing food according to the enforced law
- Studying product-related and hygiene related knowledge of statutory provisions and official examination methods (§ 64 LFGB)
- Perusing files (food monitoring/food examination)

Every student is compulsorily involved in the evaluation of the practical in accordance with the joint guidelines from the german VEEs.

1.3.4.3 Details concerning practical in VPH

Details concerning **practical**
"Training in veterinary public health" according to § 61 and § 62 of the National Veterinary Curriculum (TAppV) of 27.07.06
(in brief: public veterinary service practical)

Length: 75 h in at least 2 weeks (should be consecutive)
Time: to be stipulated by the university
Place: Departments of veterinary administration, veterinary regulatory agency and food regulatory agency, veterinary service sector in state or federal state ministry

Contents (in accordance with § 62 (1) TAppV):

- comprehensive practice in the tasks of veterinary administration
- obtaining knowledge of administrative and regulatory law
- obtaining knowledge of organisation and administration

To cover all necessary practical aspects the following details should receive attention (depending on the establishments where the practical takes place the field of activity varies; accordingly not all of the named points of the training can be realised):

Main focus Food

- Familiarisation with structure and tasks of a veterinary office including basic legal principles
- Getting to know self-checking concepts of food businesses and their official control
- Preparation and assessment of business controls, whereby the term "food business" should be widely defined (e.g. slaughterhouse business, dissecting business, processing business, cold store, wholesale trade stock, supermarkets, shops, restaurants, markets etc.)
- Getting to know the meaning of the main focus points of hygiene control in food businesses
- Recognising shortcomings/deficits and official measures (sanctions, fines etc.)

Main focus Animal Welfare

- Overview of tasks of veterinary authorities in implementing the animal welfare law
- Granting approval in accordance with § 11 Animal Welfare Law (animal shelters, boarding facilities, zoos, animal exchanges, pet shops, commercial animal husbandry, commercial places to view animals)
- Control of agricultural animal husbandry, authorised businesses in accordance with § 11
- Cooperation in implementing regulations on dangerous dogs
- Transport controls and examination of transportability
- Processing reports or applications for permission to carry out animal experiments
- Involvement in Consumer Committee (CC) controls

Main focus Livestock Epidemic Controls

- Essentials of state measures on livestock epidemic controls (e.g. combating leucosis, brucellosis, BHV1, ESP-monitoring etc.)
- Animal epidemic news system (TSN)
- Decrees (if need be bylaws) of the veterinary office
- Discussion, if need be implementation of voluntary control procedures(livestock epidemic insurance fund)
- Working with TRACES (import, export of animals or animal products)
- Import of animals (EU-domestic animals identity card)
- Control of institution for disposal of animal bodies
- Management of livestock epidemic outbreaks
- Compensation, financial aid: managing applications
- Control of livestock (e.g. livestock transportation regulation, pig farming hygiene regulation among other things)
- Carrying out diagnostics of animal diseases
- Issuing of health certificates by veterinary authority

Main focus Monitoring Veterinary Drugs

- Control of in-house pharmacy
- Monitoring of veterinary drugs manufacture and trade
- Special-purpose drug law controls in agricultural businesses
- Implementing the data bank “Vetidata”

Miscellaneous

- Government veterinary surgeon/practising veterinary surgeon: tasks, cooperation and supervision
- Getting to know the quality management system in veterinary service (e.g. EDP-program “Tizian”)
- Accompanying the veterinary assistant in taking samples of animal feed
- Cooperating with specialist authorities in the District Office (lower nature conservation authority, protection of species and hunting authorities)
- Agricultural architecture

It is not necessary to complete all of the mentioned points, since veterinary offices have to monitor very different institutions. It would, however, be very desirable to use the time for getting to know the tasks of the veterinary service in many different ways.

Every student is compulsorily involved in the evaluation of the practical in accordance with the joint guidelines from the german VEEs.

1.3.4.4 Details concerning practical in slaughterhouse and meat inspection

Details concerning practical

"Training in live animals for slaughter and meat inspection" according to § 55 (2) and § 56(2) of the National Veterinary Curriculum (TAppV) from 27.07.06

(in brief: slaughterhouse practical)

Length: 100 h in at least 3 weeks (should be consecutive)

Time: to be stipulated by the university

Place: for live animals for slaughter and meat inspection in slaughterhouse, responsible authority (in the slaughterhouse)

Demands on the slaughterhouse:

- EU approved
- Full-time government official veterinarian responsible for control activities
- In the case of exclusive slaughtering of pigs or cattle at least 30 hours practical training period in a slaughterhouse with the other respective animal species

Supervisor (in accordance with § 56 (2) TAppV): Full-time veterinarian at the responsible authority

Contents (in accordance with § 56 (2) TAppV):

- Inspection and assessment of live animals for slaughter
- Inspection and assessment of meat of various animal species
- Treatment of live animals for slaughter considering animal welfare

In the following details concerning possible training contents are given which should help in imparting the complexity of the veterinary work at the slaughterhouses during the practical. On the one hand these details cannot be seen as being in anyway complete. On the other hand it is to be taken into account that the focus of the practical should be on the animal to be slaughtered and on meat inspection.

- Inspection of live animals for slaughter – cattle, pig, possibly other animal species
- Measures following the inspection of live animals for slaughter
- Controlling of animal welfare (transport prior to slaughtering)
- Inspection of meat – cattle, pig, possibly other animal species
- Measures following the inspection of meat, assessing the fitness for human consumption
- Trichinella inspection
- Bacteriological meat examination
- Other examinations
- Taking samples (e.g. National Residue Control Plan)
- Fitness for human consumption labelling
- Meat hygiene statistics
- Checking handling of SRM and animal by-products
- Slaughterhouse apprenticeship (technology of meat production, processing, storage, classification, intestine processing etc.)
- Hygiene monitoring (premises, equipment, staff, processes, cleaning, disinfection, own control – QA management, slaughtering hygiene etc.) in accordance with the principles of good hygienic practice and the HACCP Concept.

Every student is compulsorily involved in the evaluation of the practical in accordance with the joint guidelines from german VEEs.

1.3.4.5 Evaluation form for the slaughterhouse practical

Evaluation form
for the slaughterhouse practical in accordance with § 55 (2 and 3) and § 56 (2) of the Ordinance on the Licensing of Veterinarians (TAppV)

To be completed by the student, countersigned at the end of the evaluation form by the veterinarian providing training

Surname, first name of the student: _____

Practical period: from: _____. ___. 20___ **until:** __. ___. 20___

Training centre (name and address of slaughterhouse):

Competent authority (e.g. veterinary office, name, address, stamp if applicable):

Please mark an answer in the following way: □. If you want to correct an answer, please fill in the incorrectly marked circle, like this: ●

Activity	explained	seen	Carried out under super-vision/with help	Carried out indepen-dently	None of the above answers
1. general and ante mortem examinations					
1.1 Slaughtered animal species					
Cattle (approx. number slaughtered per week: _____)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Pigs (approx. number slaughtered per week: _____)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Other animal species: please name: _____	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
1.2 Performing ante-mortem inspection					
in the slaughterhouse	O	O	O	O	O
in the farm of origin	O	O	O	O	O
home slaughter	O	O	O	O	O
game	O	O	O	O	O
1.3 Transport					
Monitoring animal transport and unloading	O	O	O	O	O
1.4 Ante-mortem inspection					
Assessment of animal health	O	O	O	O	O
Assessment of animal well-being	O	O	O	O	O
Examination findings relevant to animal welfare	O	O	O	O	O

Implementation of measures in the event of deficits (Animal health/animal welfare)	O	O	O	O	O
1.5 Cleanliness of the animals					
Assessment of the cleanliness of the animals	O	O	O	O	O
1.6 Information on the food chain					
Evaluation of food chain information	O	O	O	O	O
1.7 Animal health measures					
Measures to prevent animal diseases (checking vehicle cleaning and disinfection, documents, etc.)	O	O	O	O	O
Implementation of animal health measures	O	O	O	O	O
1.8 Decisions on suitability for slaughter based on cases or case studies					
Processing decisions on the suitability for slaughter of cases and case studies	O	O	O	O	O
1.9 Animal welfare (monitoring of operational activities and implementation of official measures)					
Dealing with non-transportable, sick, injured or non-transportable slaughterable animals	O	O	O	O	O
Monitoring: Waiting/stable area, drive, restraint, Anaesthetic technique, anaesthesia, anaesthetic success, bleeding	O	O	O	O	O
Monitoring compliance with standard operating procedures by company employees	O	O	O	O	O
Monitoring operational measures in the event of animal welfare issues, circumstances (e.g., incorrect anaesthesia, insufficient bleeding)	O	O	O	O	O
Implementation of official measures in the event of infringements (assessment of findings, sampling if necessary, preservation of evidence)	O	O	O	O	O
2. meat inspection/post mortem examinations					
2.1 Beef					
Bovine: belt work	O	O	O	O	O
Cattle: single animal (suspected case)	O	O	O	O	O
2.2 Pig					
Pig: Band work	O	O	O	O	O
Pig: single animal (suspected case)	O	O	O	O	O
2.3 Other animal species: please name					
Animal species:_____Ribbon work	O	O	O	O	O
Animal species:_____Single animal (suspected case)	O	O	O	O	O
2.4 Trichinella examination					
Sampling	O	O	O	O	O
Processing the samples	O	O	O	O	O
Diagnostics/microscopy	O	O	O	O	O
2.5 Bacteriological examination					
Organisation and documentation	O	O	O	O	O
Sampling	O	O	O	O	O

Processing of samples in the laboratory	O	O	O	O	O
Diagnostics	O	O	O	O	O
2.6 Residue analyses					
Organisation and documentation	O	O	O	O	O
Sampling	O	O	O	O	O
2.7 Further investigations					
pH value measurement	O	O	O	O	O
Cooking sample	O	O	O	O	O
Melting sample	O	O	O	O	O
other; please specify:	O	O	O	O	O
2.8 Discussion of findings					
Ante-mortem inspection	O	O	O	O	O
post mortem examination	O	O	O	O	O
Bacteriological examination	O	O	O	O	O
Further laboratory tests	O	O	O	O	O
2.9 Removal					
Classification of animal by-products in category I, II, III	O	O	O	O	O
2.10 Documentation and communication of meat hygiene findings and decisions					
Documentation and communication of official findings and Decisions	O	O	O	O	O
Documentation and communication of animal welfare-relevant Individual animal findings	O	O	O	O	O
3. organisation of the slaughterhouse and slaughter technology					
3.1 Structural facilities and equipment					
Assessment of the structural facilities and equipment in the slaughterhouse from a hygiene point of view	O	O	O	O	O
Assessment of the structural facilities and equipment in the slaughterhouse from an animal welfare perspective	O	O	O	O	O
3.2 Evaluation of further slaughtering and processing processes					
Tripe	O	O	Not applicable	Not applicable	O
Classify	O	O	Not applicable	Not applicable	O
Weighing	O	O	Not applicable	Not applicable	O
Disassembly	O	O	Not applicable	Not applicable	O
Processing	O	O	Not applicable	Not applicable	O
Cooling	O	O	Not applicable	Not applicable	O
Freezing	O	O	Not applicable	Not applicable	O
Food transport	O	O	Not applicable	Not applicable	O
Animal by-products (control of disposal or utilisation)	O	O	Not applicable	Not applicable	O
Activity	**explained**	**seen**	**Carried out under supervision/ with help**	**Carried out indepen-dently**	**None of the above answers**
4. Performing hygiene monitoring during and after the slaughter process with regard to...					
rooms	O	O	O	O	O
furnishings	O	O	O	O	O
personal hygiene	O	O	O	O	O

process hygiene (sampling, analysing results, if necessary interventions)	O	O	O	O	O
5. Enforcement measures of the authority					
on food hygiene law	O	O	O	Not applicable	O
on animal protection law (orders, administrative and criminal proceedings)	O	O	O	Not applicable	O
to other areas of law (e.g. TNP, animal diseases, occupational health and safety):	O	O	O	Not applicable	O
6. Other activities of the official veterinarian					
Checking the standard operating procedures under animal welfare law (document control)	O	O	O	O	O
Control of the operational monitoring procedure for anaesthesia (document control) and direct inspections of anaesthesia procedures	O	O	O	O	O
Monitoring the implementation of animal welfare regulations	O	O	O	O	O
EU controls	O	O	Not applicable	Not applicable	O
7. import inspection					
Import inspection or documentation check	O	O	O	O	O
8. final discussion					

	performed	not done
Final discussion	O	O

Comments/suggestions:

Date Student Training veterinarian
(Name in block capitals please,
Signature and stamp)

1.3.4.6 Evaluation form for the "Hygiene and food-inspection practical"

Evaluation form

for the **"Hygiene and food-inspection practical"**

according to § 55 (1) and § 56 (1) of the TAppV

To be completed by the student, countersigned by the veterinarian providing training

Surname, first name of the student

Practical period: from.....to.....

Practical location: .....

Please colour the relevant circles completely and add a comment at the end if necessary!

A) Hygiene control (mainly to be completed if the practical is carried out in a veterinary office).

1	Familiarisation with self-monitoring measures of the companies for monitoring hygiene status and official controls, incl. HACCP	**O**
2	Participation in company inspections (e.g., processing plants, sale and retail, restaurants, markets), including the assessment of hygiene condition of the premises and facilities	**O**
3	Assessment of the technologies used in the companies (e.g., slaughtering, processing, refrigeration, storage, kitchen operations.....	**O**
4	Participation or involvement in hygiene training for operating staff, checking of record books in accordance with the Infection Protection Act	**O**
5	Familiarisation with the focal points of hygiene controls, e.g.	
5.1	Personnel hygiene, personnel traffic	**O**
5.2	Black and white principle	**O**
5.3	Cleaning, disinfection	**O**
5.4	Pest control	**O**
5.5	Hygienic requirements for buildings	**O**
5.6	Process controls incl. temperature regime	**O**
5.7	Incoming goods inspection	**O**
5.8	Quality assurance systems in companies (certification)	**O**
5.9	Other (please specify in "Comment" (see below))	**O**
6	Recording and rectification of defects (conditions, fines, etc.).....	**O**
7	Carrying out simple methods of hygiene control, e.g. checking the success of cleaning and disinfection, temperature measurements	**O**
8	Risk assessment in the manufacturing process and identification of potential health hazards	

9	Independent preparation of an assessment of the industrial hygiene of a control object on a scientific basis	**O**
10	Study of files on hygiene controls, inspections, etc.	**O**
11	In-depth study of relevant legislation	**O**
12	Final discussion	**O**

B) Food inspection (mainly to be completed, if the practical is carried out in LUA or similar).

1	Familiarisation with the structure and tasks of the company providing practicals ……..	**O**
2	Familiarisation with the tasks of the quality assurance officer of a company/laboratory	**O**
3	Investigation	
3.1	Organisation and implementation of sampling	**O**
3.2	Determination of the total bacterial count	**O**
3.3	Selective bacteria detection (please specify in "Comment" (see below))	**O**
3.4	Chemical analysis (e.g., crude protein, hydroxyproline, BEFFE, fat content, dry matter, water content - please specify in "Comment" (see below))	**O**
3.5	pH value, common salt	**O**
3.6	Additives (e.g. nitrite, phosphate, glutamate)	**O**
3.7	Residues	**O**
3.8	Sensory analysis incl. product knowledge	**O**
3.9	Working with legal regulations	**O**
3.10	Gravimetry	**O**
3.11	Histology	**O**
3.12	Work with the official methods according to § 64 LFGB (§ 35 LMBG)	**O**
3.13	Checking legally compliant labelling and compliance with other regulations	**O**
3.14	Recording the results ……	**O**
3.15	Independent preparation of an assessment of the marketability of foodstuff on a scientific basis	**O**
3.16	Tests as part of the food monitoring and residue control plan	**O**
3.17	Other (please specify in "Comment" (see below))	**O**
4	Monitoring	
4.1	Participation in fine proceedings, court hearings if necessary	**O**
4.2	Food hygiene border controls	**O**

4.3 Accreditation and certification of food testing laboratories of food businesses ..... O

4.4 Measures in the event of an outbreak of foodborne infections (mandatory reporting, cooperation with health authorities, epidemiol. investigations etc.) O

5 Time to deepen knowledge, study literature ..... O

6 Final discussion ..... O

Comments/suggestions: (please use the reverse side if necessary)

date

Signature of student Signature of supervising veterinarian

1.3.4.7 Evaluation form for the practical "Training in hygiene control" (student)

Evaluation form

For the practical "Training in hygiene control"

according to § 55(2) and § 56(2) of the National Veterinary Curriculum (TAppV)

To be filled in by the student, countersigned by the supervising veterinarian

Surname, forename of student:…….

Period of practical : from …….. to……..…

Practical establishment:……..…….

Please colour in applicable circles completely and if need be add a commentary at the end.

1. Familiarisation with structure and tasks of a veterinary authority including the legal principles 0
2. Getting to know the self-checking measures of the businesses and the official control, including HACCP 0
3. Carrying out business controls (e.g., slaughterhouse, dissection, processing business, cold store, wholesale trade stock, supermarkets, shops, restaurants, markets etc.) 0
4. Getting to know the practised technologies in the businesses (e.g. slaughtering, processing, cooling, storage, kitchen business etc.) 0
5. Getting to know the meaning of the main focus points of hygiene control 0
6. Staff hygiene 0
7. Black and white principle 0
8. Cleaning, disinfection 0
9. Combating rodents causing damage 0
10. Staff training 0
11. Hygienic demands on buildings, including equipment, machines 0
12. Process controls including temperature regimes 0
13. Incoming goods inspection 0
14. Quality assurance systems in businesses (certification) 0

15. Recognition and removal of deficits (measures, sanctions, fines etc.) 0
16. Simple methods of hygiene control e.g., control of cleaning and disinfection success. Temperature readings 0
17. Review of documents concerning hygiene controls, inspections etc. 0
18. In depth study of food hygiene law 0
19. Closing meeting 0

Comments/suggestions:

Date:…… Student`s signature Signature of supervising veterinarian

1.3.4.8 Evaluation form practicals food hygiene, slaughterhouse, public veterinary service (student)

Evaluation form
To be filled in by the student

For the practical (Please colour applicable circles completely)

0 "Training in hygiene control" according to § 55 (1) and § 56 (1)
0 "slaughterhouse and meat inspection" according to § 55 (2) and § 56 (2)
0 "Monitoring and inspection of food" according to § 58 and § 59 of the National Veterinary Curriculum (TAppV)

Period of Practical: from ……..to…..

	1	2	3	4
1. The supervison was good.	O	O	O	O
2. The staff was sufficiently well qualified for supervision	O	O	O	O
3. My theoretical preparation for the practical was sufficient.	O	O	O	O
4. I was sufficiently prepared for the practical by the university.	O	O	O	O
5. Documents were placed at my disposal by the practical workplace.	O	O	O	O
6. The business where the practical took place offered sufficient opportunities to complete specified focus points.	O	O	O	O
7. The length of practical was sufficient in order to fulfil the specified assignment of tasks.	O	O	O	O
8. The practical placed high demands on me.	O	O	O	O
9. The practical was helpful for consolidating theoretical knowledge.	O	O	O	O
10. Interest was aroused for later work position in the field.	O	O	O	O

Comments/suggestions:
Legend: 1 – applies 2- somewhat applies 3 does not apply to a certain extent 4 does not apply at all

1.3.4.9 Evaluation form to be filled in by the supervising veterinarian

Evaluation Form

To be filled in by the supervising veterinarian

To be returned in a sealed envelope

For the practical (Please colour in applicable circles completely)

For the practical (Please colour in applicable circles completely)

0 "Training in hygiene control" according to § 55 (1) and § 56 (1)

0 "slaughterhouse and meat inspection" according to § 55 (2) and § 56 (2)

0 "Monitoring and inspection of food" according to § 58 and § 59 of the National Veterinary Curriculum (TAppV)

Period of Practical: from …….. to……....

	1	2	3	4
1. The prior knowledge from the university of the student was good.	O	O	O	O
2. The motivation of the student for the respective practical was good.	O	O	O	O
3. The student had sufficient time and opportunities to acquire and consolidate theoretical knowledge relevant to the subject-matter.	O	O	O	O
4. The student had sufficient time and opportunities to learn and to improve practical skills relevant to the subject-matter.	O	O	O	O
5. The student used the available time effectively.	O	O	O	O
6. The student was able to be motivated for a later veterinary post in the respective specialist field.	O	O	O	O

Comments/suggestions ……..

Legend:
1 – applies, 2- somewhat applies, 3- does not apply to a certain extent, 4- does not apply at all

1.3.5 Evaluation of extramural EPT

Evaluation of extramural EPT in the areas of "Food Control" and "Slaughterhouse" (pdf)

Evaluation of extramural EPT Curative (pdf)

Extramural practicals in veterinary medicine – evaluation and development (pdf)

1.3.6 Timetables, catalogue of electives:

Timetables all semesters

Summer semester 2024 (pdf)

Winter 2024/25 (pdf)

1.4 Area 4

1.4.1 Biosecurity: Posters for display in the laboratories and clinics:

Posters for display in the laboratories and clinics:
Handwashing, First Aid, Occupational Safety, QM for research under high biosafety levels, Safety in the RIZ laboratories

Operating instructions:
General Operation Instruction, Hygiene plan, Projectleader Information, General Operation Manual RIZ Research Institute

1.4.2 Moodle course biosecurity for students

Moodle course for students, mandatory, biosecurity
Modul 1: Occupational safety
- 1.1. General occupational safety and risk assessment (case study biting wounds)
- 1.2. Maternity protection including random risk assessment
- 1.3. Youth employment protection
- 1.4. Occupational health care
- 1.5. Fire protection

Module 2: Laboratory safety
- 2.1. General laboratory safety including hygiene plan and skin protection (case study centrifuge)
- 2.2. Biological substances, genetically modified organisms, etc.

Module 3: hazardous substances
- 3.1. General hazardous substances; Damaris access information to TiHo
- 3.2. Case study: Formalin
- 3.3. Nitrogen/dry ice
- 3.4. Pharmacy medication, including handling cannulas/catheters (case study accident with isoflurane)

Module 4: Radiation protection
- 4.1. Practically relevant basics

4.2. Physical basics (optional)
Module 5: Handling animals
5.1. Handling horses
5.2. Handling small animals
Module 6: Dangers from infectious agents, especially zoonoses (human pathogens)
6.1. General definitions including hygiene plan and skin protection (identical to 2.1)
6.2. Case study MRSA (case study as template)
6.3. Case study Q fever
6.4. Tuberculosis (case study as template)
Module 7: ambulatory practice and risks
7.1. Barn visits (example small ruminants)
Module 8: Work equipment
8.1. Cranes for animal transport
8.2. Ladders and steps
8.3. High-pressure cleaners (aerosols, risks)

1.4.3 Risk Management TiHo:

Policy (download pdf-file)

1.5 Area 5

1.6 Area 6

1.6.1 Learning Station Clinical Skills Lab

List_Learning_stations.pdf (pdf, 573 KB) (full information)

Learning stations of CSL (short version):

Title	Target group	Supervised course (tutors)
Horse		
Injection IV and Blood Sampling in Horses	All students	x
Hoof bandage in Horses	All students	x
Toe Pad Bandage in Horses	All students	x
High Upholstery Bandage in Horses	All students	x
Diagnostic Conduction Anaesthesia in Horses	All students	x
Vaginoscopy and Swab Sampling in Horses	2.-6. year	x
Nasogastric Intubation in Horses	2.-6. year	x
Endoscopy in Horses	3.-6. year	x

Peripheral Intravenous Catheter in Horses	3.-6. year	x
Cattle		
CMT and sterile milk sampling in Cattle	All students	x
Transrectal Gynaecological Examination in Cattle I - Breed'n Betsy®	All students	x
Transrectal Gynaecological Examination in Cattle I-Haptic Cow®	All students	x
Claw Bandage in Cattle	All students	x
Transrectal Gynaecological Examination in Cattle II - Breed'n Betsy® | Pregnancy Determination	2.-6. year	x
Artificial Insemination in Cattle	2.-6. year	x
Vaginoscopy and Swab Sampling in Cattle	2.-6. year	x
Transrectal Gynaecological Examination in Cattle II - Haptic Cow® - | Pregnancy Determination	2.-6. year	x
Exploration of the Abdominal Cavity in Cattle	2.-6. year	x
Obstetrics in Cattle	2.-6. year	x
Transrectal Gynaecological Examination in Cattle III - Breed'n Betsy® | Cycle Determination	3.-6. year	x
Surgical Technique for Displacement of the Abomasum to the Left in Cattle	3.-6. year	x
Ruminants and pigs		
Blood sampling in Sheep	3.-6. year	x
Blood sampling/Peripheral venous catheter in Pigs	3.-6. year	x
Small animals		
Head bandage in Small Animals	All students	x
Paw bandage in Small Animals	All students	x
Abdomen/Thorax bandage in Small Animals	All students	x
High Bandage in Small Animals	All students	x
Ear Examination in Small Animals	All students	x
Positioning Techniques for X-Rays Examination	All students	x
General Principles of Ultrasound Examination	All students	x
Feeding Tube in Small Animals	All students	x
Central Venous Catheter in Small Animals	All students	x
Abdominal Ultrasound in Dogs	All students	x
Ultrasound-controlled Cystocentesis in Small Animals	2.-6. year	x
Suboccipital Cerebrospinal Fluid Puncture in Small Animals	2.-6. year	x

Epidural Anaesthesia in Small Animals	2.-6. year	x
Catheterisation of the bladder in Female Dogs	2.-6. year	x
Catheterisation of the bladder in Male Dogs	2.-6. year	x
Catheterisation of the bladder of Male Cats	2.-6. year	x
Cardiac Auscultation of Small Animals	2.-6. year	x
General Eye Examination of Small Animals	2.-6. year	x
Intubation of Small Animals	2.-6. year	x
Anaesthesia Management of Small Animals	2.-6. year	x
Resuscitation and Emergency Management in Small Animals	2.-6. year	x
Thoracocentesis in Small Animals	2.-6. year	x
Small Mammals and Reptiles		
Handling and Hand Feeding in Small Domestic Mammals	All students	x
Blood Collection in Small Domestic Mammals	All students	x
Injection i.v./ PVK in Small Domestic Mammals	All students	x
Injection s.c./ i.m./ i.p. in Small Domestic Mammals	All students	x
Handling of Reptiles	All students	x
General Examination of Reptiles	All students	x
Blood Sampling in Reptiles	All students	x
X-Ray Positioning of Reptiles	All students	x
Injection and Application Techniques in Reptiles	All students	x
Cross-species Stations		
Captive Bolt Gun in Livestock Animals	All students	x
Laboratory		
General Laboratory Knowledge	3.-6. year	x
Laboratory station Haematology	3.-6. year	x
Laboratory station Urine examination	3.-6. year	x
Laboratory station Fecale examination	3.-6. year	x
Laboratory station Clinical Chemistry	3.-6. year	x
Surgery		
Knotting Techniques A.0 - Instrument Knotting Techniques	All students	x
Knotting Techniques B.0 - Hand Knotting Techniques	All students	x

Suturing Techniques A.0 - Single Basting	All students	x
Suturing Techniques B.0 - Continuous Sutures	All students	x
Hand Hygiene	All students	x
Self-directed Learning		
General Knowledge of Instruments	All students	
Free Suture Training	All students	
Handling and Chipping of Small Animals	All students	
Injection s.c./i.m. in Small Animals	All students	
Injection IV/IVC in Small Animals	All students	
Blood Collection from The Jugular Vein in Small Animals	All students	
Injection and Application Techniques in Reptiles	All students	
Handling, Chipping an Signalement of Horses	All students	
Dental Age Determination in Horses	All students	
Handling of Cattle	All students	
Injection IV/IVC in Cattle	All students	
Injection s.c./ i.m. in Horses and i.m. in Cattle	All students	
Injection s.c./i.m. in Sheep and i.m. in Cattle	All students	
Injection s.c./ i.m. in Pigs	All students	
Handling of Pigs	All students	
Blood Sampling in Piglets	All students	
Escape Rooms		
Clinical ESCAPE Room Scenario Small Animal 1	All students	
Clinical ESCAPE Room Scenario Small Animal 2	All students	
Clinical ESCAPE Room Scenario Pig	All students	
Clinical ESCAPE Room Scenario Pregnancy in Cattle	2.-6. year	

1.6.2 Open Educational Resources

List of Open-Educational-Resources.pdf (pdf, 207 KB)

This list is intended to provide an overview of the Open Education Resources of TiHo. The publication of OER takes place via "twillo", the Lower Saxony portal for Open Education Resources in university teaching.

1.6.3 List of videos for self-learning

List of videos_TiHoStudIs.pdf (pdf, 269 KB, self-learning)

List of videos_YouTube.pdf (pdf, 828 KB, self-learning)

1.7 Area 7

1.8 Area 8

1.8.1 Examination process

The examination process of electronic examinations via the examination management platform Q-Exam Institution at the TiHo is shown in Figure 8.1. The examination process of electronic exams is divided into three phases: (a) conception and pre-review, (b) execution, and (c) post-review and manipulation.

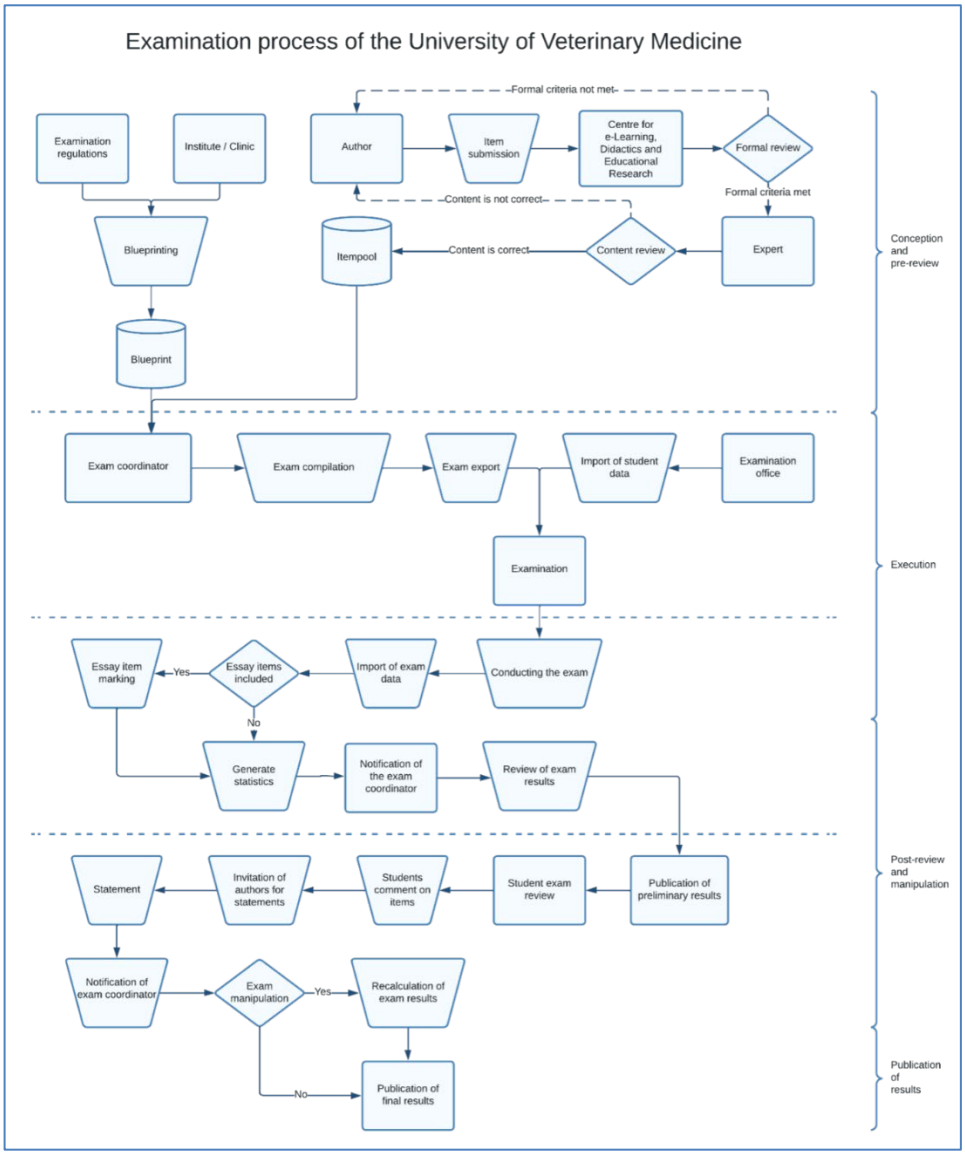


Fig. 8.1: Examination process of electronic examinations via the examination management platform Q-Exam Institution at the University of Veterinary Medicine Hannover, Foundation.

(Source: Richter R, Tipold A, Schaper E (2023): Measures for Quality Assurance of Electronic Examinations in a Veterinary Medical Curriculum. J Vet Med Educ. doi: 10.3138/jvme-2023-0061)

The electronic examinations performed between 2008 to mid-2022 were evaluated in a doctoral thesis regarding quality criteria for QA management of exams. The examinations of the state examination as well as examinations of the first and second pre-clinical examinations were analysed. As a result, the number of items in some exams was increased, see table 8.1. In addition, some examinations are specifically monitored and adjusted later if necessary.

Table 8.1: Adjustment of the number of items in electronic examinations at TiHo as a result of the examination analyses

Examination subject	Previous number of items	Number of items afterwards	Date of adjustment	Publication bulletin	Comment
Animal disease control	40	50	27.09.2022	303/2022	
Animal nutrition	60	80	27.09.2022	303/2022	
Avian diseases	60	80	27.09.2022	303/2022	
Bacteriology and mycology	40	60	27.09.2022	303/2022	
Biochemistry	100	110	01.08.2023	311/2023	Number of items for "Biochemistry Part I" increased 40 → 50 Items
Chemistry	30	60	27.09.2022	303/2022	
Dairy science	50	60	27.09.2022	303/2022	
Food science	50	60	27.09.2022	303/2022	
Histology / Embryology	50	60	01.08.2023	311/2023	Practical part was removed (10 Items) → total number of items remains the same at 60
Internal medicine	73	90	27.09.2022	303/2022	
Meat hygiene	50	60	27.09.2022	303/2022	
Radiology	60	70	27.09.2022	303/2022	
Reproductive medicine	73	90	27.09.2022	303/2022	
Physics	60	70	27.09.2022	303/2022	
Professional and ethical law	30	40	27.09.2022	303/2022	
Animal Breeding, Genetics	80	90	24.07.2024	325/2024	

1.9 Area 9

Table 9.1. shows an overview about the teaching staff (FTE) per unit.

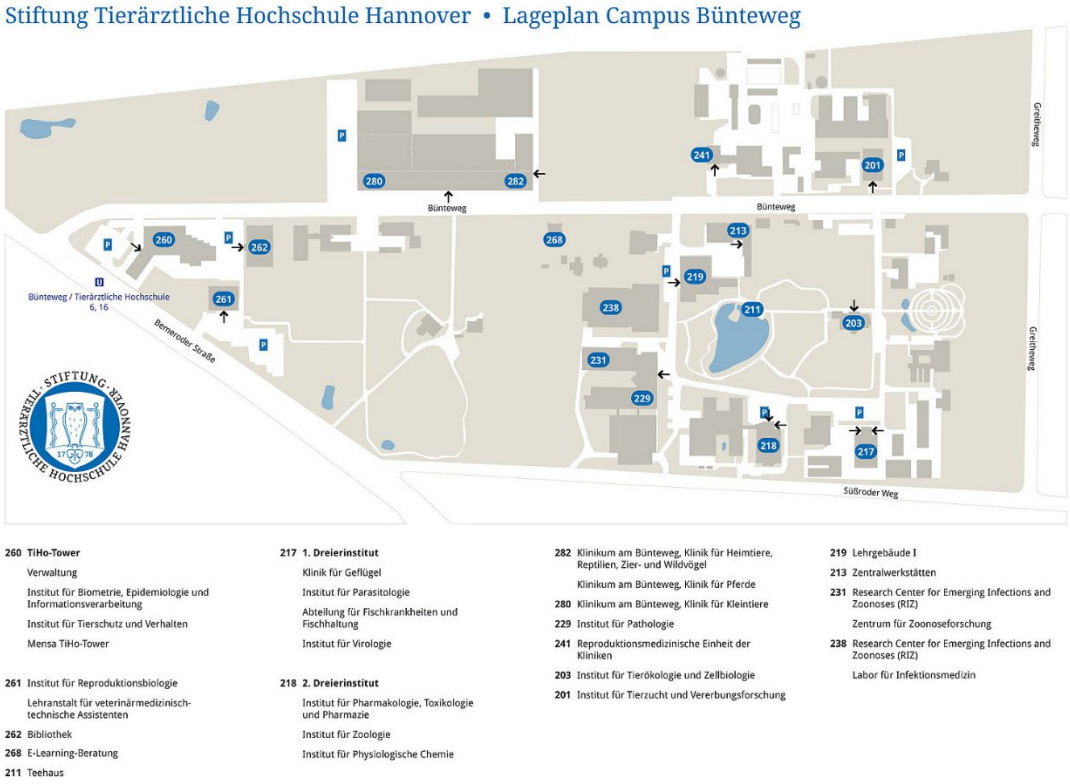
Staff who are paid from third-party funds have no teaching duties and are not included here.
Staff who are paid from service income have no regular teaching duties, but support small group teaching and work with patients.

Table 9.1 Teaching staff per unit (qualifications, their FTE, teaching responsibilities and departmental affiliations

Teaching Staff (deadline 31.12.2023)	Budgeted positions with regular teaching obligations								unbudgeted position (without third-party income), support teaching	
	A	B	C	D	E	F	G	H	I	J
Institute/Clinic	FTE Prof., permament (A)	FTE Vet. specialists (Europ. Dipl., National specialists) of A	FTE Scientists (Dr. PhD, without A	FTE Vets of C	FTE specialists (Europ. Diplom.,National specialist) of D	FTE permanent of C	FTE non-permament of C	Teaching responsibility in hours per week in semester (sum over all budgeted positions A, F, G), according KapVO	FTE Scientists non-budgeted, income from services, teaching support staff	Interns, teaching support
Clinic for Small Animals	5,0	5,0	10,5	10,5	8,5	2,0	8,5	69,3	44,0	15,0
Clinic for Horses	3,0	3,0	10,0	10,0	7,0	2,0	8,0	55,3	8,5	8,0
Clinic for Small Mammals, Reptiles and Birds	1,0	1,0	4,0	4,0	1,0	0,0	4,0	17,5	7,0	3,0
Clinic for Cattle	3,0	3,0	16,5	16,5	5,0	3,0	13,5	77,7	0,0	0,0
Clinic for Poultry	1,0	1,0	4,0	4,0	1,0	1,0	3,0	21,7	0,0	0,0
Clinic for Pigs, Small Ruminants and Forensic Medicine incl. Ambul. Clinic	2,0	2,0	11,0	11,0	11,0	4,0	7,0	60,2	0,0	0,0
Unit of Reproductive Medicine of the clinics	0,0	0,0	2,0	2,0	2,0	1,0	1,0	9,8	1,0	0,0
Institute for Anatomy	2,0	2,0	5,5	5,5	2,0	2,0	3,5	52,0	0,0	0,0
Institute for Animal Genomics	2,0	1,0	2,7	1,0	0,0	0,0	2,7	28,6	0,0	0,0
Institute for Animal Ecology	1,0	0,0	2,0	0,0	0,0	1,0	1,0	23,0	0,0	0,0
Institute for Animal Hygiene, Animal Welfare and Farm Animal Behaviour	3,0	2,0	3,0	2,0	2,0	3,0	0,0	57,0	0,0	0,0
Institute for Animal Nutrition	1,0	1,0	6,0	5,0	3,5	1,0	5,0	39,0	0,0	0,0
Institute for Biometry, Epidemiology and Information Processing	1,0	0,0	3,0	1,0	1,0	1,0	2,0	27,0	0,0	0,0
Institute for Food Quality and Food Safety	1,0	1,0	11,0	10,0	2,5	3,0	8,0	71,0	0,0	0,0
Institute for General Radiology and Medical Physics	1,0	0,0	3,0	0,0	0,0	2,0	1,0	33,0	0,0	0,0
Institute for Immunology	1,0	0,0	2,0	1,5	1,0	1,0	1,0	23,0	0,0	0,0
Institute for Microbiology	2,0	2,0	5,0	3,8	2,8	2,4	2,6	36,7	1,0	0,0
Institute for Parasitology, inc. Fishes	2,0	1,0	4,8	3,3	1,0	0,0	4,8	25,9	0,0	0,0
Institute for Pathology	1,0	1,0	6,0	6,0	6,0	3,0	3,0	35,7	1,8	0,0
Institute for Pharmacology, Toxicology, and Pharmacy	1,0	1,0	7,0	2,5	0,5	1,5	5,5	32,2	0,0	0,0
Institute for Physiology and Cell Biology	1,0	1,0	8,4	3,9	0,0	1,0	7,4	48,4	0,0	0,0
Institute for Biochemistry	2,0	0,0	3,2	1,0	0,0	1,0	2,2	36,6	0,0	0,0
Institute for Virology	2,0	2,0	4,0	3,0	1,0	1,0	3,0	28,0	1,8	0,0
Institutefor Terrestrial and Aquatic Wildlife Research	1,0	1,0	2,0	1,0	1,0	2,0	0,0	29,0	0,0	0,0
Institute for Zoology	1,0	0,0	10,5	1,0	0,0	5,0	5,5	81,0	0,0	0,0
Field Station for Epidemiology in Bakum	1,0	1,0	3,0	1,0	1,0	1,0	2,0	18,9	0,0	0,0
SUM	**42,0**	**32,0**	**150,1**	**110,4**	**60,8**	**44,9**	**105,0**	**1037,5**	**65,0**	**26,0**

2 Maps of Establishment

2.1 Campus Bünteweg, Hannover

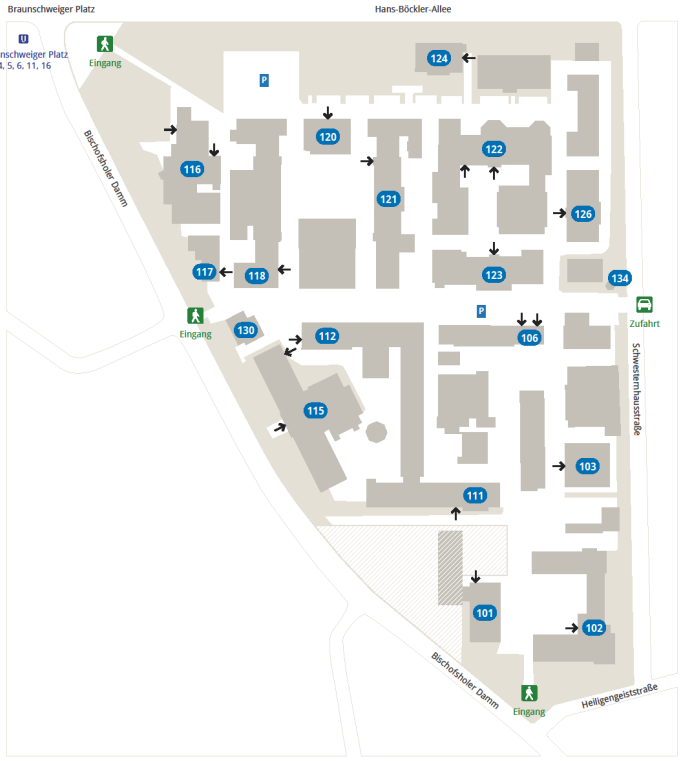


280/282 **Clinic Complex Bünteweg**:
Clinic for Small Animals,
Clinic for Small Mammals, Reptiles and Birds,
Clinic for Horses
201 Institute for Animal Genomics
203 Institute for Animal Ecology
211 Teehouse (for party)
213 Central workshops
217 Clinic for Poultry,
Institute for Parasitology, Fish Disease Research Unit,
Institute for Virology
218 Institute for Pharmacology, Toxicology, and Pharmacy
Institute for Physiological Chemistry,
Institute for Zoology
219 Building for teaching
229 Institute for Pathology
231 Research Center for Emerging Infections and Zoonoses (RIZ)
238 RIZ, Laboratory for Infection Medicine
241 Unit of Reproductive Medicine of the clinics
260 **TiHo-Tower:** Administration, Mensa TiHo-Tower, Parent-Child-Room,
Institute for Biometry, Epidemiology and Information Processing
261 Institute for Immunology
262 Main Library
268 Centre for E-Learning, Didactics and Educational Research (ZELDA)

2.2 Campus Bischofsholer Damm, Hannover

Stiftung Tierärztliche Hochschule Hannover • Lageplan Campus Bischofsholer Damm

101 Aula, Alter Pylorus
102 Physiologisches Institut
Fachgebiet Allgemeine Radiologie und Medizinische Physik
103 Alte Heizzentrale
106 Institut für Terrestrische und Aquatische Wildtierforschung
AStA
111 Computerraum
112 Anmeldung Klinik für Rinder
115 Klinik für Rinder
Institut für Lebensmittelqualität und -sicherheit
116 Institut für Tierhygiene, Tierschutz und Nutztierethologie
Zentrum für klinische Fertigkeiten, „Clinical Skills Lab"
117 Eltern-Kind-Räume
118 Mensa Caballus
120 Fachgebiet Geschichte der Veterinärmedizin und der Haustiere
Veterinärmedizinisches Museum
121 Klinik für kleine Klauentiere und forensische Medizin und Ambulatorische Klinik
122 Anatomisches Institut
Arbeitsgruppe Immunologie
123 Institut für Lebensmitteltoxikologie und Chemische Analytik
124 Institut für Tierernährung
126 Institut für Mikrobiologie
130 Personalrat
134 Pförtner



101 Lectures hall „Aula", leisure room „Alter Pylorus"
102 Institute for Physiology and Cell Biology,
Institute for General Radiology and Medical PhysicsWorking Group of Cell Biology
103 Lecture hall „Alte Heizzentrale"
106 Institute for Terrestrial and Aquatic Wildlife Research,
Office of students commitee AStA
111 Computer room (self learning)
112 Clinic for Cattle
115 Clinic for Cattle,
Institute for Food Quality and Food Safety
116 Institute for Animal Hygiene, Animal Welfare and Behaviour of Farm Animals,
Clinical Skills Lab
117 Parent-Child-Rooms
118 Mensa Caballus
120 Museum of the History of Veterinary Medicine and lecture hall
121 Clinic for Pigs, Small Ruminants and Forensic Medicine, Mobile Clinic
122 Institute for Anatomy
123 Institute for Food Quality and Food Safety, Research Group Food Toxicology
124 Institute for Animal Nutrition
126 Institute for Microbiology
130 Office of Employee Committee
134 Gatekeeper

3 Clinics

Information:

Staff: deadline 31.12.2023, see Tab. 9.1. appendix 1.9

Non-budgeted positions: payed from income from service and third-party

3.1 Clinic for Small Animals (Small Animal Clinic)

Location

The primary facility, denoted as Building 280 within the Clinic Complex of the Bünteweg (Klinikum Bünteweg) located at Bünteweg 9, 30559 Hannover, houses a comprehensive array of state of the art clinical services and facilities. These encompass over 45 dedicated rooms for clinical activities, such as consultation rooms (canine and feline specific), anaesthesia induction facilities (separated cat and dog induction rooms), diverse surgical suites (dirty, soft tissue, orthopaedic, neurology and ophthalmology theatres with an operating microscope), a dental suite, endoscopy room, specialised areas for diagnostic imaging encompassing two radiological suites, one echocardiography and two ultrasound rooms, computed tomography (Spectral CT), and magnetic resonance imaging (3T MRI) shared with the equine clinic, as well as facilities for objective gait analysis, behaviour assessment, electrodiagnostics and physiotherapy (land and water based). Additionally, there are six waiting areas designated for clients, including separate accommodations for cats and dogs, alongside segregated waiting and consultation rooms for small animals with infectious diseases. The hospital is accredited as a gold standard cat friendly clinic and as such waiting and clinical facilities are seperated for cats from the dogs in most clinical areas, students and staff are trained according to Cat Friendly Clinic guidelines. The hospital has been successfully accredited for the good veterinary practice scheme of the Bundesverband Praktizierender Tierärzte e.V. (Gold standard). Students and staff also receive regularly cardiopulmonary resuscitation training under the RECOVER Initiative of ACVECC and VECCS.

In terms of hospitalisation capacities, the clinic has 96 kennels for dogs (most walk-in) and 39 for cats, complemented by isolation units capable of accommodating 12 dogs and 8 cats respectively. Intensity of care is divided into normal, intermediate and intensive care units. Furthermore, the facility provides teaching and learning resources, including 22 dogs and 7 cats for educational purposes. The educational infrastructure comprises a dedicated lecture hall with a capacity for 100 attendees, while semester-long lectures are conducted in the central "Bayer Lecture Hall," which offers seating for 238 individuals. Equipped with modern amenities such as WLAN connectivity, visualizers, interactive pen displays (Sympodium), microphones, and lecture recording equipment, this hall facilitates advanced pedagogy.

For small groups' teaching, e.g. clinical examination, surgical practice, and cadaver training, the clinic offers three rooms ranging from 25 to 60 square meters. Additionally, there are four seminar rooms designated for theoretical interactive sessions conducted in smaller groups.

Staff in FTE

Budgeted positions				Non-budgeted positions		
Profs	Clinicians	Technicians	Administration	Clinicians	Technicians	Administration
5	10,5	16	2	44	45,11	2

Teaching responsibilities

The core curriculum is structured around clinical examination, clinical reasoning and diagnostic methodologies, covering courses in small animal handling (e.g. cat friendly handing and fear free dog handling) and clinical examinations, propaedeutics in animal handling and general physical and specialisation-specific examinations, with multiple iterations to ensure proficiency. Additionally, the curriculum encompasses the study of small animal diseases for dogs and cats including Internal Medicine, Soft-tissue and Orthopaedic Surgery, Cardiology, Dermatology, Anaesthesia and Analgesia, Critical Care and Emergency Medicine, Neurology, Physiotherapy, Ophthalmology, Dentistry, Oncology, Reproduction, and Diagnostic Imaging. Mandatory report writing is integral to clinical training, each student is assigned to write a clinical report about one animal per semester, receiving comprehensive feedback on their performance.

The focal point of practical training lies in the 11-week clinical rotation offered to 5th-year students, during which they undergo immersive learning across different general, emergency and specialists' services within the clinic. Preceding this

rotation, a dedicated week is allocated for Skills Lab training aimed at equipping students with essential competencies in communication, anaesthesia, animal handling, suturing, among others, to fortify their preparedness for clinical practice. A formative electronic Objective Structured Clinical Examination (eOSCE) is in place to evaluate students' competencies and furnish constructive feedback. Moreover, students actively engage in care for hospitalised animals, daily clinical rounds, consultations, weekly teaching seminars, and interdisciplinary journal clubs, embodying a transdisciplinary veterinary team approach to learning. The educational environment prioritises sustainability initiatives and fosters a safe culture of open communication (just and speak-up culture).

The breadth and depth of clinical cases encountered range from general to specialised, with a significant emphasis on managing a high emergency caseloads. Quality assurance measures such as morbidity and mortality rounds and surgical checklists are integrated into the curriculum to uphold standards of excellence and continuous improvement.

Cadaver training for surgical procedures is conducted in small groups comprising 1-2 students, fostering hands-on learning in a conducive and safe environment. In addition to the core curriculum, elective subjects encompassing small animal diseases offer blended learning experiences including webinars across all German speaking veterinary schools, with one interdisciplinary elective focusing on neurosciences in collaboration with other institutes, enriching the academic landscape with diverse learning opportunities.

Consultations

To address emergent needs, the clinic operates its emergency service 7-days a week, 24-hours a day. Thirty-six percent comprises of an emergency and general first opinion caseload. As a referral centre, consultations are conducted with a notable portion of cases being referrals, constituting approximately 64% of the total caseload.

The clinic employs the "easyVet" practice management software for documentation, but also to streamline operations, facilitating efficient coordination of patient care and administrative tasks. Additionally, students are granted reading and writing privileges within the system, enabling them to access pertinent information necessary for report writing and assessments, thereby enriching their educational experience and clinical reasoning. Students and staff are trained to use the Subjective, Objective, Assessment, and Plan (SOAP) for documentation and case presentations in rounds. Furthermore, students and staff learn to use the Identify, Situation, Transfer, Background, Assessment, Recommendation, and Communication/Costs (ISTBAR-C) communication tool for clinical transfers.

Other information

Areas of clinical specialisation:

Internal Medicine, Soft-tissue and Orthopaedic Surgery, Cardiology, Dermatology, Anaesthesia and Analgesia, Critical Care and Emergency Medicine, Neurology, Physiotherapy, Ophthalmology, Dentistry, Oncology, Reproduction, and Diagnostic Imaging.

Continuous education:

The clinic is very engaged in continuous education and provides prerequisites for the education in European Colleges. Every year 15 positions in the structured internship-programme are opened. The clinic currently trains residents in following disciplines: Internal Medicine, Veterinary Surgery, Cardiology, Dermatology, Anaesthesia and Analgesia, Critical Care and Emergency Medicine, Neurology, Ophthalmology, Dentistry, Oncology, and Diagnostic Imaging. The assessment for European Board Examination of ECVAA takes place in Hannover to profit from the electronic assessment system used at the VEE. Furthermore, the clinic provides intensive training for national specialists (Small Animal, Internal Medicine, Surgery, Cardiology, Anaesthesia and Intensive Care, Neurology, Ophthalmology, Dentistry, and Diagnostic Imaging) and is majorly involved in the assessment procedure performed by the Chamber of Veterinarians of Lower Saxony.

Main research activities

Research is focused on Anaesthesia and pain management, Oncology, Clinical Pathology, Haemostasis, Regenerative Medicine, Surgery with a focus on Orthopaedics and gait analysis, alternatives to antibiotics, Neurology (neuroimmunology, epilepsy, behaviour, dogs for medical detection).

3.2 Clinic for Horses

Location

The main facility (clinic, laboratory, stables, teaching rooms, black smith) is located at Buenteweg 9, 30559 Hannover. There are 52 hospitalisation places for horses available, including separate isolation wards. In addition, there is a polyclinic for obstetrics of mares at Bünteweg 15, 30173 Hannover.
Premises of the clinic for teaching include one lecture hall with 120 places, and additionally 2 rooms for practical, and 4 rooms for theoretical group work. All examination rooms are also used for teaching activities (see below).
The diagnostic laboratory of the clinic is operated in cooperation with the small animal clinic. Diagnostic work is done for patients of the clinic, for outside patients, and for scientific reasons. For emergencies basic laboratory examinations are performed directly in the clinic for horses (24 hours/day).
Special diagnostics or services (X-ray) are done for other institutions/clinics of the TiHo.
Other rooms: animal reception (1), X-ray (1), computed tomography (1), MRI (1) shared with the small animal clinic, ultrasonography (2), endoscopy (1), surgery (3), dentistry (1), ophthalmologic examinations (1), exercise examination (1), orthopaedics (2), dispensary, sterilisation, photo laboratory, library, secretariat.
A riding hall (20 m x 40 m) and a riding place (20 m x 40 m) also belong to the clinic.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
3	10	17	2	8,5	1	3

Teaching responsibilities

Core curriculum: Clinical examination and diagnostic methods (course in animal handling/propaedeutics [11 lectures and 7 exercise courses), basics of clinical X-ray techniques (all species), training of clinical cases, equine medicine, orthopaedics, surgery, anaesthesia, pain management, endoscopy etc. Interdisciplinary subjects are offered in the 9th semester. The majority of hands-on clinical training is offered for 5th year students during a 10 weeks specialized training, where students rotate through the clinic and the different divisions.

Additional elective subjects: General and special surgery, Anaesthesia, Dentistry

Consultations

The clinic is open 52 weeks a year; Consultation hours are Mon-Fri 8 a.m.- 4 p.m. (additional emergency service Mon-Fri 4 p.m.-8 a.m., and 24 hours on weekends).

Other information

- Areas of clinical specialisation: Internal medicine, Surgery and minimally invasive surgery, anaesthetics, X-ray, ultrasound imaging, Reproductive medicine, obstetrics
- Relationship of the establishment with outside practitioners: Intensive collaboration with external practitioners, continuing education programme is offered 4 times yearly for referring veterinarians.
- Administrative system used for the patients: Currently a commercial computer software is in use “easyVet”, VetZ company.

Main research activities

- Areas of research with significant publication output:
- Infectious diseases: Projects (Non primate Hepaci virus) in cooperation with the RIZ that is hosted at the TiHo and the Twincore Centre (Hanover Medical School)
- Equine metabolic syndrome
- Opthalmology: Equine Recurrent Uveitis in cooperation with the RIZ
- Equine Anaesthesia
- Upper and lower airway diseases

3.3 Clinic for Small Mammals, Reptiles and Birds

Location

- The clinic is located in Building 281/282 within the Clinic Complex at Bünteweg 9, 30559 Hannover. The facility spans two floors, featuring a reception area, two waiting rooms, and seven examination rooms. Diagnostic facilities include a clinical and a research laboratory, two rooms for ultrasonography, and two rooms for radiographic examinations. In-house patients are accommodated in nine standard rooms and three isolation rooms. The clinic includes three surgery rooms, one room for preoperative animal preparation, a necropsy room, a pharmacy, a sterilization facility, a library, and a teaching room for practical clinical courses.
- Hospitalization rooms consist of three for small mammals, three for reptiles, and six for birds, with a total capacity of 44 places for small mammals, 20 for reptiles, and 60 for birds. Isolation facilities, located on a separate floor, include one room each for reptiles, birds, and wild animals, accommodating from 2 (birds) to 6 (reptiles) individual animals. The clinic also includes three additional open space areas and hospitalization facilities designed for outdoor-living domestic and wild birds. Additionally, animals intended for teaching purposes are housed in six rooms and two aviaries.
- The teaching facilities comprise a specialized lecture hall with 88 seats, a necropsy room, a laboratory facility, and three rooms for seminars or small group work. The diagnostic laboratories feature facilities for hematology, clinical chemistry (utilized during emergency hours), fecal examination, and cytology in two rooms. For routine and specialized examinations, blood samples are regularly dispatched to the laboratories in the small animal clinic (located in the same building).

Staff

Budgeted positions (full time equivalents)				**Non-budgeted positions**		
Profs	Scientists	Techns.	Secretaries	Scientists	Techns.	Secretaries
1	4	3.5	0.5	17.5	2.75	

Teaching responsibilities

The curriculum consists of a basic education for all students and an advanced, in-depth education. The basic education starts with propaedeutics in the fourth semester: clinical examination and diagnostic methods are taught both in lectures and practical sessions (courses in animal handling, examinations and treatment). Diseases of small mammals, reptiles, and birds (internal medicine, surgery, dermatology, anaesthesiology, neurology, ophthalmology, oncology, diagnostic imaging, etc.) are learned in lectures and practical courses in semester 6 to 8. As advanced training, students can choose from more in-depth courses on small mammals, reptiles, birds, and wildlife. Further, the clinical rotation in the 5th year can be absolved for 10 weeks and follows a structured programme (6 students in one rotation). Lectures take place in the own lecture hall and in the adjacent central lecture hall (“Bayer Lecture Hall”) with 238 seats.

Consultations

The clinic is open 52 weeks a year. Regular opening hours are Mon, Tue, Thu and Fri 8 a.m. – 5 p.m., Wed 8 a.m. – 13 a.m., emergency service is provided on a 24/7 basis.

Consultations are available for both referred cases and initial (first opinion) assessments. Laboratory and diagnostic imaging services operate 24/7, alongside intensive care and surgical procedures. Emergency care is provided with experienced clinicians specializing in internal medicine and surgery for small mammals, reptiles, and birds as a back-up. Referral cases make up approximately 40% of the workload.

The clinic frequently receives wild animals, particularly through emergency services, and collaborates with shelters and animal parks to facilitate rehabilitation following successful treatment.

Main research activities

The research areas of the clinic cover diseases affecting small mammals, birds, and reptiles in human care, along with investigations into wildlife, especially in urban areas of Germany. Particularly significant are studies on the intestinal microbiome, exploring alternatives to antibiotic treatment, infectious diseases, non-invasive imaging techniques, cardiology in birds and small mammals, as well as therapy and rehabilitation for wild animals, within the broader context of biodiversity and human impact.

3.4 Clinic for Cattle

Location

The Clinic for Cattle is located in Buildings 111 and 115 with animal facilities in Buildings 106, 110, 112, 113 and 114. Overall, there are 116 hospitalisation places for adults and calves, four of which are suitable for recumbent cows and 37 of which are for calves

Staff

Budgeted positions				Non-budgeted positions (third-party income)		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
3	16,5	25	4	12	1	0,5

Teaching responsibilities

Core curriculum:
Bovine internal medicine and surgery (propaedeutics, organ-, infectious and metabolic diseases, surgical procedures, including pain management, diagnostic imaging).
Bovine theriogenology (propaedeutics, diseases of the mammary gland, bovine gynaecology and andrology, obstetrics, neonatology, biotechnology).
Clinical training in bovine internal medicine and surgery, neonatology, andrology, gynaecology, obstetrics and biotechnology.
Bovine herd and production medicine including practical training in herd health management.

Teaching is performed through lectures, seminars, clinical work with patients, self-learning, clinical training in wet labs and various e-learning options. The latter ones became especially important when live education forms were not permitted during the Covid-19 pandemy. Moodle and MS TEAMS were the basic platforms, and are partially still used to make teaching material available and enable several on-line lectures, seminars, propaedeutics and elective courses for students. The practical training is organized by the teaching hospital, by extramural possibilities in various cattle farms and by the Teaching and Research Farm in Ruthe. Furthermore, the Clinical Skills Lab offers a place to learn and practice various diagnostic and therapeutic procedures including surgery techniques on synthetic preparates and simulators prior to any contacts with living animals.Two mandatory written case reports are submitted by 3rd and 4th year students (one report each on reproduction medicine and on internal medicine and surgery). Reports are reviewed by the academic staff with feedback for students.

Elective courses are offered in small groups for 3rd or 4th year students (maximum 8 students/group) in form of practicals, farm visits, seminars and “problem based learning” courses.

The majority of hands-on clinical training is offered for 5th year students during the four courses of 10 weeks of specialized training (maximum 20 students/course). Students rotate through the clinic: orthopaedics and radiology / aseptic surgery and anaesthesia / internal medicine, diagnostic imaging, laboratory medicine / gynaecology, obstetrics and udder diseases/ reproduction biotechnology / herd health management. Students are expected to take (supervised) case responsibility from admission to the clinic until release or referral to the Department of Pathology. Students are expected to join post mortem examinations of their cases and to report results of necropsies to students and clinical staff. Once a week interdisciplinary seminars (5 hours) are organised on subjects of preventive herd health management. Teaching staff from other departments deliver intensive contributions. Interdisciplinary seminars are organized on special topics. Students also acquire hands on training in the skills lab. To intensify surgical training, cows (rumenotomy; 5 students/cow) and pregnant heifers (caesarean section; 5 students/cow) as well as organs from the slaughterhouse (lower legs, genital tracts, udders, heads, tails) are purchased. 10 to 12 Clinic owned cows are kept for students` skills training in propaedeutics including transrectal palpation primarily of the genital tract

Consultations

The Clinic for Cattle is open all year round and provides a 24h/7d emergency service. The diagnostic laboratory is open for samples from Monday through Saturday.

Other information

The Clinic covers all subjects of buiatrics, and provides harmonized and synchronized teaching of undergraduate and graduate students in bovine medicine. The current case load covers a wide variety of different diseases. Herd health aspects of bovine medicine are well integrated into the curriculum and are taught directly on farms.

The Clinic collaborates intensively with outside practitioners to keep a high case load.

The diagnostic laboratory serves the Clinic, research projects, and field practitioners. The results serve educational purposes.

The Clinic collaborates intensively with other veterinary faculties (national or international). Students are supported in their efforts to gain extramural international experiences. Veterinary students from Germany and other countries (e.g. ERASMUS+ students) are welcome for training in the clinic.

Main research activities

Currently four research groups mainly focus their activities on the transition cow period. On population and herd level, research objectives are risk factors for animal health, disease recording, and management of the dry and transition cow period. On animal as well as organ and cellular level, lipolysis, ketosis, insulin resistance, stress, reproduction and general endocrinology, embryonic mortality, in vivo and in vitro peripartal uterine contractility as well as postpartum uterine health are major research topics. Other important research areas are pain management, techniques of orthopaedic and abdominal surgery, IVP of bovine embryos, the influence of metabolic stress on reproduction, diagnostic procedures in bull infertility and studies on sperm characteristics.

3.5 Clinic for Poultry

Location

The Clinic for Poultry is located on the campus Bünteweg (buildings 217 and 214). This unit is responsible for teaching, research, and services (extension service and diagnostic services including necropsy) related to commercial as well as backyard poultry (e.g. chicken, turkeys, ducks, geese), and pigeons. In addition, teaching, research and diagnostic services may also address pet- and feral bird species for selected topics.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
1	4	4	1	2,6	0	0

Teaching responsibilities

Teaching of avian including poultry diseases and related topics is done in close cooperation with the Clinic for small mammals, reptiles and birds. This includes lectures, practical trainings (electives, clinical training practical year) as well as the examinations in accordance with the governmental and veterinary board regulations for training and licensing of veterinarians as laid out in the TAppV, § 42.

Core curriculum: Propaedeutics in avian medicine (poultry, pet, wild and zoo birds), principles and interpretation of laboratory diagnostic findings (incl. practical training), interdisciplinary subject teaching directed to food hygiene and safety, post-mortem examination of avian species with a special emphasis on poultry, diagnostic strategies and population medicine at the flock level including sampling procedures, vaccination methods, flock medication, and preventive strategies; biosecurity measures at the farm level (farm practical of students in preclinical phase) in accordance to the requirements of the Animal Health Law; case studies (Quote); conventional lectures on specific topics in avian medicine;

Elective subjects: seminars and field trips (including pigeon and backyard poultry holdings, GESEVO as an example for measures undertaken for disease outbreak control) on selected chapters of avian medicine (poultry, pet birds, wild and zoo birds).

Practical year: Cooperation with the Clinic for Swine, Small Ruminants and Forensic Medicine offering clinical rotations in the respective subunits of both institutions including the field station Bakum. In addition, the Clinic for Poultry offers clinical rotations with a scientific and poultry emphasis for individuals not involved or in addition to the mentioned cycle. Students involved in this cycle are guided through a small research project.

PhD-Studies: The Clinic is involved in the curricula of the PhD-programs “Veterinary Research and Animal Biology” as well as “Animal and zoonotic infections” including the DFG research training group “Viper” with seminars, workshops laboratory classes and field trips.

M.Sc. Veterinary Public Health (BEST-Vet): Lectures and necropsy classes with sampling in the module “Animal disease control”.

Doctoral students: For PhD- and doctoral students the clinic offers “Journal Clubs” as well as training of presentation skills, data analyses, grant writing skills, and discussion of ongoing research topics during “Research Meetings”.

Interns and residents: For interns and residents (within the European College of Poultry Veterinary Science) as well as for the applicants for the “Fachtierarzt” (Certified Specialists in Poultry Disease as well as in Microbiology) the clinic offers seminars, invited lectures, field trips and guided research projects.

Continuing education for poultry veterinarians: The clinic organizes the biannual DVG-meeting on poultry health (“Fachgespräch über Geflügelkrankheiten) for over 50 years.

Consultations

Opening hours: generally Monday - Thursday from 7.45 am to 4.15 pm; Friday from 7.45 am 4.00 pm. On call continuously throughout the week and on weekends.

Other information

Studies on efficacy and safety of vaccines and drugs under controlled laboratory and field conditions; pathogenesis studies; development of diagnostic tools for poultry diseases; investigations on frequency, significance and control of

important pathogens of poultry, pet birds and wild birds (zoonotic infections, epizootic diseases, food-borne infections); clinical and immunobiological examinations of poultry, pet and feral birds; characteristics of immunosuppressive pathogens of poultry, husbandry systems, animal welfare, health management of poultry; KI in poultry production; translational medicine.

3.6 Clinic for Pigs, Small Ruminants and Forensic Medicine

Location

The main facility (clinic, laboratory, stables, teaching rooms, ambulatory service) is building 121; stables of the clinic are also located in building 127 and building 128, as well as building 106 on the campus Bischofsholer Damm. The clinic participates in the unit of reproductive medicine of clinics as well. Stables in house 127 are not open for hospitalization but are reserved for animals of the EU-registered Artificial Insemination (AI-) center D-KBSZ 003-EWG.

There are 32 hospitalisation pens available for small ruminants/South American camels, 21 hospitalisation pens for pigs and 14 pens alternatively for pigs, small ruminants and South American camels. Additionally there are 7 pens for accommodation of pigs, small ruminants and South American camels in an isolation facility including one operating room specifically for animals under isolation and 5 x 4 pens for small ruminants in the AI-center.

Premises of the Clinic for teaching include one lecture hall with 82 places, one laboratory for practical work by students with 48 places, one small laboratory with 6 places and 3 rooms for group work with 36 places in all.

The diagnostic laboratory of the clinic includes rooms for haematology/parasitology, cytology, serology, clinical chemistry, PCR diagnostics and a lab for Atomic absorption spectrometry and flame spectrometry. Assignments of the rooms are currently under reconstruction in connection with the reconstruction process of the Clinical Centre for Farm Animals. Diagnostic work is done for patients of the clinic (pigs, small ruminants, South American Camels, enclosure game) and outside service (all species except cats, dogs, small mammals, reptiles and birds) as well as for scientific purposes.

Special diagnostics or services for other institutions of the TiHo are available upon inquiry (e.g. X-ray, ultrasonography, laboratory).

Other rooms: X-ray/ultrasonography, endoscopy, surgery, dispensary, sterilisation, gnotobiotechnique laboratory, semen collection, semen preparation and semen storage.

The EU-accreditated AI-center is registered under number EU-Nr.: D-KBS2-003 EWG. Housing capacities are for up to 20 sires or bucks and 5 ewes or does. Semen is available on request for customers in Europe and oversees and specific breed are offered upon demand after conclusion of contract and dependent of the individual international import / export regulations. Semen is regularly collected once to twice a week.

Staff

Budgeted positions				**Non-budgeted positions**		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
2	8	11	1,5	3,8	0,5	

Teaching responsibilities

Core curriculum: Clinical examination and diagnostic methods (course, 4 repeats), propaedeutics (animal handling and treatment), laboratory diagnostics (course, 6 repeats), basics of internal medicine (all species), training of clinical cases, swine medicine, small ruminants medicine, veterinary legislation, interdisciplinary subject clinics, herd health management, "practical year" (i.e. 10 weeks for a group of 12 students with reinforced clinical teaching esp. with "hands on patients" in pigs, small ruminants, South American camels and teaching units in the mobile clinic, flock health service for small ruminants, Bakum and clinic for poultry, 3 repeats; Skills lab training to prepare surgery classes, eOSCE for feedback).

Compulsory elective subjects: herd health management (swine, small ruminants: intramural course, excursion, also see Mobile Clinic), therapeutic and diagnostic training, swine medicine for pet pigs, interdisciplinary problem-oriented learning (together with Institute for Physiology)

Examinations: propaedeutics, internal medicine, surgery and anesthesia, reproductive medicine, veterinary legislation

Consultations

The clinic is open 52 weeks a year. Consultation hours are Mon - Fri 8 a.m. - 5 p.m. (additional emergency service Mon - Fri 5 p.m. - 8 a.m., and 24 hours on weekends)

Flock Health Service for Small Ruminants

The Flock health service for small ruminants (HHSSR) is part of the Clinic for swine and small ruminants. The HHSSR offers visits and consultation to small ruminant flocks on a regular base. Actually 92 flocks take part at the HHSSR; covering round about 30,000 animals. They are visited on a regular base, with a minimum of 2 visits per year, and a maximum of 12 visits per year. The service provides routine clinical investigation of the flocks, pregnancy scanning, monitoring of infectious diseases, parasitological monitoring, and monitoring on trace elements. In addition, vaccination programs are provided. Emergencies are also treated. Farm visits take place all over the year (about 48 weeks per year) with 1 to 3 days per week and 1 to 3 farms visited per day. Most of the visits are joined by up to 3 students.

Other information

Additional outside sources of material for clinical training purposes: Purchase of animals (swine, small ruminants) from outside farms for teaching purposes. Level of clinical service offered by the clinic is comparable with outside practices. Proportion of cases that are primary and referrals: Swine – mostly referred by veterinarians (for diagnostic, not for therapeutic reasons, except miniature pet pigs); Small ruminants – brought as primary cases by the owner (70%), referred by the veterinarian (30%) (diagnostic as well as for therapeutic reasons).

Areas of clinical specialization: Internal medicine/laboratory investigations; Surgery, anesthetics, X-ray, ultrasound imaging, endoscopy techniques; Reproductive medicine, obstetrics; Resident education within ECPHM and ECSRHM

Relationship of the clinic with outside practitioners:

- Intensive collaboration with outside practitioners by diagnostic services (swine and small ruminants) and referral work (small ruminants)
- Other relationships with outside organizations: Collaboration with pig and sheep health organizations; Scientific cooperation with e.g. the Friedrich-Loeffler-Institutes in Greifswald, Mariensee, and Jena, Fraunhofer Institute for Cell Theapy and Immunology in Leipzig, Institute for Microbiology of the Bundeswehr Medical Service in Munich, Niedersächsisches Landesamt für Verbraucherschutz und Lebensmittelsicherheit

Main research activities

The main research of the clinic covers a broad range from epidemiology, physiology, pathophysiology, laboratory diagnostics, infectious diseases, animal welfare and surgical procedures. Detailed list of projects see homepage tiho (TiHoDozis)

Within the field of swine medicine the main research topics are:

- Pathophysiology, diagnostics and therapy of different infectious diseases (e.g *Actinobacillus pleuropneumoniae*, enzootic pneumonia, *Campylobacter ssp. / Yersinia ssp*.,) including measures for reduction of antibiotic use
- Animal health and welfare with regard to pig housing systems and evaluation of stress/mental health
- Pain management during piglet castration; euthanasia of non-viable suckling pigs, Development of protocols for long-term anesthesia
- Modern technologies in health monitoring and disease control strategies

Within the field of small ruminants and South American camelids disorders the research activities focus on:

Systemic diseases:

- Epidemiology, Pathophysiology, diagnostics and therapy of different infectious diseases (Maedi-Visna, Sheep Pulmonary Adenomatosis, Johne's disease, Listeriosis, Q-fever, Bluetongue, Schmallenberg-Virus infections, Mycoplasma ovis and M. ovipneumoniae-infections.)
- Diagnostic of infections of erythrocytes like Mycoplasma spp., Anaplasma spp., Babesia spp.
- Monitoring and treatment of endoparasitic infestations in small ruminants
- Diagnosis and epidemiology of resistance of endoparasites against anthelmintics
- Diagnostics, pathogenesis and therapy trace element disorders (copper, cobalt, selenium)
- Calcium metabolism, deficiency and intoxication in south american camelids
- Pathogenesis and therapy of pregnancy toxicosis of sheep
- Long term anaesthesia in sheep
- Diagnostic of renal insufficiency in different species (swine, small ruminants, horses, cattle)

3.7 Mobile Clinic (Ambulatory Service)

Location

The Mobile Clinic (Ambulatory Service) is organizationally attached to the Clinic for Pigs, Small Ruminants, Forensic Medicine and Ambulatory Services, Building 121 located on the campus "Bischofsholer Damm". Daily practice is offered for farms and riding stables within a one-hour drive from the TiHo (cattle, swine, small ruminants, horses). Additionally, herd health services are offered for cattle (by staff of the Mobile Clinic and of the Clinic for Cattle), for swine, for small ruminants and south american camelids (by staff of the Clinic for Pigs and Small Ruminants and of the Field Station for Epidemiology – only pigs). See also figure below.

Rooms: dispensary, preparation room (instruments, sterilisation), room for group work

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
-	3	-	1	0.5	-	-

Teaching responsibilities

Core curriculum: Mobile clinic excursion (10-12 students, 5 hours/day, 3 busses)
Elective subjects: Herd health management (cattle, excursions, also see Clinic for Swine, Small Ruminants, Forensic Medicine and Ambulatory Services)

Consultations

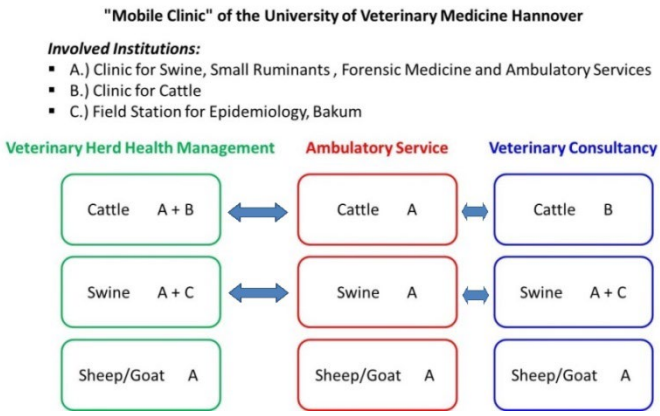
The Mobile Clinic operates 52 weeks a year, operation hours are Mon – Fri 8 a.m. – 5 p.m. (additional emergency service Mon – Fri 5 p.m. – 8 a.m., and 24 hours on weekends).
Herd health services operate regularly and on request.

Other information

Level of clinical service that is offered by the establishment compares with outside practices.
Administrative system used for the patients:
A commercial centralised software system (EasyVet) for clinics and institutes of the TiHo is installed and in use for case and data recording as well as for writing final reports and invoices.
Another commercial computer software is in use for regular herd health service on cattle farms (Boviconcept).

Cooperation with the Clinic for Cattle and the Field Station for Epidemiology

- Regularly exchange of knowledge
- Case discussions between institutions
- Computer-based data analysis (bovine: "Boviconcept"; swine: "db-Planer")



3.8 Unit of Reproductive Medicine of the clinics

Organisation and location

The 'Unit for Reproductive Medicine' is located at Buenteweg 15, and affiliated with the different clinics of the TiHo. The Unit is an interdisciplinary centre, which is involved in teaching and research in themes related with reproductive medicine and associated biotechnological applications. In addition, there are clinical services provided for horses, cattle, pigs, sheep and goat, dogs and cats. The Unit includes an accredited 'Central Lab for Spermatology and Biotechnology', with state-of-the-art equipment. Furthermore, it has an EU-licensed Equine and Small Ruminant AI-centre, and EU-licensed Equine ET-centre. The Unit closely cooperates with members of the 'Virtual Centre for Reproductive Medicine Lower Saxony', including the 'FLI-Institute for Farm Animal Genetics' in Mariensee, the 'National Stud of Lower Saxony' in Celle, as well as animal breeding associations, and AI- and ET-organizations. These efforts should support long-term competitiveness of animal production in Germany.

Within the 'Unit for Reproductive Medicine', different professorships are responsible for small animals, cattle, horses, pigs and small ruminants. It is headed by the Chair of Equine Reproduction.

The main building (administration, clinic, diagnostic laboratory, spermatology research laboratories, lecture hall, stables, EU-Equine AI- & ET-centre, pasture) is designated as Building 241.

Teaching facilities include one lecture hall with 103 seats including an area for animal examination, four rooms for working with animals in small groups, two seminar rooms with eight seats each, two rooms for preparation and semen collection and -handling, as well as one course room equipped with 25 microscopes and 25 seats (Building 261).

The accredited 'Central Lab for Spermatology" (DAkkS D-PL-13261-08) provides rooms for semen processing as well as laboratories for standard microscopic procedures and advanced spermatological methods including computer-assisted sperm analysis and flow cytometry. It is a recognized reference laboratory of German Livestock and Horse Breeding Associations.

The Unit for Reproductive Medicine provides two consultation rooms for small animals (dog and cat), equipped with endoscopy and ultrasound devices, which are used both for clinical and research purposes as well as teaching. Two laboratory rooms for spermatology and facilities for surgery in pigs are present. Two separated areas are available for stallion semen collections, which are used for teaching and diagnostic purposes. The EU-licensed centres for equine artificial inseminations and embryo in-vitro production and transfer were founded in 2006, and include separated stables, areas for clinical examinations and facilities for quarantine, semen collection, disinfection, and laboratories for sperm and embryo handling.

The Institute owns 15 to 20 dogs, 2 stallions, 6 mares, 10 boars, 4 rams. These are kept around Building 241, and are used for teaching and research purposes. Species-appropriate stable boxes, paddocks and pastures are provided for animals of the facility and for patients.

Staff

Budgeted positions				**Non-budgeted positions**		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
2 are included in Clinics for Small Animals, Horses	2	7,5	1	2.3	2.75	-

Teaching responsibilities

Core curriculum: Teaching of clinical and laboratory methods in reproductive medicine as well as biotechnological applications in dogs, horses, pigs and sheep. Especially artificial insemination and embryo transfer techniques are educated. In addition to lectures, clinical training, interdisciplinary clinics, and lab courses are given.

Furthermore, lectures and practical training are offered for MSc students in 'Animal Biology and Biomedical Sciences', as well as AI and ET technicians. Post-graduate training is provided to veterinarians and specialists. The 'Unit for Reproductive Medicine' participates in the residency programme of the 'European College of Animal Reproduction' (ECAR), for cattle, horses, dog and cat, pigs and small ruminants. Besides, one year of work in 'Unit for Reproductive

Medicine' can be accredited for the 'European College of Equine Internal Medicine'. The 'Unit for Reproductive Medicine' is involved in the PhD programme "Veterinary Research and Animal Biology" at the TiHo.

Elective curriculum: Seminars and practical training in reproductive medicine and biotechnology.

Consultations

- For small animals, services in andrology, gynaecology, obstetrics, neonatology and biotechnology (semen collection, chilling and freezing, artificial insemination) are offered.
Regular consultation hours are: Mon – Fri, 8 a.m. – 1 p.m. On request and emergency consultation hours are until 4/4.30 p.m.. Students participate in consultations.

- For horses, services in andrology, gynaecology, artificial insemination and embryo transfer are offered. Regular consultation hours are: Mon – Fri, 8 a.m. – 1 p.m. Students participate in consultations.

Spermatological diagnostics of samples from different species (pig, horse, cattle, dog); which are sent to the Unit by artificial insemination centres, veterinarians and breeders.

Semen preservation for small animals, pigs and horses and development of preservation methods.

Consultation of veterinarians from commercial centres for artificial insemination and embryo transfer, as well as private practices, and of breeders.

4 Institutes

Information:

Staff: deadline 31.12.2023, see Tab. 9.1. appendix 1.9

Non-budgeted positions: payed from income from service and third-party

4.1 Institute for Anatomy

Location

The Institute's main site is in Building 122 (Bischofsholer Damm campus). Rooms for teaching (anatomy) comprise one lecture theatre (114 seats), two dissection halls with visualizer, computer and video projection (46 dissection tables with 5-6 places each), a seminar room ("Studio", with computer and video projection, video microscope; 49 seats), a museum/learning room (60 seats; for self study purposes). Histology is taught on the premises of the Institute for Pathology (Bünteweg campus). The main lectures on anatomy and embryology take place in the Institute for Physiology (270 seats) which is equipped with visualizer and computer projection (Building 102). Due to the high number of students, the lectures are synchronously transmitted to the Institute's lecture theatre, where an academic teacher is present for questions. Post-graduate students may use fully equipped laboratories for histology, cell- and molecular biology, including a Live-Cell-Imaging station and a Laser Microdissection microscope.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
2	5,5	7	1	-	-	-

Teaching responsibilities

The institute's staff teaches anatomy, histology, and embryology for students in their first and second years with many practical classes. Formative assessment gives feedback to students achieved competences. Histology courses are given twice, due to the large student numbers and the intended intensity of training.

The anatomical dissection classes are also given twice, with a maximum of 4 students per dissection table forming one group. The students´ practical work is supported by visualizer guided dissection and setting priorities on clinically relevant structures in teaching. Interdisciplinary electives are given with teachers from the clinics, and partly utilize a virtual dissection table.

Main research activities

Research activities have been focused on the reproductive tissues of female and male, with emphasis on the development of in vitro systems for placenta cells and functional analysis with transgenic mice (spermatogenesis). A second methodological focus has been set on the ultrastructural analysis and three-dimensional reconstruction of the respective tissues applying serial-block-face scanning electron microscopy (SBF-SEM). Besides, a variety of clinically driven research projects are conducted in collaboration with the respective clinical institutions.

4.2 Institute for Animal Genomics

Location

The Institute is located in Building 201 on the campus Bünteweg (17p).

Premises for teaching include one lecture theatre for 120 students, one demonstration room for 50 students, one seminar room for 30 students.

The molecular genetic S1 laboratory is open for individual undergraduates or student courses (5-10 students per course); it includes facilities for library preparation and Next-Generation Sequencing (MiSeq and NextSeq2000), PCR, genotyping of SNPs, realtime PCR for quantitative DNA and RNA analyses and two local workstations for bioinformatics work. Bioinformatics methods can also be taught on a Linux computing server on which specific student accounts are available. A cell culture lab is currently under renovation and will serve for genetic engineering work on S2 level. In addition, there are three computer rooms open to individual undergraduate and graduate students, multiple storage rooms and two rooms for biobanking including blood, tissue, cells, DNA and RNA samples. The institute also has a stable, which contains cattle, sheep and pigs for teaching purposes.

Staff

Budgeted positions				**Non-budgeted positions**		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
2	2,7	7	2	5	-	-

Teaching responsibilities

The core curriculum in animal breeding and genetics is taught in the 2nd year in lectures and practicals. A practical course for assessment and selection of breeding livestock (horses, dairy cattle, beef cattle, sheep, and pigs) is offered for all students in small groups. Furthermore, students can join optional seminars to develop specific skills and learn more about OMICs, conservation of breeding material or specific breeds as well as statistical and bioinformatics programming skills.

Consultations

TIHOMICs is part of the institute's scientific unit that specifically deals with high-throughput sequencing and offers various OMICs methods for a wide range of application areas in cooperation projects with scientists and research groups. The TIHOMICs-team has many years of experience in the field of OMICs and is happy to provide support with project planning, sequencing, quality control and data analysis for collaborative work.

Other information

- The institute is an approved location for advanced training for certified veterinary specialists in molecular genetics and gene technology.

Main research activities

Our Institute is focusing on a better understanding of the genome and its functional elements, elucidating their role in the development of specific phenotypes and diseases with its interdisciplinary teams. Additionally, the institute is at the forefront of developing new bioinformatic methods for analyzing genomic data. Applied methods are multi-OMICs approaches, which highlight the complex interrelation of genome, transcriptome and chromatin modifications. Functional genomics analyses particularly target non-coding elements in the genome and their effects on growth and development, determination of body size, skeletal development, and skeletal health in pigs and other livestock. In vitro models from mesenchymal stem cells are created and modified for a deeper understanding of the investigated processes. Furthermore, classical statistical methods, such as resampling techniques or methods of evidence synthesis are used, and adapted for bioinformatic purposes specifically for data from infection research.

4.3 Institute for Animal Ecology

Location

- The institute is located in the building 203 at Bünteweg 17d and uses a DNA laboratory (S1), a computer room, a library, and three animal culture rooms for graduate and post-graduate education. The labs are available to graduate students and undergraduates for lab rotation periods of 3 to 12 weeks.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
1	2,0	2	1	1	0	0

Teaching responsibilities

Lectures, seminars, field and lab courses in organismal and molecular ecology and evolutionary genetics are offered to biology and veterinary medicine students. The major part of teaching is done for students of biology (FüBa, Bachelor, PhD, and masters programmes).

Other information

Our teaching of state-of-the-art molecular techniques in ecology and evolution is fueled by a set of international collaborations (see below). Student exchange programmes between the collaborating institutions are crucial for both teaching and research.

Main research activities

Our institute combines ecology, evolution and molecular genetics to study current issues of integrative biology. Long-term research projects include (i) conservation genetic studies of biodiversity (e.g. in odonate bioindicator systems), (ii) comparative phylogenetic studies in Invertebrate Animals (e.g. early phylogenetic branching pattern within Pterygota; deep phylogenetic relationships in basal metazoans: Placozoa, Porifera, Cnidaria, Ctenophora), (iii) developmental biology in diploblasts and odonates and the development of new DNA technologies for ecological and evolutionary research. A new global warming study investigates the metagenomics of the UNESCO World Heritage Wadden Sea. A recent cancer research initiative on placozoan model systems takes place in space and on the ground. Projects profit from long-term collaborations with the Yale University, the American Museum of Natural History in New York, Oxford University, LaTrobe University Melbourne, the Alfred-Wegner-Institute (AWI), and the German Aerospace Centre.

4.4 Institute for Animal Hygiene, Animal Welfare and Farm Animal Behaviour

Location

The Institute (ITTN) is located on the campus Bischofsholer Damm in Building 116 on 2nd floor onwards above the Clinical Skills Lab. Laboratories (including microbiological laboratory L2-status) and offices are situated on the second floor, and the rest of the building on 2.5th, 3rd and 4th floor includes offices, social rooms and the respective infrastructure.

The diagnostic laboratory (BSL 2) is open to individual undergraduates; it focuses on cultural and molecular biological diagnostics; about 4,000 microbial samples (from animals and air, water, soil, litter, swabs etc.) are handled p.a. from current ITTN research projects.

Premises for teaching comprise one seminar room for up to 30 students and one auditorium for up to 110 persons.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
3[1)]	3	6,5	1,5	14,55	0	0

1) Includes one Professor in applied ethics in veterinary medicine.

Teaching responsibilities

The core curriculum in animal husbandry, animal hygiene, animal welfare and animal behaviour is fully taught by ITTN. A wide variety of compulsory courses is offered in the fields of Animal Welfare and Ethology, Farm Animal Hygiene and Husbandry, Laboratory Animal Sciences and Ethics.

Other information

ITTN is an approved location for advanced training for certified veterinary specialists in animal and environmental hygiene, microbiology, animal welfare and animal behaviour. ITTN cooperates nationally and internationally and offers study abroad opportunities for foreign students and scientists.

Main research activities

Key knowledge areas of ITTN are the biological, physical and chemical principles and the living conditions of livestock. Applied methods include the analysis of animal behavior via video or direct observations, and, in the field of animal hygiene, a combination of classical analysis of hygienic practices with modern molecular biological methods. The generated knowledge is used to improve and develop current livestock farming systems, to realize animal health and welfare in farm animals whilst also maintaining performance in modern, sustainable animal husbandry. The aim of all research projects is to transfer key knowledge into farming practice.

Research fields include:

Animal hygiene

- interactions between animals, humans and the environment
- improvement of hygiene practices and testing of sensors to assess important key parameters
- analysis of spreading and transmission routes of pathogenic and indicator
- bacteria and virus
- Animal health and welfare
- definition and measurement of the physical, chemical and biological environment of animals
- use of digitalisation and precision livestock farming tools

Animals welfare and behaviour

evaluation of alternative husbandry systems

environmental enrichment for poultry and pigs

impact of climate change on animal husbandry systems

Environmental protection: farming environment and emissions

- e. g. impact of airborne emissions from livestock production on humans,
- animals and the environment
- mitigation strategies to reduce bioaerosols and other emissions from farms.

4.5 Institute for Animal Nutrition

Location

- Campus Bischofsholer Damm; Bischofsholer Damm 15; D-30173 Hannover

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists*	Technicians	Secretaries
1	6	11	1	11	0	0

Teaching responsibilities

The institute offers lectures in animal nutrition and veterinary botany.

The institute offers lectures in veterinary botany in the first and second semester, which includes case-related botany and the application of knowledge about forage and poisonous plants.

In the fourth and seventh semesters the content of animal nutrition includes the basics of feed science, principles of animal nutrition, risks of feed for health and food safety and, last but not least, feed law (4th semester) as well as the feeding of different types of food-producing animals and pets (7th semester).

Mandatory seminars

Animal nutrition: During the entire semester, mandatory seminars are held 2 hours per week per student. The topics are based on the contents of the lectures, for example: in the lecture with a focus on the preservation → in the mandatory seminar: visual appraisal of silage quality.

At the Farm for Education and Research, the institute provides teaching in the field of animal nutrition (feed science, feed assessment and animal nutrition for all types of livestock) for the mandatory student courses.

Elective courses

During the entire semester, elective courses are held regularly in the form of seminars (Animal Nutrition) and as excursions (Botany); in the latter aspects of nutritional ecology are integrated. The contents of the courses are related to the contents of the lectures, too, or focus on current topics in animal nutrition. In addition to lecturers from the institute, colleagues from other institutions and presentations from extramural institutions (including feed industry) are invited. In addition, we offer students the opportunity to gain a deeper insight into scientific work by allowing them to look at doctoral theses individually for a few hours. Additionally, there are special offers for practical skills in botany (e.g. identifying of plant species in hay) during winter and summer.

Consultations

The institute offers a wide range of consulting services. Questions about the nutrition of all animal species are on the focus. A large repertoire of laboratory and diagnostic services, inclusive botanical expertise about feed and poisonous plants, is available. Both, questions concerning the nutrition of individual companion animals as well as questions concerning the nutritional problems on the herd level are on the agenda. On-site visits are organised for specific issues.

Other information

The peculiarity at Hannover is the role of the established service including analytical work as well as consultations. Samples (feed, water, faeces, urine, blood, tissues) related to actual cases of disease, prevention of disease or dietetic purposes are sent to the institute by veterinarians, owners of animals or public authorities for problem orientated analysis or require instructions, comments or advice in feeding, particular food producing animals but also in companion animals. Students can have insight in those cases and the information gathered in the service is integrated in lectures and courses (e.g. samples of feeds, case reports). The regular analytical consultation service in nutrition by members of the staff is a unique background in education.

Finally the spectrum of species recognized by nutritional point of view (pet birds up to horses and fish) and the emphasis of veterinary aspects is the main part of the profile of the Institute.

Main research activities

About two thirds of research activities are focused on species of food producing animals, one third is related to species of companion animals.

General Objectives Development of feeding concepts to promote animal health and welfare and improve sustainability and use of state-of-the-art analytical methods and evaluation and assessment methods.

Special issues concerning farm animals

- Pigs: Functional ingredients in pig nutrition to control the microbiota and specific pathogens as well promote animal welfare; sustainability and feeding/dietetic concepts in pigs; precision farming and nutrition; dietary effects on gastric ulcer; roughages in pregnant sows; dietary prevention of periparturient disorders; body composition of newborn piglets; feed additives and health; skeleton health and phosphorus supply
- Poultry: Functional ingredients in poultry nutrition to control the microbiota and specific pathogens as well promote animal welfare; sustainability and feeding/dietetic concepts; precision farming and nutrition; dietary effects on foot pad health
- Ruminants: Nutritional concepts to promote calf health; use of feed additives to promote animal health (udder) in dairy cows; optimizing dietary management of the transition period; trace element supply and health; Sustainability and feeding/dietetic concepts in ruminants; precision farming and nutrition
- Especially goats: Long-term survey of natural diet (browse, herbs) during the year in a seasonal environment; basic research with “professionals”: Strategies of experienced goats to deal with poisonous plants as feed. Sheep: Grazing Ecology of Sheep and Its Impact on Vegetation and Animal Health on Pastures Dominated by Common Ragwort (*Senecio jacobaea L.*)
- Horses: Ecological context of feed borne horse diseases (e.g. Atypical Myopathy due to maple fruits); plant-based deworming (e.g. anthelminthic properties of certain plant species); roughage concepts in the nutrition of horses, feed hygiene and mineral supply of horses. Functional ingredients to direct intestinal microbiota.
- Special issues concerning companion animals
- Dogs: Utilisation of plant-based feed components in the nutrition of dogs, dietary concepts to promote animal health, development of new feeding concepts
- Cats: Dietary concepts to promote animal health and animal welfare
- Birds: Energy and nutrient requirements during laying/breeding period and for nestlings` growth in ornamental bird species
- Various species and exotics: Various questions on the interaction of nutrition and animal health
- These research is brought back into evidenced-based education of students.

4.6 Institute for Biometry, Epidemiology and Information Processing

(WHO Collaborating Centre for Research and Training for Health at the Human-Animal-Environment Interface (WHO-HAEI))

Location

IBEI, which is designated by WHO for its One-Health activities as a Collaborating Centre is located on two floors in Building 260, Bünteweg 2. Premises for teaching include two seminar rooms (20/10 students), and a specialised library. In addition to being used for seminars and teaching classes the seminar rooms are also used by students in free working groups (self-directed studies). Other rooms are available to individual undergraduates for practical periods of up to six months as well as to graduate students.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
1	3	1,68	0,5	5,65	1,8	0,5

Teaching responsibilities

Biometry is part of the curriculum in the third year of veterinary medicine, in the second year of biology, in the first year of animal biology and for all PhD students. Veterinary epidemiology is part of the curriculum in the fourth year of veterinary medicine as it is included in the lecture on epizootic diseases.

In addition, special courses are offered in veterinary epidemiology, designing and planning animal experiments and statistical models for veterinary staff, for biologists and for PhD students. Classes on methods in Evidence based Medicine with a special emphasis on techniques of meta-analyses are offered as well. In addition, statistical classes including specialised software use for data capture, data management and data science techniques were offered.

Consultations

IBEI is responsible for statistical and epidemiological consulting of all research students preparing their theses as well as other scientists and projects. Here, small classes are taught (see above) to be prepared for individual consulting. Within this service, IBEI includes the design of study protocols, randomisation of cases and sample size determinations as well as specialised statistical analyses following international Standard Operating Procedures of Good Clinical Studies (e.g. EMA protocols). For animal experiments, these protocols were included as fixed expert opinions into the formal applications for animal experiment due to the processes within the Lower Saxonian authorisation procedures.

Other information

IBEI is designated by the WHO for its One-Health activities as a Collaborating Centre for Research and Training for Health at the Human-Animal-Environment Interface (WHO-CC HAEI Hannover). In agreement with the WHO, the terms of reference (TOR) for the (WHO-CC HAEI Hannover) were structured into three fields of training and research activities, namely:

TOR (i)Support WHO in activities to strengthen Member States' national capacity for AMR surveillance and continuous development and implementation of the WHO Global Antimicrobial Resistance and Use Surveillance System (GLASS)

TOR (ii) Support WHO in development and implementation of GLASS One Health surveillance model

TOR (iii) Contribute to the network of WHO Collaborating Centres for AMR Surveillance and Quality Assessment under WHO's leadership

These TOR are the basis of the updated work plan for the years 2020 to 2023.

Main research activities

IBEI is structured into two working groups "Health, Well Being and Behaviour of Animals" and "One Health / Zoonoses". These groups set up related research studies with a common methodological background in biometry, epidemiology, and (medical) documentation.

The focus of the investigations in the "One Health" working group is the transmission of zoonotic pathogens between humans and animals and, in particular, the exchange of antibiotic resistance and its causes.

VetCAb and its international version VetCAb-ID (Veterinary Consumption of Antibiotics – International Documentation) are scientific research projects on antibiotic consumption in farm animals, which determine the treatment frequency of a herd or flock. In a collaboration project, the quantification of antibiotic use in commercial broiler farms in Pakistan and its association with the emergence of antimicrobial resistance in commensal *E. coli* isolates from broilers are examined. Following this, VetAmUR is to describe continuously the use of antibiotics in livestock in Germany and to document practical resistance data from microbiological studies. In the project "Integrated One Health Surveillance for Antimicrobial Resistance (IT-AMR)" together with countries from sub-Saharan Africa a harmonised protocol for the monitoring of antimicrobial resistance data in an integrated One Health approach of humans, animals and the environment was set up. KontRed is a project with the aim to reduce the contamination of carcasses with zoonotic pathogens (primarily Salmonella and Campylobacter) at the end of the production chain from a hygienic point of view by optimizing and controlling existing processes and implementing new technical procedures. During the pandemic several consulting projects were generated to support the Cofoni-network, the National University Medicine and others with the One Health-approach. The Connect OHD project develops a concept and tool for sharing data from Public Health Services and in Veterinary Administration in the spirit of One Health, which uses the metadata of existing data structures for the targeted integration and analysis of information. The legal framework for using this data for research purposes will also be clarified and data protection issues addressed.

The "Animal Health" working group is focussing on improving the health and well-being of (farm) animals. There are a large number of intrinsic and extrinsic factors in (livestock) husbandry that endanger or improve animal health. Within this working group we conduct (large) epidemiological field studies to understand the interplay of the various factors under real life conditions. We believe, that the future challenges in epidemiology lie in establishing methods of analysis so that we can see the world in which animals live as complex as it is. Research of animal behaviour and animal welfare has become increasingly important in the past years. Recently, also the people who care for the animals, are brought into the focus of scientific interest. Hence, we provide methodological know-how for quantitative scientific studies as well as for studies of qualitative social research. This is why we in the working group "Animal health, animal welfare, animal diseases, animal behaviour", are pursuing the goal of developing a more complex understanding of associations and also including animal owners and veterinarians in our considerations regarding better mutual understanding and communication.

4.7 Institute for Food Quality and Food Safety

Location

The institute is located in Building 115 and Building 123 on the campus Bischofsholer Damm 15, 30173 Hannover. Within the building 115 the institute occupies the cellar, half of the basement, the complete ground floor, half of the first floor and the entire third floor.

Within the building 123 a cell-culture laboratory (S2) and a molecular biology laboratory (S1) can be used for teaching cell- and molecular biology techniques in small groups. An additional course room (S1) for bigger groups of students is available. Thus, there are many possibilities to integrate students for practical training in the institute. Further, the animal housing unit of the institute is located in building 124, the Institute for Anatomy, directly in front of the institute.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
1+1JP	11	19	1	11	0	0

Teaching responsibilities

The core curriculum contains lectures and practical courses in the following subjects:

- Food science
- Food microbiology
- Food toxicology
- Red and white meat hygiene
- Milk hygiene and milking techniques
- Meat inspection (course)
- Food investigation (course)
- Milk hygiene and sampling (partly held at the farm in Ruthe, course)

Courses have to be repeated three to four times per week due to the large number of veterinary students. The students are well prepared for their practicals in slaughter houses.

The interdisciplinary teaching units involve shared seminars with clinics (Clinic for Cattle, Clinic for Pigs and Small Ruminants) and the Institutes for Pathology, Parasitology and Microbiology as well as contributions from external experts working at state authorities or private establishments.

Core elective course teaching is offered for various subjects.

The institute is also involved in teaching of veterinarians prepared for official authoritative duties (Referendare).

Consultations

For students: every working day between 10.00 – 11.00 h and after the lectures and courses. In addition: At any time upon prior appointment.

Other information

- Two laboratories of the institute in building 115 (laboratory for food molecular biology and food microbiology) are accredited according to ISO/IEC 17025.

Main research activities

- Food microbiology
- Campylobacter: Molecular tracing throughout food chain; Salmonella in pork and poultry
- Intervention strategies (e.g. use of bacteriophages in food production); Antimicrobial resistance
- Biofilm formation and inactivation strategies on the example of *Listeria monocytogenes*
- Food technology
- Meat processing and food (bio)chemistry
- Food preservation methods (e.g., cold plasma, ultraviolet light, starter cultures)
- NaCl and $NaNO_2$ reduction strategies in raw and cooked sausages, raw and cooked ham
- Food toxicology

- Development of stem cell-based new approach methodologies for neurotoxicology and neuroinfectiology
- Activity assessment of Botulinum Neurotoxins
- Myelin toxicity
- Effects of bacterial and viral infections on brain development (e.g. *Listeria monocytogenes*)
- in vitro modelling of chronic pain for toxicological and pharmacological studies
- Milk hygiene
- Mastitis agents; Composition of milk
- A1A2 milk technology
- Mechanisms of action of bacteria causing food infections, food intoxications and food (especially milk) spoilage
- Occurrence and mode of action of mycotoxins
- Production and microbiological safety of plant-based milk alternatives
- Molecular food biology
- Epidemiology of food pathogens and reservoirs (wild animals)
- Molecular tools for the detection and quantification of food pathogens

Teaching responsibilities

The institute covers important fields in Veterinary Education: To start with Chemistry, followed by Food Toxicology and Alternatives/Complementary Methods to animal experiments.

In the 1st and 2nd semester Chemistry courses start with anorganic and organic Chemistry specially adapted for the needs of veterinarians. There are lectures, as well as compulsory, interactive seminars in smaller groups and elective courses to deepen the expertise of interested students.

Food Toxicology is taught as lecture in the 6th Semester and as compulsory practical course in the 8th Semester. Another related interdisciplinary lecture is organized to discuss current issues in food science with speakers from different Institutes as well as external experts. Elective courses are available to deepen the knowledge in Food Toxicology, partly offered by external experts.

Students interested in Replacement/Complementary Methods to Animal Testing in the field of Toxicology can join elective seminars.

Moreover two students/year get the opportunity to spend 10 weeks of their practical year to learn cell- and molecular biology techniques. The students contribute to ongoing projects to obtain practical skills and to broaden their view on the possibilities of veterinary research fields.

Main research activities

The Research Group Food Toxicology and Alternative/Complementary Methods to Animal Experiments works mainly on the development of stem cell-based *in vitro* methods in the field of neurotoxicology and neuroinfectiology. Focus is on assay development for Botulinum Neurotoxin potency assessment, for myelin toxicity assessment and characterization of chronic pain for toxicological and pharmacological studies. Further, the group investigates effects of bacterial and viral infections on brain development, e.g. Listeria monocytogenes.

The Department of Microbiology is dedicated to the biofilm formation of *L. monocytogenes* on various surfaces, as well as testing different inactivation and decontamination strategies for food borne pathogens, e.g. using plasma water.

In the Department of Milk Hygiene, the large number of mastitis pathogens from diagnostics is used for research purposes, e.g. for the differentiation and characterization of coagulase-negative staphylococci. One of the main areas of research is the mode of action of the pore-forming enterotoxins of *Bacillus cereus*. Research is also being carried out into the presence and activity of mycotoxins in various dairy products. Regarding their (microbiological) safety, vegan milk alternatives are also increasingly investigated. Investigating the detection sensitivities of various inhibitor tests in relation to the different substance groups of antibiotics in milk of different animals is a further research aspect.

4.8 Institute for General Radiology and Medical Physics

Location

The Institute is located on the campus Bischofsholer Damm in Building 102.

The auditorium of the Building 102 is used for lecture courses in physics and general radiology. Practical exercises in both subjects are held in rooms of the same building. Our X-ray diagnostic lab with conventional as well as digital X-ray equipment including a digital luminescence radiography system is used for education of students in small groups. Besides we have labs for simulation of mechanical, thermal and electrical processes in animals using the finite element analysis on a Dell Precision Workstation 7910, for measurement of ionising radiation as well as radioactivity (gamma radiation) in specimens of food, and a workshop for electronics and 3D printing.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
1	3	1	0,5	1,5	1	0

Teaching responsibilities

The core curriculum comprises teaching of the fundamentals of physics as well as general radiology; in both subjects, mandatory practical exercises are taught in small groups. Students are divided into small groups of 20 students. As each experiment has to be presented five times, small groups of four students are assigned to the experimental apparatus.

In addition, the Institute is responsible for the examination in experimental physics and general radiology. Furthermore different elective courses (Principles of electrocardiogram, Principles of Ultrasonic Diagnosis, Principles of Diagnostic Radiology, Physics Escape Room), various lectures for PhD students and courses of radiation protection for veterinarians conforming with German X-ray regulations are offered. The Escape room is well appreciated by students.

Main research activities

The research of the Institute includes themes from General Radiology and Medical Physics in Veterinary Medicine. There are three main activities:

1. Use and Optimisation of Imaging Methods in Veterinary Medicine

These research projects are often carried out in cooperation with the clinics and cover areas of imaging with ionising radiation (Digital Radiography, Computed Tomography (CT), Micro-CT), Magnetic Resonance Tomography (MRT), including functional MRT, and Infrared Tomography (IRT).

2. Use of the Finite Element Analysis (FEA) in Veterinary Medical Issues

In order to a better understanding of fundamental physical processes within living creatures, within the scope of interdisciplinary research projects mechanical, thermal and electrical processes in animals are simulated with the aid of FEA in computers. These research projects are often carried out in cooperation with other institutions (e.g. Institute for Anatomy, Clinic for Small Ruminants, Department for Fish Diseases and Fish Farming, Clinic for Small Animals). They cover, above all, simulations of

- mechanical stress and deformations in the equine jaw during chewing,
- heat dispersion and distribution in equine teeth during dental treatment,
- animal welfare-friendly stunning and killing of fish (e.g. simulation of current density distribution in the brain during electrical stunning),
- animal welfare-friendly stunning and killing of piglets (e.g. simulation of current density distribution in the brain and heart when using electrical current),

- movement of the canine pelvic applying a three-dimensional computer model of the canine pelvic limb including cruciate ligaments.

Alongside a better understanding of physiological and pathological processes in animals the simulations also lead to a limitation in the variation of relevant parameters in animal experiments and thereby to a reduction in the number of animal experiments.

3. Research in the areas of Radiation Protection and Dosimetry of Ionising Radiation

Through the increasing application of imaging methods with ionising radiation in veterinary medicine on the one hand, and the continuing tendency of lowering dose limits for persons exposed to radiation at work on the other hand, the following questions arise in view of radiation protection and dosimetry of ionising radiation. Research projects are frequently carried out in cooperation with the clinics. They occur above all in the areas

- Radiation exposure of personnel in radiology and those accompanying animals during radiological investigations and
- Optimisation of physical-technical parameters in the evaluation of dosimeters (e.g. thermoluminescent dosimeters).

The aims of this research are the evaluation and improvement of the radiation protection situation when using imaging methods (e.g. with X-rays).

4.9 Institute for Immunology

Location

The Institute for Immunology is located in building no. 261 on the "Bünteweg" campus. The location includes five state-of-the-art laboratories for molecular biology, biochemistry, and immunology studies as well as office space. Relevant instrumentation, such as a flow cytometer, ELISA reader, and fluorescence microscope, is available. Training, for instance as part of the practical year, is provided to students in research projects as well as our immunodiagnostic laboratory that handles about 800 samples per year submitted from clinics and practitioners all over Germany and Austria. In addition, the Institute for Immunology holds lab space in the Research Center for Emerging Infections and Zoonoses (RIZ, building no. 231 on the "Bünteweg" campus). In this location, all infection-related work takes place, mainly with zoonotic pathogens, such as bacteria, parasites, and viruses. State-of-the biochemical labs, molecular biology labs and cell culture labs are available. The connection between the Institute for Immunology and the RIZ strengthens the research activities with regard to infection medicine and zoonosis research.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
1	2	2,5	0,5	6	0	0

Teaching responsibilities

The core curriculum including basic training in immunology is focused on the 2nd and 3rd year of studies. We provide lectures in "General infectiology (Immunology)" and "Special infectiology (immunology)". "Diagnostics of auto-aggressive immune diseases" is taught together with the Clinic for Pigs, Small Ruminants, and Forensic Medicine. Moreover, the Institute for Immunology contributes to hands-on training courses ("Infektionsdiagnostischer & Labordiagnostischer Kurs") in which veterinary students are trained on practical aspects of immune-related diseases. Immunological aspects of selected topics or diseases are taught and discussed together with various clinics and institutes in interdisciplinary subjects as well as in elective courses, such as an infection immunology seminar.

Other information

A diagnostic service is offered that focuses on the analysis of samples related to allergic and autoimmune diseases of dogs and cats. Students learn from these cases, and the entire diagnostic service is integrated into training (e.g. case reports).

Main research activities

The main research interest of the Institute for Immunology is innate immunity, particularly the role of cell subsets of the innate immune system in pathogen recognition and immune homeostasis. For instance, one main research focus is on the functions and the regulation of myeloid cells (monocytes, macrophages, neutrophils). This includes, in particular, innate receptors such as Toll-like receptors and C-type lectin receptors. The roles of innate cell subsets and receptors in immunity are investigated in murine models of infections and inflammation and also postpartal infectious diseases of cows (mastitis, metritis). Since targeting of innate immune receptors on antigen-presenting cells is a promising strategy to modulate immune responses, the Institute for Immunology exploits such receptors for cell-specific antigen delivery to increase the efficacy of vaccines. In conclusion, the Institute for Immunology combines mechanistic immunological studies (in transgenic cell culture and mouse models) with clinical veterinary immunology (mainly in cows).

4.10 Institute for Microbiology

Location

The Institute is located in Buildings 125 and 126 on the campus Bischofsholer Damm.

Premises for teaching include one large laboratory allowing practical classes for up to 85 students, one lecture theatre for 90 students and a seminar room for 12 students.

The diagnostic unit is open to individual undergraduates; it focuses on cultural processing of diagnostic samples and receives approximately 12,000 samples per year from within and outside the TiHo.

Other rooms, including media preparation room and two research laboratories are open to individual undergraduates for practical periods of 6 to 14 weeks as well as to graduate students.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
2	5	9	1	4	0	0

Teaching responsibilities

The core curriculum: Microbiology, Infectious Diseases and Epidemic Diseases. The latter are taught together with the Institutes for Virology and Immunology. “Notifiable animal diseases“ comprising a part of the subject “State veterinary medicine“) is taught together with the Institutes for Virology and Epidemiology. Laboratory classes are repeated three times due to the number of students.

Other information

Founding of a department (“*Zentrum für Infektionsmedizin*”) has improved communication benefiting the co-ordination of teaching, diagnostic work, and research.

Main research activities

Our research activities focus on bacterial pathogens relevant in veterinary medicine, including identification of virulence factors, elucidation of host-pathogen interactions, and their application for development of improved diagnostics and preventive measures, such as vaccines. Current projects are on *Streptococcus suis*, *Mycoplasma* spp., *Mycobacterium avium* subspecies (spp.) and Brachyspira spp. funded by different research grants (e.g., DFG).

4.11 Institute for Parasitology

Location

The Institute for Parasitology is located in Building 217 on the new campus area Westfalenhof (Bünteweg 17). It consists of three storeys in that building and the adjacent animal house with facilities for housing of horses, cattle, pigs, sheep and goats, chicken, cats, dogs and mice/rats/gerbils.

Premises for teaching include a library for 25 students as a seminar room. The diagnostic laboratory is open to individual undergraduates. It focuses on coproscopical examinations but also offers serological and molecular diagnostic and receives approximately 9,000 samples per year from within and outside the TiHo. Other rooms including several research laboratories (S1, S2) are open to individual undergraduates for practical periods of up to three months and to graduate students.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
2	3	4,5	1	3	1	0

Teaching responsibilities

Parasitology is part of the curriculum in infectiology. The practical classes have to be repeated two times due to the number of students.

Main research activities

Our research focus is Veterinary Public Health, divided into the topics “vector-borne diseases” and “parasitic zoonoses". The research area of vector-borne diseases includes the distribution and frequency of ticks as well as the spread and transmission of tick-borne diseases. The focus is on molecular detection methods and the epidemiology of pathogenic organisms as well as risk factor analysis and modelling of tick abundance and public health risk. Besides ticks, mosquito-borne viruses are investigated. The research focus on parasitic zoonoses centres on roundworms of companion animals and pigs. In addition to studies on the zoonotic potential and the risk of infection in urban areas accessible to the public, parasite-host interactions are studied. A further research aspect is the epidemiology of parasite infections in livestock, pets and wild animals. In addition to the use of established methods, naive and recombinant antigens are also being evaluated for improved diagnostic detection possibilities.

4.12 Institute for Parasitology, Fish Disease Research Unit

Location

This institution is an independent working group, which is associated to the Institute for Parasitology. It is located at Bünteweg 17, Building 217 (2nd upper floor) and building 227.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
	2	1	0.5	2.25	-	-

Teaching responsibilities

Fish Medicine, Fish Diseases: This includes: Basic aspects of fish anatomy, fish physiology and histology; introduction into aquaculture systems; fish diseases and basic procedures for the diagnosis of diseases in fish, shrimps and other aquatic animals; treatment of fish, procedures of virus and bacteria diagnostic from fish samples.

Consultations

Diseases in farmed and ornamental fishes; clinical diagnosis of diseases, advisory service on aspects of fish keeping, on animal welfare in fish during farming, stunning and killing, and on treatments of fish diseases (incl. vaccination programmes); health assistance for large ornamental aquariums (e.g. Sea Life, Aqua Zoo Düsseldorf, Zoo Hamburg, Hannover, Bremerhaven); service for fish farms (carp, salmonids, pike perch, sturgeon, catfish), for ornamentals from whole sale trader and private aquariums and garden ponds as well as research institutes (zebrafish, *Nothobranchius* species, sea bream, turbot, sharks). Approx. 1000 consultation cases per annum

Other information

Diagnostic surveys on viruses pathogenic to carp and eel and on pathogens in mussel cultures.

The consultations are used for training of students and of post graduates in order to achieve the degree of a fish health specialist (European College of Aquatic Animal Health, German degree of national specialist - Fachtierärztin/ Fachtierarzt für Fische). The consultations include clinical examinations and the evaluation of bacteriological, histological and virological examinations. In addition, chemical water parameters are assessed for an advice on keeping conditions of fish.

Main research activities

Research activities concentrate on investigations into pathogen related diseases and into safeguarding of animal welfare in aquaculture. In particular the following topics are investigated:

- Innate immune responses of carp from different genetic lines in response to infections with various carp pathogenic viruses (cyprinid herpesvirus 3, spring viremia of carp virus, a novel paramyxovirus, carp edema virus) with a focus on the impact of type I interferon responses on the outcome of the infection
- Innate immune responses of cells and carp individuals to genetically engineered CyHV-3 virus variants as basis for the development of an efficient vaccine
- Identification of components from the mucosal barrier in carp and an assessment of their role for the protection of carp from pathogen infection
- Response of the microbial community in aquaculture systems in tanks and biofilters to water quality as possible reservoir for pathogenic bacteria
- Phage therapy of fish
- Safeguarding animal welfare during stunning and killing of rainbow trout, carp, African and European catfish, sturgeons and arapaima; modelling of electric currents during electric stunning of fish.

4.13 Institute for Pathology

Location

University of Veterinary Medicine, Foundation, Department of Pathology, Bünteweg 17, D-30559 Hannover, Germany

The Department of Pathology is located on the Bünteweg campus in Buildings 228-230 and excellently equipped.

Premises for teaching include one large lecture hall for 288 students, two rooms for group work for 98 and 32 students, respectively, and six rooms for practical work for 142, 36, 60, 20, 10 and 10 students, respectively. The diagnostic unit (necropsy area, 1,200 m^2) is open to small group teaching of undergraduates; it focuses on necropsies (app. 1,500 p.a.) and evaluation of surgical biopsy samples (app. 10,000 p.a.) from within and outside the TiHo. Approximately 300 locker units allow hygienic storage of students' clothes and personal belongings before they enter the necropsy area.

Other rooms: offices, diagnostic service room, student preparation and study room, research laboratories, storage rooms, secretariats, library, autoclave room, refrigerated rooms for storage of carcasses, diagnostic laboratories.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
1	6	11	2,5	5,15	1,5	0

Currently 1 full Professor is newly assigned, 2 junior professorships are in state of assignment.

Teaching responsibilities

The core curriculum in pathology contains lectures on general and systemic pathology, a seminar on general as well as on systemic pathology, practical courses in histopathology, necropsy and organ demonstrations. Electives are offered on various subjects in systemic pathology that change annually, some electives with various clinics (clinicopathological correlation).

Consultations

Opening hours: Daily throughout the year 7:30 a.m. to 6:00 p.m.

Consulting hours: Daily from 2:30 p.m. to 4:30 p.m.

Delivery of carcasses: possible at any time of the day.

Main research activities

- Neuropathology, neuroimmunology and neuroimmunopathology: Canine distemper virus; Theiler virus encephalomyelitis, Rift-valley fever virus, Zikavirus, spinal cord injury, epilepsy, storage diseases, cell transplantation, in vitro macroglia cell characterization, mechanisms of de- and remyelination,
- Oncology: oncolytic potential of canine distemper virus infection
- Diagnostic pathology: virus discovery and pathogenesis, congenital tremor of pigs, MERS-Coronavirus
- Immunopatholgy: studies on the immunopathogenesis of canine and feline inflammatory bowel disease; pathogenesis of *Mycoplasma bovis*-induced lung alterations in calves; keratin expression and pathogenesis of epidermal proliferative lesions in draft horses with chronic pastern dermatitis; pathology of junctional epidermolysis bullosa in sheep and pathogenesis of ruptur of the anterior cruciate ligament in dogs.

4.14 Institute for Pharmacology, Toxicology, and Pharmacy

Location

The institute is located in building 218 (ground, 1st, 2nd floor) on campus Bünteweg, including animal holding rooms (building 218 and 225) and a practical course room for up to 85 students. The general laboratories, including animal facilities, animal behavioral unit, animal surgery unit, microscope room, research laboratories (histology, biochemistry, neurochemistry, drug chemistry, molecular biology, microbiology, cell culture, biosafety level 1-2) are open to individual undergraduates in veterinary medicine and biology for practical training periods of 3 to 12 weeks as well as to graduate students.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
1	7	9,5	1,5	8	0	0

Teaching responsibilities

The Institute offers lectures in pharmacology and toxicology, clinical pharmacology and in drug law and galenic formulation. Additionally, the institute is involved in teaching interdisciplinary clinical and food hygiene courses and in various elective seminars, including a course in experimental pharmacology. Additionally, the Institute is involved in teaching Master students within “Animal Biology and Biomedical Sciences” and cooperate with Leibniz University Hannover and the Medical School Hannover in teaching and instructing Bachelor students in the Biology programs. Finally, the Institute is involved in several teaching activities with the three PhD programmes at the TiHo (HGNI), which also includes PhD students enrolled in the DFG graduate school VIPER.

Other information

Involved in activities of:

- Center for Systems Neuroscience Hannover (CSN)

- Virtual Center for Replacement - Complementary Methods to Animal Testing

Main research activities

Neuroinfection (SARS-CoV-2, Influenza, bacterial infections, Theiler virus); Pathogenesis and treatment of neurodegenerative diseases and epilepsy; Dermatopharmacology, antibacterials and resistance; Drug delivery via implants; Development of novel therapies for human and veterinary diseases including pharmacokinetic studies; Collaborations with pharmaceutical companies for drug development; Research projects funded by MWK-Cofoni, VW Foundation, DFG, BMBF, Else Kröner Fresenius Foundation and other third party funding.

4.15 Institute for Physiology and Cell Biology

Location

The Institute is located in Building 102 on the campus Bischofsholer Damm.

Premises for teaching: Lecture theatre for 270 students, seven rooms for practical courses or seminars (3 rooms for 24 students and 2 rooms for 12 students). There are two rooms for practical courses within the stable tract for each 12 students). There is a library for ten students.

Other rooms: Nine research laboratories are open to individual undergraduates for practical periods of 3 to 12 weeks and for research projects; these facilities are also open to graduate students.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
1	8,4	7	1	3	0	0

Teaching responsibilities

Core curriculum in physiology including lectures and practical courses. Elective courses for veterinary medicine students are: “Special Physiology”; “Ecophysiology: Adaptations of animals to extreme environmental conditions”; “Cell culture techniques as replacement and complementary methods to animal experimentation”; “Case-oriented learning: Virtual patients in Biochemistry and Physiology”. The Institute also contributes to interdisciplinary teaching units in the Clinical centre for farm animals. Additionally, the Institute is involved in teaching M.Sc. Animal Biology and Biomedical Sciences students. Other teaching responsibilities in cooperation with the Leibniz University Hannover and the Medical School Hannover are in the B.Sc. Biology in Cell- and Developmental Biology and Entomology. The Institute is also involved in several teaching activities with the three PhD programmes at the TiHo (HGNI).

Main research activities

Gastrointestinal physiology and pathophysiology in rodents and farm animals: Influences of the diet on growth, health and metabolism of animals, the mechanisms of digestion and absorption, as well as the excretion of nutrients and their effects on metabolic processes.

Neurogastroenterology: study of the electrophysiological, neurochemical, pharmacological and functional properties of enteric neurons responsible for the sensory-motor control of the gastrointestinal functions in animal models, cell culture and human intestinal tissue samples.

Metabolism and structure of microbial populations in rumen and colon.

Development of in vitro models for studying physiological properties and pathogenicity mechanisms of gut diseases caused by zoonotic pathogens.

The cell biology group is interested in structural and functional neuronal plasticity of the developing and adult insect nervous system. One focus is on signal transduction through the gaseous messenger nitric oxide (NO), both in nervous system development and interactions between immune and nervous systems of insects. We also explore the suitability of insect embryos as test system for potential developmental neurotoxicity of industrial or environmental chemical compounds.

Other information

PIs of the institute are members of the Center for Systems Neuroscience Hannover, the Virtual Center for Alternative Methods at the University of Veterinary Medicine Hannover, and the Consortium of Veterinary Neuroscience in Europe (CVNE).

Main research activities

Our group investigates the role of cellular signal molecules in brain development. To this end, we analyze simple nervous system of invertebrates and networks of human model neurons in culture. One focus is on signal transduction through the gaseous messenger nitric oxide (NO). We study the role of NO and also other neuroactive substances, e.g. biogenic amines, in regulation of cell migration, neurite outgrowth, microglial phagocytosis and other aspects of brain development and regeneration. An ongoing collaboration with the Laser Zentrum Hannover e.V. about biomedical technology resulted in the development of a novel 3D imaging technique, the scanning laser optical tomography (SLOT).

4.16 Institute for Biochemistry

Location

The Institute is located in Building 218 (3rd and 4th floor) on the campus Bünteweg 17 and is closely connected with the animal facility (Building 225).

Premises for teaching include one large laboratory, shared with the Institute for Pharmacology allowing practical classes for up to 85 students, and a library for 20 students in the same building (Building 218).

The diagnostic unit is open to individual undergraduates; it focuses on analysis of protein expression and protein-protein interactions and activities of intestinal disaccharidases. It receives approximately 10.000 body fluid, tissue, and cell culture samples per year from within and outside the TiHo. The general laboratories, including BSL1 and BSL2 laboratories are open to individual undergraduates for practical training periods of 3 to 12 weeks as well as to graduate students. Trans-institutionally organized BSL3 laboratories as well as animal facilities of the Research Center for Emerging Infections and Zonooses (RIZ) are used by scientists and graduate students under supervision of scientists of the institute.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
2	3,5	5	1	19	2	

Teaching responsibilities

The core curriculum in Biochemistry for students in Veterinary Medicine is taught, laboratory classes have to be repeated three times due to the number of students.

Additionally, the Institute is involved in teaching Master students within its own programme “Animal Biology and Biomedical Sciences” and cooperate with Leibniz University Hannover and the Medical School Hannover in teaching and instructing Bachelor students in the Biology and Biochemistry programmes. The institute further educates students within the “Infectious Diseases and One Health” (IDOH) international Master programme of MHH and hosts IDOH students for 6 months practicals. Finally, the Institute is involved in several teaching activities with the three PhD programmes at the TiHo (HGNI) and the VIPER (Virus detection, pathogenesis and intervention) graduate school.

Main research activities

Research at the Institute for Biochemistry links the pathophysiology of zoonotic diseases with the cell biology of membrane proteins and their interactions.

The research group "Molecular and Clinical Infection Biology" aims to understand the biochemical principles of infection of host cells by viruses. At the heart of the group’s work is the investigation of the invasion and replication of zoonotic viruses in host cells. Using high-resolution quantitative protein analysis, we investigate the protein interactions during the life cycle of viruses. In recent years we have elucidated protein interactions during infection with the chronic hepatitis

C virus (HCV) and emerging insect-borne viruses causing arthritis and encephalitis in humans and animals. These studies were also extended to the new SARS-CoV-2. In the long term, the identification of host factors will be used for the development of anti-infectives and help to understand why viruses infect different tissues and hosts.

The BMBF-funded junior research group RNA-VIRT is part of the Zoonotic Infectious Diseases Research Network and investigates the host-dependent pathogenesis of zoonotic RNA viruses using the example of the flaviviruses tick-borne encephalitis (TBE) virus and West Nile virus (WNV). The goal is to identify molecular factors that influence the host tropism and pathogenesis of these viruses. In the subprojects of the junior

research group RNA-VIRT, molecular and immune-regulated host responses to flavivirus infection are to be analyzed in order to identify resistance mechanisms. These could be used in prophylactic and therapeutic applications in the future.

The research group “Infection Biochemistry” investigates new therapeutic options to support the innate immune system against infections. Despite the extensive use of antibiotics and vaccination programmes, infectious diseases continue to be a leading cause of morbidity and mortality worldwide. Especially, the emergence of multi-drug resistant bacteria generates increasing public health concern and economic loss. The goal of the research group Infection Biochemistry is to combine two of the most active areas of biomedical research to search for novel anti-bacterial strategies: the molecular and cellular basis of microbial pathogenesis, and the nature and manipulation of the host immune defence. The research focuses on the understanding of the cellular biochemical mechanisms e.g. cellular membrane composition and protein signalling events leading to host cell manipulation or host cell death during host-pathogen interactions.

The emeritus research group “Biochemistry and pathobiochemistry of membrane and protein transport” focusses on the molecular mechanisms underlying membrane and protein trafficking in health and disease. The cellular and molecular biology of the gastrointestinal tract constitute a central research area, which deals on the elucidation of the molecular basis of intestinal malabsorption disorders in genetically-determined disaccharidases deficiencies, structure-function, biosynthesis and trafficking of intestinal brush border membrane glycoproteins as well as membrane alterations during chronic inflammatory bowel disease (colitis). The implication of the trafficking of mutants of lysosomal proteins in the pathogenesis of lysosomal storage diseases, such as Niemann-Pick Type C or Fabry disease is another major field of research.

4.17 Institute for Virology

Location

The Institute for Virology is located on the Bünteweg campus in the fifth and sixth floors of Building 217. In general, the laboratories are equipped to meet the standards of biosafety level L2. With respect to German regulations concerning work with genetically modified organisms (GMO), some laboratories are equipped to meet biosafety level S2. Furthermore, the institute is using labs in the Research Center for Emerging Infections and Zonooses (RIZ) meeting the requirements for biosafety level S2 (Buildung 231). For experiments with laboratory and farm animal labs and stables in the Building 238 are used meeting the requirements for biosafety levels L2 and L3. These labs are also open to individual undergraduates for practical training periods of 3 to 12 weeks as well as to graduate students under supervision of the senior scientists.

The Institute for virology is place of the EU- and WOAH-Reference-Laboratory for Classical swine fever.

The Institute provides a diagnostic service for detection of various viral diseases of domestic and wildlife animals.

Staff

Staff Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
2	4	6	1	10	3	0

Teaching responsibilities

The core curriculum in virology contains lectures in general and special virology. The general part, also including a practical course, is performed together with the Institutes for Microbiology and Immunology. Together with the Institute for Microbiology, the Institute for Virology is involved in teaching control measures against notifiable animal diseases. All lectures and courses are performed outside the Institute in central facilities since there is no lecture theatre in the virology facility.

Furthermore, the Institute is involved in teaching interdisciplinary subjects with different clinics and offers electives on various subjects – in part together with the Institute for Microbiology and the Institute for Parasitology, Fish Disease Research Unit. The department of infectious diseases ("Zentrum für Infektionsmedizin") has improved communication benefiting the co-ordination of teaching, diagnostic work, and research.

Main research activities

- pathogenesis of virus infections in the respiratory and intestinal tract
- interaction of viruses with polarized epithelial cells and 3D organoids
- characterization of cellular virus receptors
- biological significance and mechanism of genetic variability of RNA viruses
- identification and characterization of new viruses from domestic and wild animals and investigation of their zoonotic potential
- development of vaccines against SARS-CoV-2, MERS-CoV, classical swine fever virus, and others using modified vaccinia virus Ankara (MVA) and reverse genetics
    - development of diagnostic assays
    - pestiviruses (bovine viral diarrhea virus, classical swine fever virus, atypical porcine pestivirus, and others)
    - isolation and characterization of hepatitis E virus, rotaviruses, influenza viruses, poxviruses and others

4.18 Institute for Terrestrial and Aquatic Wildlife Research

Location

The University of Veterinary Medicine Hannover, Foundation, (TiHo) has reorganized and expanded its wildlife research: TiHo Scientists at the special field station **in Büsum**, Schleswig-Holstein near the North Sea, are now working on marine mammals, including harbor seals, gray seals, harbor porpoises, dolphins and minke whales. Extensive research efforts target not only the North and Baltic Seas but also other European waters and Polar Regions. Domestic terrestrial wild animals, such as hoofed game, pheasants, black grouse, hares, wolves, wisents, lynx and wildcats, have been a focus of **TiHo's Hannover facilities** for many years and are now joined by marine mammals. To merge these two research areas, the University of Veterinary Medicine Hanover, Foundation, established a new institute, named the Institute for Terrestrial and Aquatic Wildlife Research (ITAW).

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
1	2	3	2,5	50-60	3	0

Teaching responsibilities

The Institute offers unique educational opportunities in the field of wildlife research for PhD programmes and doctoral, master and bachelor theses in the specialties of veterinary medicine, biology, landscape conservation and forestry. The Institute is integrated in the course curriculum of the University of Veterinary Medicine (immobilisation) and, in addition, offers lectures and internships in wildlife biology to students matriculated in biology programmes

Other information

It is the first facility in Germany accredited by the European College of Zoological Medicine to offer specialized education in wildlife population health. The research conducted at the ITAW serves for several national and international agreements and political decisions.

Main research activities

Within the discipline of wildlife biology, ITAW focuses on basic research, applied research and monitoring. Research is concentrated on health in wild animals and diseases transmittable between humans and animals. Other areas of interest include habitat use, bioacoustics, wildlife behavior, nutrition and management, as well as the ecology of wild animals as it relates to issues of environmental protection and conservation. ITAW aims to elucidate the biology, health and ecology of wild animals and to investigate the influence of anthropogenic activities on wildlife with the goal to manage and protect wildlife species. Knowledge transfer and outreach strategies have a high importance, especially for school systems and stakeholders.

4.19 Institute for Zoology

Location

The Institute is located in Building 218 (fifth and sixth floor) on the campus Bünteweg.

Premises for teaching are one room allowing practical classes for up to 30 students and a library for 10 students and the Aula (Bischofsholer Damm) with 430 seats.

The research laboratories (behavioural phenotyping, bioacoustics, cellular neurophysiology, cognitive phenotyping, conservation genetics, psychoacoustics) as well as the small mammal animal house provide the basis for research oriented teaching and the possibility to offer small research projects to undergraduate and graduate students.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
1	10,5	7	1	23	0	0

Teaching responsibilities

Obligatory for undergraduate students in Veterinary Medicine:

The practical coursework and connected basic lectures constitute the core curriculum in Zoology. Special electives are offered for undergraduates in Veterinary Medicine and graduates in Veterinary Science.

Other information

The institute is responsible for teaching zoology to students in veterinary medicine (240 students, 1st year), and for teaching zoology and animal- human physiology to students in biology (160 Bachelor students, 2nd and 3rd year), as well as for teaching behavioural and evolutionary biology, sensory biology, neurophysiology and primatology to students in biology. It is involved as a lead institute in the TiHo's two years Master program "Animal biology and biomedical sciences" (20 Students / year). The Institute for Zoology participates and teaches in the PhD training programs of the HGNI.

Main research activities

The institute works in the research field of Zoology with special emphasis to Behavioral and Evolutionary Biology, Cellular Neurobiology and Sensory Biology with financial support of DAAD, DFG, EU/BMBF, VW, Small Rufford Fund and further private foundations. The institute is further involved in several national and international research networks in the field of Zoology.

5 Field Station

5.1 Field Station for Epidemiology in Bakum

Location

The Field Station for Epidemiology of the TiHo is located in the village of Bakum (population of about 6,000), which is situated in the district of Vechta, with one of the highest densities of food animals (pigs, poultry) in Europe (160-2000 pigs per 100 hectares). The primary task of the Field Station is teaching and research in preventive veterinary medicine ("taking the students to the farm"). The Field Station offers a broad spectrum of diagnostic services and co-operates closely with herd veterinarians and pork producers in the region. The diagnostic lab of the field station has been accredited since 2011 by the German Accreditation Body (DAKKS) according to international standard ISO/IEC 17025.

Premises for teaching include one seminar room (10 to 15 people), one library, four spacious laboratories and a very spacious necropsy hall.

Staff

Budgeted positions				Non-budgeted positions		
Professors	Scientists	Technicians	Secretaries	Scientists	Technicians	Secretaries
1	3	2,5	1	0	2,5	0

Teaching responsibilities

Groups of three or four students (4th year) stays for two weeks at the Field Station (there is a rented flat near the Field Station to host the students during their stay in Bakum). These groups are instructed in preventive veterinary medicine, pre-harvest food safety and herd health management during the week, with the focus on farm visits and on the diagnostics for those farms that are visited.

Other information

Despite the physical distance of Bakum to Hannover (185 km west), there is continuous communication between the TiHo's administration and faculty on the one hand and the Field Station on the other by using modern communication tools, e-learning and conference calls. The location facilitates close co-operation with farms and veterinary practitioners in the intensive farming area.

6 Learning support units

6.1 Library

Location

The library is located in building 262 on the Campus Bünteweg. The publicly accessible freehand magazine and reading rooms with 110 workplaces are located on 921 sqm out of 1.765 sqm. Wireless-LAN is available in the entire building.

Staff

Budgeted positions				Non-budgeted positions		
Academic librarians	Graduate librarians	Library assistants	Secretaries & magazine			Magazine
3	5	4	2			0,6

Teaching responsibilities

The lectures and seminars given by the library on information literacy cover searching, acquisition, management, critical appraisal and utilisation of information, as well as publication processes. The lectures are part of the "professional studies", the "practical year" and the graduate and PhD programmes. Further seminars are offered as elective courses and open to all students.

Other information

In addition to the standard services of providing access to analogue and digital media, the library supports open access publishing and offers a digital repository.

6.2 Centre for E-Learning, Didactics, and Educational Research (ZELDA)

Overview

The Centre for E-Learning, Didactics and Educational Research (ZELDA) with its specialised teams and experts offers a variety of information, advice and training programs for students and teachers. ZELDA brings together – under the leadership of the Vice President for Education – all persons who support and further develop the use of digital educational tools, including new innovative forms of teaching and learning, as well as those who cover the subject areas of didactics and educational research.

The **E-Learning Service** with a focus on e-learning, didactic use of digital learning tools, e-assessment and educational research and the **Clinical Skills Lab** as an interface for the various clinics at the TiHo, which focuses on promoting clinical-practical and communicative skills, through the innovative development of teaching by implementing the use of simulators. Both groups work closely together with the Department of Student and Academic Affairs and the Department for personnel and organizational development, strategic controlling, quality management. These groups meet regularly to discuss ZELDA's common goals and how to implement them in the university context.

Location

The **E-Learning-Service** is located at Buenteweg 11, 30559 Hannover.

Premises for service and teaching include six offices and two seminar rooms.

The **Clinical Skills Lab** is located at Bischofsholer Damm 15, 30173 Hannover.

For teaching and learning purposes, the facility includes 13 teaching rooms, two seminar rooms, two learning spaces, one registration and one changing room for students. Furthermore, the Clinical Skills Lab contains five offices, one workshop, ten storage rooms and two 3D printing rooms.

Staff (07/2024) (Full-time equivalent; absolute number of student assistants)

	Budgeted positions				Non-budgeted positions		
	Veteri-narian	Academic Staff	Techni-cians	Student assistants	Veteri-narian	Academic Staff	Student assistants
E-Learning Service	2	1	-	-	4.6	-	6
Clinical Skills Lab	1	0	1	-	3,8	-	19

Teaching responsibilities

Core curriculum:

- Veterinary Communication and Lifelong Learning: 2h in 1st semester, 2h in 2nd semester, 4h in 5th semester
- Surgical logbook: 6h in 1st to 4th semester, 7h in 5th to 8th semester, 4h in 7th to 8th semester

Elective subjects:

- Elective courses for esp. first year students about e-learning (1./3. Sem.) and e-examinations (1./3./5./7. Sem.)
- Introduction "Learning to learn": including time management, learning strategies, procrastination and learning tools at TiHo (Moodle) (1./3./5.Sem)
- Introduction to Open Educational Resources (OER) (2./4./6./8.)
- Progress Test Veterinary medicine and trial tests (online) (1./3./5./7./9./11. Sem)
- Key competences (CASUS), including SMART goal setting, procrastination, feedback, communication different types of questions, Teambuilding (2./4./6./8.)
- E-Tutor training (Moodle) (all semesters)
- Learning stations in the Clinical Skills Lab (all Semesters): Teaching clinical skills
- Practical dental treatment for horses (6./8. Sem)
- Practial day cattle (6./8. Sem)
- Suturing techniques in cattle (6./8. Sem)
- Practical day horse "colic" (4./6./8. Sem)
- Dealing with bird patients (6./8. Sem)
- Block seminar on small animal skills (6./8. Sem)
- Management of emergency situations in small animals (6./8. Sem)
- Basics of communication and dialogue skills (1./3.Sem)
- Veterinary communication (5./7.Sem)
- Interprofessional team communication for the veterinary practice (3./5./7. Semester)
- Euthanasia and breaking bad news (5./7.Sem)
- Communication skills: Tips and tricks for an effective application and successful presentation (2020)

In cooperation with other institutes and clinics:

- Tips and tricks for scientific writing (CASUS) (1./3./5./7./9./11.Sem)
- Economics Business administration for veterinarians (online learning) (5./7.Sem)
- Economics for veterinary students (5./7. Sem) with/by bpt (including telemedicine)
- Virtual patients in biochemistry and physiology; Elaboration of molecular pathomechanisms in self-study (CASUS) (3./5./7. Semester)
- E-Learning CASUS Neurology (5./7.Sem)
- Neurological key feature cases on diseases of the spinal cord and peripheral nervous system (CASUS) (5./7.Sem)
- Neurological key feature cases on intracranial diseases of the cranial region (CASUS) (6./8.Sem)
- WP CASUS Ophthalmology (5./7. Sem)

- Online seminar 'Selected topics small animal medicine' (5./6./7./8. Sem)
- Surgical procedures on reptiles. Acquisition of practical surgical procedures on reptiles (6./8. Sem)
- Castration and cesarean section of small animals (6./8. Sem)

In cooperation with other veterinary faculties in Germany:

- VetSkills Lab Challenge (4.-10. Sem)

Table: 6.2.1: Videos about the study programs on the YouTube channel TiHoVideos:

Title	Language	Link
Die Hannover Graduate School (HGNI)	German	https://youtu.be/W7ovsplu6Sg
Tiermedizin studieren an der TiHo | Studying veterinary medicine at the TiHo	German	https://youtu.be/IJvrRQlRRS8
Studieren an der TiHo: Virtuelle Campus-Tour | Virtual campus tour	German	https://youtu.be/OXmipKEmphE?feature=shared
Start of Studies at the TiHo - Virtual Campus Tour	English	https://youtu.be/XESjVJGrd5o?feature=shared
Studieren an der TiHo: Orientierung in Hannover | Orientation in Hannover	German	https://youtu.be/oLbvwPozbek?feature=shared
Start of Studies at the TiHo - Orientation in Hannover	English	https://youtu.be/nz82K2YDjqk?feature=shared
MSc Animal Biology and Biomedical Sciences - Viel Praxis viel Forschung! | Lots of practice, lots of research	German	https://youtu.be/JCVS6AAUhd0
Die TiHo - im Dienst für Mensch und Tier | TiHo - in the service of humans and animals	German	https://youtu.be/iFv2bujGBHY
Berufsmöglichkeiten für Tierärztinnen und Tierärzte | Career opportunities for veterinarians	German	https://youtu.be/noKc0mXAF0Y
Nähen, Beatmen, Verbinden: Die ersten Versuche eines Tiermediziners | The first experiments of a veterinarian	German	https://youtu.be/MdZxCVhty_o
Wurst ist uns nicht Banane - Masterstudiengang Veterinary Public Health | Sausage is not bananas - Master's degree programme in Veterinary Public Health	German	https://youtu.be/xFiNcq94OJY

E-Learning Service: Consultations and Service

- TiHoMoodle (Learning Management System)
- CASUS (case based authoring tool)
- Audience Response Systems (PowerVote, Mentimeter, etc.)
- E-Assessment (Q-Exam® Institution)
- Videos (YouTube)
- Lecture Recordings
- Online-Survey Tool (LimeSurvey)

- Open Educational Resources
- Virtual Microscopy
- Others

E-Learning Service: Main research activities

Areas of research with significant publication output:

- E-Learning in Veterinary Education
- E-Assessment in Veterinary Education
- Veterinary Communication

E-Learning Service: Train the Teacher

The E-Learning Service offers several workshops, lunchtime seminars, tutorials and consultations througout the year concerning teaching and assessment procedures and is involved in the didactic in-house training "Professional Teaching". The courses are designed for different target groups (teachers from EPT providers, student assistents, teaching staff, etc.). The aims are:

- Improvement of teaching by interactive, up-to-date and high-quality teaching materials and methods
- Boosting a competent and learning goal-oriented use of digital tools both by teachers and students
- Strengthening the (e-)didactic skills of teaching staff
- Creation of possibilities for self-directed learning independent of time and place
- Expansion of interactive blended learning offerings
- Preparation for life-long learning and strengthening digital literacy among teachers and students
- Teaching methods for practical and clinical teaching
- Enhancement of interdisciplinary learning and communication skills
- Teaching skills relating to formative and summative examination formats and systems as well as pre- and post-examination processes including quality assurance measures

Online courses are offered for each category of teachers (from EPT providers to academic staff) in the Moodle learning management system, which cover the topics according to Annex 6, Standard 9.1. A procedure is in place to check whether teaching staff have participated in didactic qualification measures. All teaching staff are required to document their continuing education certificates in Moodle platform.

Clinical Skills Lab: Consultations and Service

- Teaching clinical practical skills
- Teaching communication skills by conversation simulations with professional actors
- Implementation of the surgical logbook
- Preparing students for the Practical Year
- Conducting eOSCEs
- Printing and copying service for students
- Provision of learning space for students
- Development of models and simulators
- Rental of models and simulators to clinics and institutes of the TiHo

Clinical Skills Lab: Main research activities

Areas of research with significant publication output:

- Educational research and Veterinary Communication

6.3 Departement Information Technology and Data Processing

Location

The Department for Information Technology and Data Processing is situated across two floors within Building 260, located at Bünteweg 2. The department boasts state-of-the-art facilities for teaching and practical sessions, including two PC Pool rooms accommodating up to 24 and 4 students respectively.

These well-equipped rooms serve as versatile spaces, not only for seminars and structured teaching classes but also for fostering collaborative learning environments through student-led initiatives such as free working groups and self-directed studies. Furthermore, students have convenient access to PC facilities across various locations on the campus, ensuring seamless integration of technology into their academic pursuits.

Staff

Budgeted positions				Non-budgeted positions		
Academic or operational Training	Trainee	Dual Education (IT)	Secretaries	Scientists	Technicians	Secretaries
13.5	2	1	0	0	0	0

Teaching responsibilities and Consultations:

The Department for Information Technology and Data Processing provides comprehensive support to a vast community of 1,200 employees and 2,400 students, managing approximately 2,500 desktop PCs and laptops, 260 virtual Servers and various Storage und Backup Clusters for Maintenance of Data. We employ a centralized PC management system to efficiently administer the lifecycle of these devices. Additionally, our centralized identity management system ensures seamless management of human accounts, integrating data from both our CMS and human resource information system. Access to data, directories, email, and applications is facilitated through a standard directory service.

Federated It Services

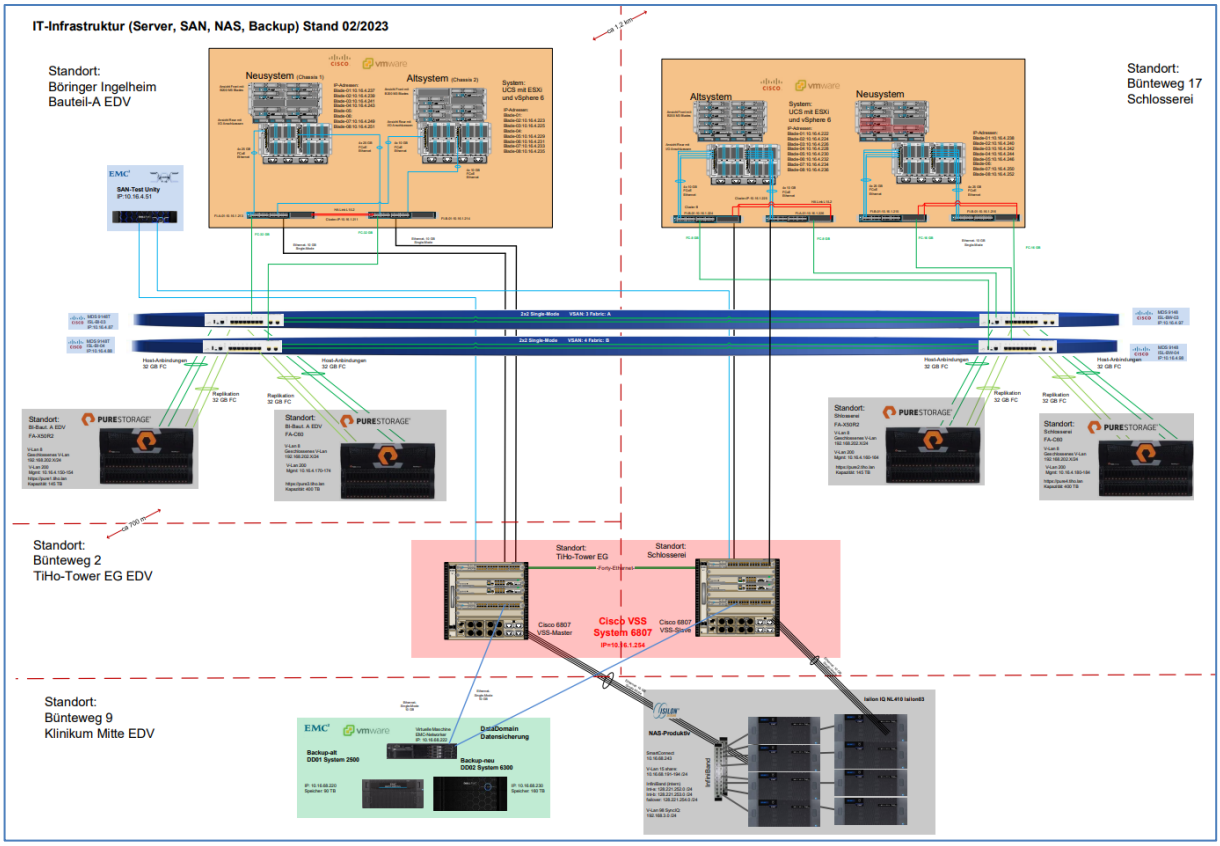
The Lower Saxony state universities are transitioning towards organizing an increasing portion of their IT services not locally (per university), but rather as federated services (statewide). As a result, four employees from the IT Department are strategically and operationally involved in statewide committees and the board of the existing association, the State Working Group Lower Saxony for IT. Through this initiative, substantial third-party funding has been obtained for IT operations, such as in the areas of IT security or expansion of Wi-Fi networks.

Server and Storage:

Our robust infrastructure includes three server rooms equipped with cutting-edge facilities, including high-speed Ethernet and Fibre Channel backbones. We operate 30 powerful blade servers running vMware vSphere, supporting 250 virtual machines delivering essential services and applications. Our Storage Area Network facilitates efficient data management, while an eight-node Network Attached Storage cluster caters to unstructured data storage needs. (More see Appendix, Chapter 6.3).

Network:

We provide extensive LAN and WAN capacities to support data and voice services for both employees and students, ensuring seamless connectivity and communication.



6.3.1 Fig. Overview of the central IT Equipment of the TiHo:

- 4 virtual server farms (orange)
- 3 Clusters of disk or flash based storage (grey)
- 2 Sets of Backup /Restore devices
- 1 Set of clustered Core Routers