



Self Evaluation Report 2017

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 12 May 2016
valid for the Visitation 15-19 January 2018

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Introduction

Brief history of the Establishment and of its previous ESEVT Visitation

Stiftung Tierärztliche Hochschule Hannover (University of Veterinary Medicine Hannover, Foundation, later referred to as TiHo) has been an independent establishment since its foundation in 1778.

The TiHo became an endowed university within a public foundation, with effect from 1 January 2003, the year of the TiHo's 225th anniversary. This brought about a wide variety of opportunities to foster excellence in research, teaching and veterinary services. The TiHo aims to develop those opportunities to the benefit of its students, the veterinary profession and society at large. The TiHo has committed itself to the highest standards of quality in all its activities. With its two sites, the Campus at Bischofsholer Damm and the Campus at Bünteweg, TiHo disposes of over 175.000 squaremeters. The newer campus Bünteweg provides room for development and possibilities to adapt to special needs in education and research.

In accordance with standards and guidelines for quality assurance in the Standards and guidelines for quality assurance in the European Higher Education Area (ESG) universities are required to carry out internal and external evaluations of research and teaching at regular intervals. Students are to be involved in the evaluation of teaching once a year, the results of the evaluations are being published. The external evaluation of veterinary education in European veterinary education establishments is conducted by the European Association of Establishments for Veterinary Education (EAEVE).

The TiHo has been already successfully evaluated in 2008, where no major deficiencies were found. The minor weak points have been considered and resolved in the further development of organisation and education programmes of the TiHo.

Main features of the Establishment

The TiHo is an independent university for veterinary medicine, which is unique in Germany. The Foundation Board of Trustees acts as the board of overseers with legal control responsibilities and represents the interests of the public, stakeholders and politics.

About 250 undergraduate places are available every year for more than 1.000 applicants. Including PhD and doctoral students there are approximately 2.400 students registered. Furthermore, the TiHo educates also biology students (bachelor) in cooperation with the Leibniz University Hannover and the Hannover Medical School.

The TiHo has 5 locations: On the two campuses the TiHo comprises six clinics and 21 institutes. To foster collaboration between the institutes in teaching and research, several virtual centres were designed. For support of teaching and research, in Ruthe, south of Hannover, in Bakum near Vechta and in Büsum at the North Sea the TiHo runs three special field stations for training students and conducting research projects.

Main developments since the last Visitation 2008

Main changes due to the suggestions of the expert group:

- Wireless-LAN was implemented and is accessible on the whole campus area and buildings.
- The ratio of theoretical to practical training has been changed in favour to practical training.
- The organisation (timeframe/schedule) of examinations has been made more "student-friendly". Two examiners are obligatory during first and second oral repeat examinations, a progress test for self-evaluation and feedback was implemented.
- For achievement of day-one competences, practical clinical training is continuously adjusted and improved including extension of the Clinical Skills Lab and its integration in the curriculum.
- Together with the Federal Association of Practicing Veterinarians (BpT), standards for the quality of extramural training were agreed upon.
- The TiHo contributed to recent changes in Ordinance of the Certification of Veterinary Surgeons (TAppV) to achieve more student-friendly conditions of examination procedures and to facilitate extramural training in slaughterhouses.
- The TiHo currently implements new advanced postgraduate certificates and master programmes in VPH and Laboratory Animal Sciences for veterinarians.

- The development of the national curriculum and the local implementation considers the suggestions of external stakeholders (BTK, BpT, AFAB). At the TiHo new electives considering economical and ethical subjects are offered.
- Optimized organisation of the ambulatory clinic into the respective clinics regarding professional issues.

Further important changes for students:

- Extension of e-learning offers, Clinical Skills Lab and electronic assessment
- Abolition of study fees paid by students, which are currently refunded by the ministry
- Extension of cooperation with farmers for teaching herd health management
- Stipend programmes for excellent students
- Implementation of an official strategy of internationalisation
- Reorganisation of the Graduate School

Further important changes in buildings, institutes or clinics:

- New clinic centre for horses, small animals, small mammals, reptiles and birds
- New Clinical Skills Lab with various models and simulators and 36 units for training of specific clinical-practical skills – open for all students
- New research centre for emerging infections and zoonoses (RIZ) to strengthen a main research focus of the TiHo

Further important organisational changes:

Founding of a new Institute of Terrestrial and Aquatic Wildlife Research

Major problems encountered by the Establishment (whether resolved or not)

- Students' number is directly linked to the number of teachers regulated by law - more teachers means more students
- Curriculum is subject to the TAppV which provides limited flexibility

Version and date of the ESEVT SOP which is valid for the Visitation:

Standard Operating Procedure (SOP) as approved at the Uppsala General Assembly 12 May 2016.

1. Objectives and Organisation

1.1. Factual information

1.1.1 Details of the Establishment, i.e. official name, address, phone number, Email and website addresses, Establishment's Head, name and degrees of the person(s) responsible for the professional, ethical, and academic affairs of the VTH, official authority overseeing the Establishment

University of Veterinary Medicine Hannover, Foundation	
Bünteweg 2 30559 Hannover, Germany Postfach 71 11 80 30545 Hannover, Germany	Tel.: +49 511 953-60 Fax: +49 511 953-8050 E-Mail: info@tiho-hannover.de Website: www.tiho-hannover.de
Head: President	Dr. Dr. h. c. mult. Gerhard Greif (Veterinarian)
Telephone (President's office): +49 (0) 511 9 53-8001 Fax (President's office): +49 (0) 511 95 3-82-8001	
Other members of presidium: Vice-President for Administration Vice-President for Teaching Vice-President for Research	Joachim Mertes (Economist) Prof. Dr. Andrea Tipold (Veterinarian) Prof. Dr. Hassan Y. Naim (Biochemist)

Details of the competent authority overseeing the establishment

The University of Veterinary Medicine Hannover, Foundation, (TiHo) is a scientific institution of higher education of the state of Lower Saxony. The fundamental principles of the organisation are anchored in the Lower Saxony University Law (NHG).

The TiHo is an endowed university within a public foundation. The foundation is subject to legal supervision by the Lower Saxony Ministry of Science and Culture as set out in the University Law. Appropriate measures for such supervision are prepared and enforced by a board of trustees as set out in the University Law.

Address of Lower Saxony Ministry of Science and Culture (legal supervision)

Niedersächsisches Ministerium für Wissenschaft und Kultur
Leibnizufer 9 (Postfach 2 61), D-30002 Hannover, Germany

Supervision of the Ordinance concerning the Certification of Veterinary Surgeons (TAppV) is the responsibility of the Lower Saxony Ministry of Nutrition, Agriculture and Consumer Protection. This Ministry also appoints the members of examining committees for the preclinical and clinical examinations. In accordance with the TAppV, professors of the establishment serve as chair and substitute chair of the examining committees; additional committee members are professors or other instructors of the subjects being examined. The formal Veterinary Licensing Authority is the Chamber of Veterinarians of Lower Saxony (TÄK).

Address of Lower Saxony Ministry of Nutrition, Agriculture and Consumer Protection (exam supervision):

Niedersächsisches Ministerium für Ernährung, Landwirtschaft und Verbraucherschutz
Calenberger Straße 2, D-30169 Hannover, Germany

1.1.2 Summary of the Establishment Strategic Plan with an updated SWOT analysis, the mission and the objectives

The strategic plan of the TiHo in teaching, research and service is embedded in the landscape of the different areas and stakeholders (Fig.1.1), from which the mission and objectives are derived.

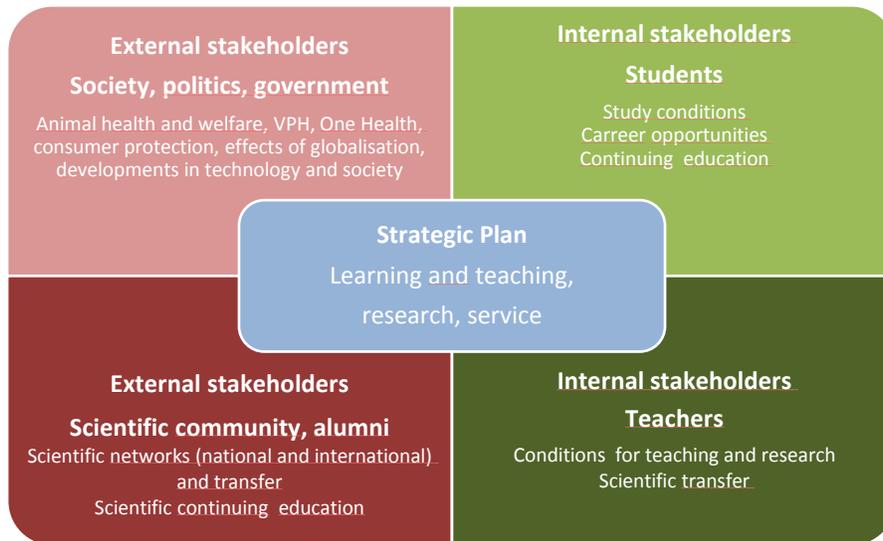


Fig. 1.1: Involvement of different stakeholders in strategic plan

SWOT-Analysis:

Strengths	Opportunities
<ul style="list-style-type: none"> • University's focus is veterinary medicine • Endowed university with guaranteed state funding • Advanced status of autonomy • Species specific clinics with strong scientific focus and significant number of patients (pets and horses as well as farm animals) for clinical teaching and research • Clinical Skills Lab and unit for e-learning • Practical Year with individual rotation options • Practical training for students in herd health management of food-producing animals (Field Station for Epidemiology in Bakum and livestock farming at TiHo-farm for Research and Education in Ruthe) • Number of necropsies in the Institute of Pathology, in Bakum (swine only) and Clinic for Poultry, permitting comprehensive training covering all species • Strong commitment to animal welfare: 2 professors in veterinary medicine as well as 1 professor in ethics with a working group for "Applied Ethics in Veterinary Medicine" • Graduate School with 3 PhD programmes for advanced postgraduate education, programmes focused to research areas of TiHo • Excellent research facilities 	<ul style="list-style-type: none"> • Short transparent decision-making processes • Independence and utmost flexibility in personnel decisions i.e. selection of faculty members and deployment of resources • Location of TiHo in an area with highest density of farm animals in Germany (number of patients, teaching and research conditions in these topics) • Location of TiHo in an area with high density of research institutions with good cooperation opportunities for excellent research projects • Adaption of PhD programmes to focus of research cooperation • Great options to adapt to special requirements in teaching, service and research (recruitment, TiHo regulations) due to higher autonomy • Internal Collaboration by forming "virtual departments" to enforce cooperation in undergraduate education and research • Collaboration with external establishments (HZI, FLI etc.) concerning teaching and research in order to enforce cooperation in postgraduate education and research.

Weaknesses	Threats
<ul style="list-style-type: none"> • Legal Teaching Capacity Regulation of Lower Saxony (KapVO) determines student number on basis of obligatory teaching load • Legally restricted selection of students • Legally restricted compensation of specialists • One campus university only in the long term 	<ul style="list-style-type: none"> • Legal change of obligatory teaching load due to political objectives could lead to higher number of students • Attraction of the best heads to academia

Objectives:

The objectives are derived from mission statement, see below.

Mission statement of TiHo:

Mission statement

Working for the Welfare of Humans and Animals

The University of Veterinary Medicine Hannover, Foundation (TiHo) is a nationally and internationally recognized institution of higher education known for its excellence in veterinary science and its interdisciplinary focus. We are a leader in research, teaching and services in veterinary medicine and train young scientists in all areas of veterinary science. Our overall goal is the continual development of the science of veterinary medicine.

Target Areas

Science and Research

The broad range of basic and applied research conducted at the TiHo produces results of the highest calibre in both veterinary medicine and biology. This is crucial to our ability to continue to attract internationally acclaimed scientists to our institution. Research is focused on the following key areas

- Infection medicine
- Clinical research
- Systems neuroscience
- Animal health and food quality

Research at the TiHo is fundamentally devoted to increasing our understanding of the causes, prevention and treatment of diseases and to improving animal welfare. Furthermore, research is being conducted on the health of food animals, on the quality of food of animal origin and consumer safety, and on the importance of animal genetic diversity. These goals are supported by our continuing expansion of regional, national and international cooperative agreements with other universities and extramural research institutes.

Courses of Study and Instruction

The TiHo provides its students an excellent education in all areas of veterinary medicine and animal biology in a broad context ranging from fundamental research to practical clinical training. The curriculum of the TiHo is also constantly under review within an ongoing dialog among students, teachers and practitioners in order to ensure everything possible is done within its legal framework to meet new challenges arising within the discipline and in society. It is the aim of the TiHo to enable its students to think independently and to seek solutions to problems, thus preparing them for lifelong learning.

Students at the TiHo are expected to be interested in the natural sciences. They are also encouraged to work in university committees dedicated to maintaining and constantly improving the quality of their studies, to become involved in social issues, and to develop international contacts.

Continuing education for postgraduates includes international Ph.D. programmes and coursework within the European Board of Veterinary Specialisation. National and international cooperative arrangements provide dynamic support for the professional development of young scientists.

Lifelong learning is clearly essential in the constantly changing field of veterinary medicine. The TiHo thus offers high-level training courses for practicing veterinarians in order to give them direct access to new developments in the field.

Patient Care and Public Service Duties

Our patients and their owners are provided a complete range of treatments with the latest technologies in both clinical and herd health management contexts. Cooperation among TiHo specialists from a wide variety of disciplines makes it possible to work efficiently and effectively both in very specialized areas as well as in wide reaching

interdisciplinary issues.

The TiHo is also a leader in the prophylaxis and treatment of disease. As part of its duties in zoonosis control, public health, food safety and consumer protection, the TiHo is the primary authority for these issues. One of the central scientific goals of the TiHo is to constantly improve animal welfare and health.

Our Public Image

The TiHo is well known as an institution of higher learning and advanced research with a long tradition of excellence, competence, progressiveness and dedication. The TiHo is recognized for its innovativeness and excellence in research, teaching and services, which are constantly in great demand. The TiHo actively publicizes its achievements and services wherever appropriate, and is always available for expert consultation.

Financial Goals

It is the goal of the TiHo to increase acquisition of funds while using its means efficiently and effectively. Financial decisions at the TiHo are thus based on effective money management in combination with an appropriate level of investment. Funds are allocated on the basis of tasks assigned and results achieved in order to encourage innovation and increase motivation by rewarding excellence.

In particular, the financial goals of the TiHo are to secure its public funding including its investments and the maintenance of facilities and technical resources; to create financial possibilities for research and teaching by providing funding on the basis of performance; to acquire external funding in both existing and innovative areas; and to develop and sustain sources for the TiHo foundation.

International Relations

The TiHo is deeply dedicated to the international development of veterinary science. It maintains scientific contacts and official partnership agreements with numerous universities in other countries. These partnerships and international exchange programmes make possible an intense exchange of students and scientists and a wide range of joint research projects.

A large number of foreign students are enrolled at the TiHo within the limits set by state admissions policy. The TiHo offers foreign students, interns and guest scientists opportunities to familiarize themselves here with all areas of veterinary medicine. Furthermore, alumni programmes are being developed to promote internationalization and strengthen ties with students from developing and emerging countries.

Internal Structures and Procedures

Highly motivated employees are fundamental to our success in achieving the goals of the TiHo. The internal structures and procedures of the TiHo provide a flexible framework for fulfilling its fundamental goals and tasks in research, teaching and services. These structures and procedures provide the basis for efficient functioning and make it possible to accomplish tasks effectively. Decision-making pathways are direct and transparent.

The organisational units of the TiHo make use of synergies, encourage cooperation, avoid overlapping and multiple structures, and support its major scientific goals.

The TiHo also actively supports the concept of equal opportunities for women and men.

External and internal evaluation and quality control processes established at all levels contribute to constant improvement of the TiHo's performance.

1.1.3 Summary of the Establishment Operating Plan with timeframe and indicators of achievement of its objectives

The Guarantee Contract for university development between the state of Lower Saxony and the universities guarantees financing for 5 years, currently until 2021 (signed in 2017). This contract is the solid framework for internal development planning. The Agreement on Objectives between the TiHo and the state of Lower Saxony is a continuous process. It bases explicitly on the mission statement and the resulting objectives of TiHo in teaching and research. Last agreement was made for the years 2014 up to 2018. In the agreements the financial allocation of the state to the university is agreed upon and the university in return is committed to achievement in teaching, research and service. Internal targets are agreed between presidium and scientific units (clinics and institutes). The individual goals of staff are arranged between executives and staff about personal development etc. Fig. 1.1 shows the relations of different agreements in general.

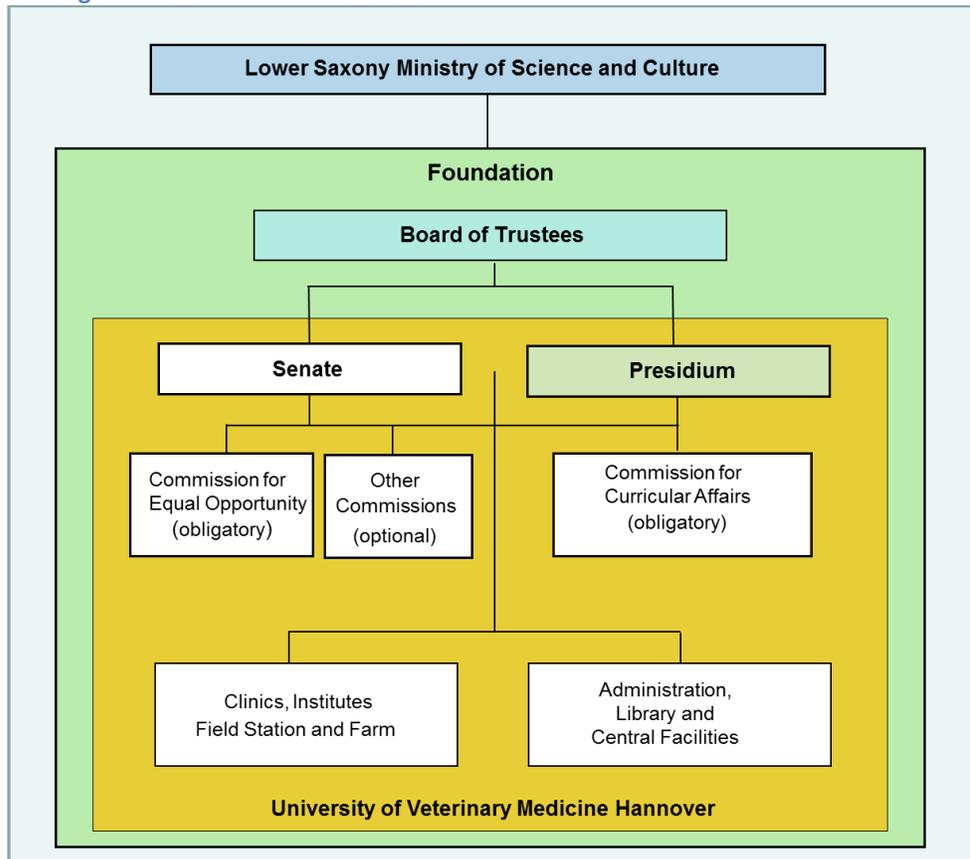


Fig. 1.1 Levels of objectives

Objectives	Operating plan	Indicators	Timeframe
Teaching			
Excellent training in veterinary medicine and animal biology	<ul style="list-style-type: none"> Improvement of study conditions and offers (e. g. e-learning components, electives, Clinical Skills Lab) Implementation of suggestions from student's evaluations Improvement of didactic skills of teacher by special offers 	student's evaluation, student statistics	annually
Low percentages of long-term students and attrition	<ul style="list-style-type: none"> Implementation of „Progress Test Veterinary Medicine“ as a tool for self-evaluation Improvement of assessment procedures 		
Continuing education			
Fostering the young generation of scientists	<ul style="list-style-type: none"> Adaption of PhD programmes to research fields Support candidates to reach European Diplomate degrees and habilitation Support of grant applications 	Student and graduate statistics	annually
High quality continuing education	Implementation of post-gradual master programme in VPH and Laboratory animal sciences	Offer of relevant modules, high demand of students, legal acceptance of the examination regulation	2019
Research			
Excellence in basic and applied research	Strengthening of broad scope of national and international networks	Statistics and controlling of research	annually

		grants, publications (TiHo index)	
Performance as excellent, competent, modern and motivated teaching and research university	Modern and state-of-the-art infrastructure (laboratories, lecture halls, clinics) Focusing of objectives in research and teaching to relevant current requirements of society and developing in veterinary medicine Recruitment of excellent scientists and professors to achieve these objectives	External evaluations, citation indices, external student evaluations (e.g. www.studycheck.de)	annually
Performance-oriented allocation of funds, encouragement of innovation and recognition of top performance, adequate investment quota	Third party funds about 50% of ministry funding	Strategic controlling, analysis of research grants	annually
Fund raising			
Increasing fund-raising of capital incl. foundation funds	Improvement of networks in society, politics and alumni	Financial statistics, controlling	annually

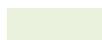
1.1.4 Organisational chart of the Establishment



1.1.5 List of departments/units/clinics and councils/boards/committees with a very brief description of their composition/function/responsibilities

a) List of units (clinics and institutes), more information in profiles (see appendix).

Preclinical	Clinical	Aetiology
Institute of Anatomy	Clinic for Horses	Institute of Microbiology (Dept. of Infectious Diseases)
Institute of Physiology	Clinic for Small Animals	Institute of Parasitology (Dept. of Infectious Diseases) incl. Fish Pathology and Fish Farming
Institute of Animal Breeding and Genetics	Clinic for Small Mammals, Reptiles and Birds	Institute of Virology (Dept. of Infectious Diseases)
Institute of the History of Veterinary Medicine and Domestic Animals	Unit of Reproductive Medicine of the Clinics	Institute of Immunology
Institute of Zoology	Clinic for Pigs, Small Ruminants and Forensic Medicine	Institute of Biometry, Epidemiology and Information Processing
Institute of Animal Ecology and Cell Biology	Clinic for Cattle	Institute of Food Quality and Food Safety
Institute of General Radiology and Medical Physics	Clinic for Poultry	Institute of Food Toxicology
Institute of Biochemistry		Institute of Animal Nutrition
		Institute of Pathology
		Institute of Pharmacology, Toxicology and Pharmacy
		Institute of Animal Hygiene, Animal Welfare and Behaviour of Farm Animals
		Institute of Animal Welfare and Behavior (Pets, laboratory Animals and Horses)
		Institute of Terrestrial and Aquatic Wildlife Research
	Field Station for Epidemiology in Bakum	
Farm for Education and Research in Ruthe		

 Clinic Centre Bünteweg
 Live stock clinics

 Centre Infectious Diseases

b) Councils/boards/committees (selection)

Translation English	Name (German)	Composition	Function/responsibilities
Foundation board of trustees	Stiftungsrat	5 representatives of external stakeholders (society, business, industry, science, culture; who are familiar with higher education), 1 representative of government (ministry), 1 representative (professor) of senate of TiHo Consulting member without voting right: members of presidium, equal opportunity officer, representative of employee committee	Advises the establishment, makes decisions of fundamental importance to the foundation and monitors the activities of the foundation and presidium, appointment and dismissing of members of presidium, appointment of professors
Presidium	Präsidium	President and vice presidents (administration, teaching, research)	Conducts the routine business affairs of the foundation and prepares and implements resolutions for the Board of Trustees Responsible for overall management of university, enacting legal regulations (if senate is not responsible)
Senate	Senat	7 professors, 2 representatives of scientific staff, 2 students, 2 representatives of support staff, several consulting members (without voting right)	Enacting legal regulations in all academic issues (if not excluded by law)
University Developmental Commission	Hochschulentwicklungskommission (HEK)	1 representative of each of the 4 expert commissions (professors), 1 representative of scientific staff, 1 student, 1 representative of support staff Consulting member without voting right: members of presidium, equal opportunity officer	Consulting concerning developing in all areas of university
Expert Commissions <ul style="list-style-type: none"> • Pre-clinical • Clinical • Aetiology 	Fachkommissionen <ul style="list-style-type: none"> • Vorklinik • Klinik • Ätiologie 	For each special area (see 1.1.5 a): All professors, two representatives of scientific staff, two representatives of support staff, two students	Consulting concerning special area in teaching, research, developing facilities
Commission for curricular affairs	Zentrale Studienkommission (ZSK)	Vice president teaching (without voting right), 4 professors, 2 persons scientific staff, 10 students, 1 representative of support staff (without voting right)	Consulting concerning all areas of teaching, study curriculum, assessments
Commission for admission	Zulassungskommission	3 professors, 2 representatives of scientific staff, 1 student, 1 representative of support staff	Consulting and decision concerning admission of students of veterinary medicine

Commission for schedule	Stundenplan-kommission	4 professors, 2 representatives of scientific staff, 1 student, 1 representative of support staff	Consulting concerning schedules
Commission for study quality budget	Kommission für Studienqualitätsmittel (SQM)	4 professors, 2 representatives of scientific staff, 7 students, 1 representative of support staff	Consulting concerning application of study quality budget
PhD-commissions (one for each programme)	PhD-Kommissionen	For each PhD program: 10 professors (incl. vice president research), 1 representative of scientific staff, 1 doctoral candidate	Consulting and decision concerning all areas of PhD programs
Dr. med. vet. commission, Dr.rer.nat. commission	Promotionskommission Dr. med. Vet, Dr. rer. nat	5 professors (incl. vice president research), 1 representative of scientific staff, 1 doctoral candidate (student)	Consulting and decision concerning teaching, study curriculum, assessments and admission of graduate program Dr. med. vet. and Dr.rer.nat.
Animal welfare	Tierschutzausschuss	All animal welfare officers , 2 persons entrusted with the care of the animals, 2 scientific members or persons who conduct animal experiments	Monitoring and critical supervision of animal experiments, support of the welfare officers
Commission for ethics in sciences	Kommission für Forschungsethik	8 professors incl. animal welfare officer and professor for Applied Ethics in Veterinary Medicine	Consulting in critical discourse on ethical issues in sciences, especially dual-use research of concern (DURC)
Commissions for appointment	Berufungskommissionen	3 internal professors, 2 external professors, 1 representative of scientific staff, 1 representative of students, 1 representative of support staff (without voting right)	selection process of professors

1.1.6 Description of how and by whom the strategic plan and the organisation of the Establishment are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

The strategic plan and the organisation of the TiHo are based on the mission statement. The latter was drafted with the University Developmental Commission (HEK), approved by the senate and leads to the target areas and the Agreement on Objectives with the government (see 1.1.2). This is reviewed regularly between officials of the Ministry of Science and Culture (MWK) and the Presidium of the TiHo. The TiHo must submit an annual progress report to the Ministry, upon which the allocation of funds is based.

Decisions in the presidium and in the commissions follow the statements in the strategic plan; the long-term strategical goals are derived from these decisions.

The TiHo publishes the plans, decisions and developments in the areas of research, study and organisation in several media to different recipients:

Public protocols of senate and commission meetings, public annual reports (general, research, teaching), general assemblies of professors, staff, students, press releases of public relations office, network meetings with cooperation partners, meetings with stakeholders of society and politics. These communication ways allow several opportunities for discussion with all stakeholders, which have influence on decision making about future plans.

1.2. Comments

The suggestions due to the review discussion of the strategic plan by external and internal stakeholders lead to the following visible important developments:

- Implementation of Clinical Skills Lab and its extension
- Extension of implementation of digital solutions in teaching (e-learning, e-assessment)
- Developing and implementation of future-oriented postgraduate master programmes and certificates
- Constant small adaptations of the practical year after students evaluation
- Implementation of a new research centre for emerging infections and zoonoses (RIZ)
- Implementation and enhancement of Niedersachsen-Research Network on Neuroinfectiology (N-RENNT)
- Reinforcement of cooperation with research institutes (e. g. Helmholtz-Institute, Heinrich-Pette-Institute, Friedrich-Löffler-Institute)
- Future-oriented alignment of professorships

1.3. Suggestions for improvement

The TiHo is aware of the benefit of larger units due to using research synergies, and a more efficient use of resources and equipment, and the TiHo is constantly looking for opportunities to form larger units. To achieve these effects already now with the goal of intensifying cooperation in more complex research projects as well as in order to create effective organisation units beyond institute and location borders, the TiHo established different virtual centres www.tiho-hannover.de/en/clinics-institutes/centers) in which clinics and institutes of the TiHo and other research facilities of the region work together:

- Virtual Centre for Infectious Disease
- Virtual Centre for Systems Neuroscience
- Virtual Centre for Animal Health and Food Quality
- Virtual Centre for Replacement - Complementary Methods to Animal Testing
- Virtual Centre for Reproductive Medicine
- Virtual Centre for Canine Neurosciences

2. Finances

2.1. Factual Information

2.1.1 Description of the global financial process of the Establishment

Main sources of revenues are funds by public authorities, revenues by clinical services and research grants by third-parties. Concerning funds by public authorities, the TiHo operates under a lump-sum budget, which permits a flexible allocation of funds and the accrual of capital reserves.

2.1.2. Degree of autonomy of the Establishment on the financial process

The TiHo is an endowed establishment within a foundation. This enables the TiHo a large degree of autonomy and flexibility whilst retaining under state responsibility for its operating and financing. Although funding is still allocated by the Ministry on the basis of the agreement on objectives, the state has no longer influence on details. Furthermore, the TiHo can build up its own capital from income and private donations. By law, these revenues may not be deducted from the funding provided by the state.

2.1.3. % of overhead to be paid to the official authority overseeing the Establishment on revenues from services and research grants

All revenues from services, research grants and other sources (e.g. donations, inheritances) remain entirely at the TiHo. Income from third-party funds from industry, research, services or donations is charged with an overhead of 20%, which reaches the central funds of the University. Overhead allowance on research grants are paid by EU, Federal ministries and German Research Foundation (DFG).

2.1.4. Annual tuition fee for national and international students

Students pay semester registration fees of € 390,48. The amount of fees is equal for national and international students.

Only €75 out of this sum can be used for the TiHo's administration service. The other amounts are €95 for Hannover student services, €9 for Student Committee (AStA) and € 211,48 for free use of public transport in Lower Saxony. These named organisations and ministry define the fees.

Students who study longer than 17 semesters (6 semesters more than the regular study programme) have to pay €500 per semester (exceptions are students who are suspended for a semester and students who have to care for a family member or have children younger than 14 years). In study year 2016, the income generated by long-time fees was €20,500.

The students tuition fees, which were available in WS 06/07 until SS 2014, were omitted in winter semester 2014 on political request. About 90% of this amount is substituted and included as incremental budget in revenues of government (Budget for Study Quality, SQM).

2.1.5. Estimation of the utilities and other expenditures directly paid by the official authority and not included in the expenditure tables

All utilities and maintaining costs are covered by lump-sum budget.

2.1.6. List of the on-going and planned major investments for developing, improving and/or refurbishing facilities and equipment, and origin of the funding

In the annual allocation from the state, funds for maintaining of buildings are included. All premises and facilities are improved continuously and maintained on a high technical level. The research facilities, like RIZ, are state of the art.

2.1.7. Prospected expenditures and revenues for the next 3 academic years

Prospected revenues:

The TiHo expects the same revenues in the next three years. In June 2017, the follow-up Guarantee contract of university development was signed by government and all universities of Lower Saxony. This agreement ensures the financial funding for universities.

Prospected expenditures:

The TiHo plans to upgrade the facilities of several institutes.

2.1.8. Description of how and by whom expenditures, investments and revenues are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

Presidium is responsible for all decisions concerning financial plans. Presidium discusses these plans annually with the senate. The supervision and monetary control is carried out by the Foundation Board on basis of annual reports, internal and external audits.

Basic lump-sum funding is monthly paid by government for basic personal, technical and teaching operations. For research activities, all institutes and clinics apply for research grants by research funders, e. g. DFG, ministries, EU. For special investments for new building, e. g. RIZ or clinic complex, TiHo gets additional allocation by the state (federal or state government) after competitive application.

Institutes and clinics achieve a lump-sum budget for teaching, research and basic investments, which bases mainly (80%) on the number of scientific staff of the unit. The other part of these allocations (20%) depends on performance indicators of every unit, like publications and amount of income of third-party research funds (Hochschulindex).

The use of special Budget for Study Quality (Studienqualitätsmittel, SQM) is discussed and decided by the Commission for Study Quality Budget together with presidium. This special budget has to be used for enhancing study quality.

Table 2.1.1. Annual expenditures during the last 3 academic years (in €)

Area of expenditure	2016	2015	2014	Mean
Personnel	55.054.029	53.213.837	52.585.168	53.617.678
Operating costs	13.383.194	11.997.055	12.072.232	12.484.160
Maintenance costs	13.047.047	12.176.024	12.589.532	12.604.201
Equipment	6.368.062	15.128.120	18.120.684	13.205.622
Total expenditure	87.852.332	92.515.036	95.367.616	91.911.661

Table 2.1.2. Annual revenues during the last 3 academic years (in €)

Revenues source	2016	2015	2014	Mean
Public authorities	58.016.398	57.469.024	56.121.981	57.202.468
- New research building	110.649	3.918.655	12.543.376	5.524.227
- Budget for Study Quality*	1.289.511	1.131.154	21.567	814.077
Tuition fee (standard students)	23.000	174.632	1.755.547	651.060
Tuition fee (full fee students)	-	-	-	-
Clinical services	11.837.008	11.364.940	11.046.398	11.416.115
Diagnostic services				
Other services				
Research grants	12.707.969	12.578.630	12.136.733	12.474.444
Continuing Education	253.367	251.481	275.902	260.250
Donations (incl. legacy)	102.933	159.096	176.107	146.045
Other sources (Sponsoring, administration fees of students, rental fees, interests)	2.065.468	2.203.023	1.924.992	2.064.494
Total revenues	86.406.303	89.250.635	96.002.603	90.553.180

*Abolition of student fees since 2015/16, substitute by Budget for Study Quality

Table 2.1.3. Annual balance between expenditures and revenues (in €)

Academic year	Total expenditures	Total revenues	Total revenues Balance*
2014	95.367.616	96.002.603	634.987
2015	92.515.036	89.250.635	-3.264.401
2016	87.852.332	86.406.303	-1.446.029

*Total revenues minus total expenditures

2.2. Comments

Regarding the compensation budget for former tuition fees, we are confident that the public funding is guaranteed beyond the year 2021.

A part of third party funds is generated for research in education (e. g. Clinical Skills Lab, e-learning).

2.3. Suggestions for improvement

3. Curriculum

3.1. Factual information

3.1.1. Description of the educational aims and strategy in order to propose a cohesive framework and to achieve the learning outcome

The educational aims are described by national “Ordinance concerning the Certification of Veterinary Surgeons” (TAppV, see download link in chapter 14) and leading to a general approbation. This means that every graduate has the possibility to work in all veterinary fields in Germany. In the TAppV, a specialization is not intended in the undergraduate study. Therefore the core subjects are regulated by the TAppV and have to be taught for every student (see subjects of examinations).

Since the trial clause offers the possibility of changing subjects to a certain amount, the TiHo implemented the so-called Practical Year in 2004. For one semester in this year students have the possibility of focussing on intensification and gathering experience for their individual career decision (six individual rotation options of internal practical training, see Tab. 3.1.5). They can choose the clinic in which they want to have the main part of their internal practical training. One of the six clinical rotation options was created for internal paraclinical training (research, food hygiene) for students who are more interested in a research career or veterinary public health with reduced clinical training.

Having explained these legal requirements, the strategy of the TiHo developing educational aims tend to provide the basics for the general approbation with an additional orientation period.

In the curriculum as regulated by the TAppV, teaching and examinations are divided into two preclinical and one clinical section:

- First preclinical examination (Vorphysikum) – scheduled during the first year, covering physics, chemistry, zoology, botany
- Second preclinical examination (Physikum) – scheduled during the second year, covering basic subjects such as anatomy, histology and embryology, physiology, biochemistry, animal breeding and genetics
- Clinical examinations (Staatsexamen) – covers virology, bacteriology and mycology, parasitology, animal nutrition, animal hygiene and husbandry, clinical subjects (internal medicine, surgery, clinical radiology of the different species), diseases of poultry, pathology, reproduction, as well as pharmacology and toxicology, food hygiene and legal knowledge of subjects such as food hygiene (meat, milk, other food of animal origin), animal welfare, state veterinary medicine, pharmaceutical law, by-laws covering anaesthetics and veterinary legislation (see description of examinations).

These subjects have to be taught as regulated by the TAppV. The scientific-theoretical/clinical-practical part of the studies covers 3,920 hours of obligatory lectures, seminars, courses, practicals and electives (practical farm training of 70 hours and Practical Year of 460 hours intramural training included). Students should be on campus for an average of 33 hours per week, allowing time for independent study at home or at university facilities.

External Practical Training (EPT): Students have to complete an obligatory EPT comprising a total of 1,100 hours. During this time, 850 hours (1 x 4 weeks and 2 x 2 months) are spent in private practice or at a TiHo clinic, and 250 hours (2 x 3 weeks, 1 x 2 weeks) in governmental or private institutes concerned with different aspects of food hygiene (including slaughterhouse hygiene) and consumer protection.

This extramural work is reviewed by the TiHo and has to be taken during the lecture-free time. In the Practical Year (5th year) students rotate between intramural training (practical semester), training in private practice (selection of another turn of the intramural training as an alternative is possible) and food hygiene (training in a slaughterhouse).

Following the Practical Year, the final section of the clinical examinations takes place, leading to an average length of study of eleven semesters (5.5 years), which is met by the majority of students.

Further, the TAppV requires electives. These are lectures, seminars or practical and clinical courses intended to enhance students’ basic knowledge in certain fields which they can choose according to their

preferences and individual rotation options. Students have to subscribe for 308 hours of such electives. The electives are classified as basic subjects, research, food hygiene, aetiology, companion animals and farm animals to facilitate students' choices and to provide a good orientation for their future career.

Learning outcomes are defined for every subject, published in learning management system and assessed by formative and summative examinations and logbooks provided by TiHo. In general, the developing of curriculum can be described according by the model of "constructive alignment" (J. B. Biggs, www.johnbiggs.com.au/academic/%20constructive-alignment), see Fig. 3.1.

In order to achieve the educational aims, the strategy of the TiHo includes a constant review and improvement of learning and teaching outcomes on basis of student's evaluations and assessment results. The deciding participants and commissions are described in 3.1.3 and 3.1.10.

3.1.2. Description of the legal constraints imposed on curriculum by national/regional legislations and the degree of autonomy that the Establishment has to change the curriculum

A defined national curriculum and several additional by-laws govern the studies at the TiHo, important are these three ones:

- The **Ordinance concerning the Certification of Veterinary Surgeons (TAppV)** is a national by-law governing the course of studies in veterinary medicine in Germany and of course at the TiHo. The TAppV regulates the subjects to be taught, the number of hours to be taken by each student in each subject, and the content of examinations.
- The **Teaching Obligation Regulation of Lower Saxony (LVVO)** is a state by-law. It specifies the number of hours to be taught per year by each faculty member. The sum of the individual teaching hours to be given results in the total teaching capacity of an establishment.
- The **Teaching Capacity Regulation of Lower Saxony (KapVO)** is by-law of Lower Saxony which, together with the teaching obligation regulation, forms the basis for the number of students to be admitted each semester (see 7.1.4, 9.1.8 and 9.2).

The TiHo cannot change the curriculum in general. An exception would be the development of a model course of study in order to field test new models in veterinary medical education. Such a model course of study must, however, be approved by the responsible public authority. Instead, the TAppV allows under certain circumstances the number of hours to be given in every subject with more than 28 hours to be changed at a rate of 20% (trial clause). Therefore, the TiHo has decreased the given hours in botany, chemistry, zoology to increase hours for clinical education. The TiHo-specific interpretation of the TAppV is outlined in the conditions of study, published completely and as summary in inter- and intranet. The clinics and institutes can deliberately determine the ratio of lectures to courses and clinical classes in each subject and decide on the teaching style (i.e. individual classes or blocks on certain subjects facilitating a problem-oriented approach or using interactive learning programmes). The TiHo can decide on the introduction and form of the Practical Year. However, it required the permission of the Ministry in order to introduce an orientation phase in a semester particularly enabling this orientation phase not only in the clinics, but also in research and food hygiene subjects.

All decisions on curricular matters are discussed in the commission for curricular affairs (Zentrale Studienkommission), and a recommendation is submitted to the Senate for approval; both bodies are defined in the NHG. Course contents are determined by the institute or clinic responsible for teaching and

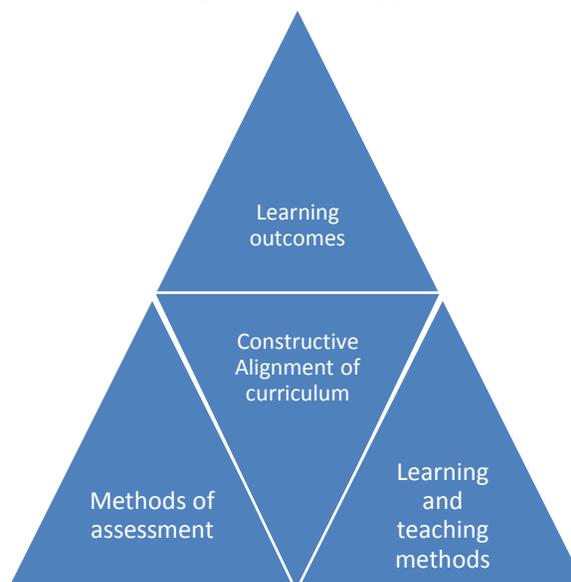


Fig. 3.1: Constructive alignment

are discussed and decided in the four Expert Commissions. Course contents are published on the intranet to facilitate arrangement between different institutes and clinics.

The allocation of hours among various subjects is given by the TAppV. The balance between theoretical and practical teaching is decided by the clinic or institute responsible for the subject and discussed in the four Expert Commissions (Fachkommissionen). In general, teachers provide as much practical or clinical training as possible in every subject. The TiHo supports small group teaching by providing support staff paid with budget for study quality (SQM, Studienqualitätsmitteln.)

3.1.3. Description of how curricular overlaps, redundancies, omissions and lack of consistency, transversality and/or integration of the curriculum are identified and corrected.

Overlaps are partially intended and not completely excluded. In many discussions in the four expert commissions and the Commission for Curricular Affairs (discussion of student's comments) together with vice president for teaching a certain transversality repetition taught by different teachers was thought to be useful. The student's evaluation shows the potential areas of improvement. The e-learning consulting supports the improvement or implementation of new e-learning materials, helps to find the right didactic methods, synchronises the whole e-learning offer and encourages institutes with no e-learning offer to engage in this.

The circle of curriculum development shows Fig. 3.2.

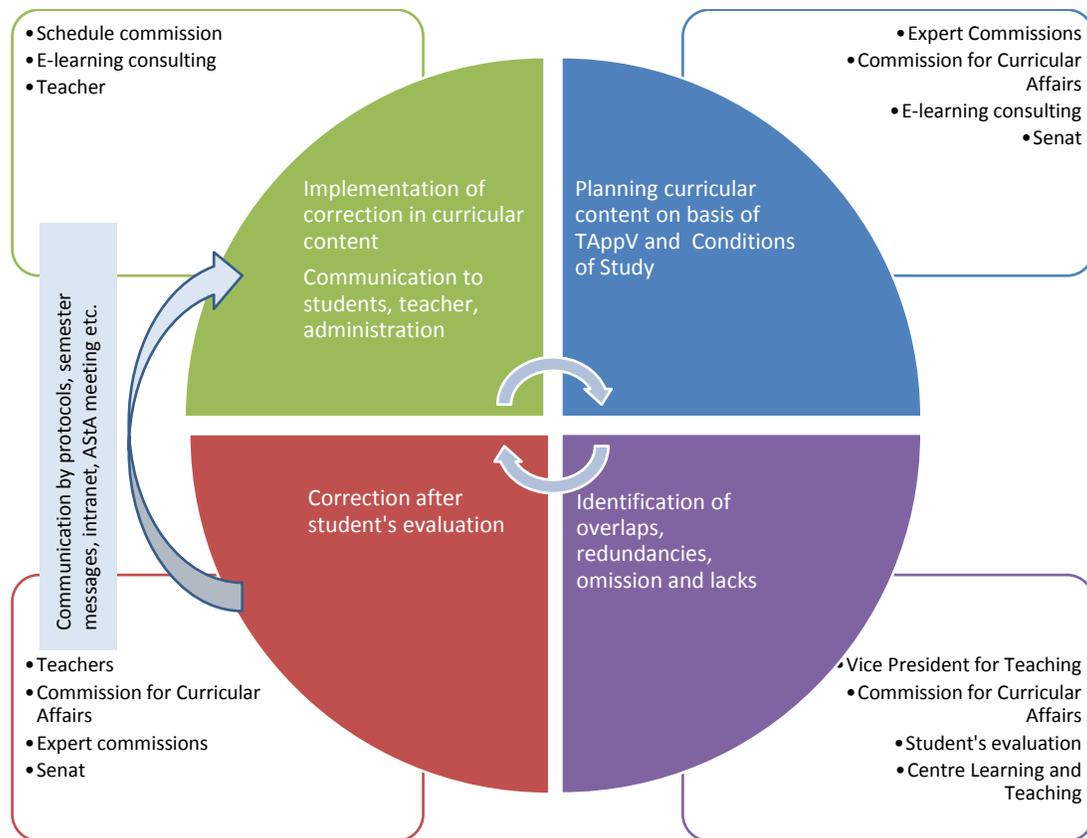


Fig. 3.2: Development of curriculum

3.1.4. Description of the core clinical exercises/practicals/seminars prior to the start of the clinical rotations

The imparting of clinical knowledge, skills and competencies is considered during the whole study programme (Fig. 3.3):

- Starting from the 1st semester, students can deliberately learn and practice in the Clinical Skills Lab. Here theoretical and hands-on training using manikins and simulators is provided by tutors, peer-tutors or self-learning instructions. Virtual patients can be analysed in a safe environment to enhance clinical and diagnostic thinking. Furthermore, students can voluntarily join clinical rounds in the evening or during the weekend or work as student assistants in every clinic.
- In 4th and 5th semester propaedeutics with theoretical teaching and practical training on TiHo owned animals is provided in small groups.
- In 5th semester lectures starts on internal medicine, reproduction and surgery, continue in 6th semester and are expanded with lectures provided by each clinic (cattle, pigs, small ruminants, horses, small animals, exotics, poultry, fish, bees etc.)
- During the 6th, 7th and 8th semester clinical cases, provided by each clinic, are taught and discussed during the clinical training sessions on patients ("Klinische Ausbildung am Patienten", Quote). In every training unit students have clinical examination training (hands-on). Every student has to write case reports, which are supervised and discussed together with 1-2 students per lecturer.

As shown in Fig. 3.3., students enhance their responsibilities for patients and clinical knowledge continuously during the whole study period.

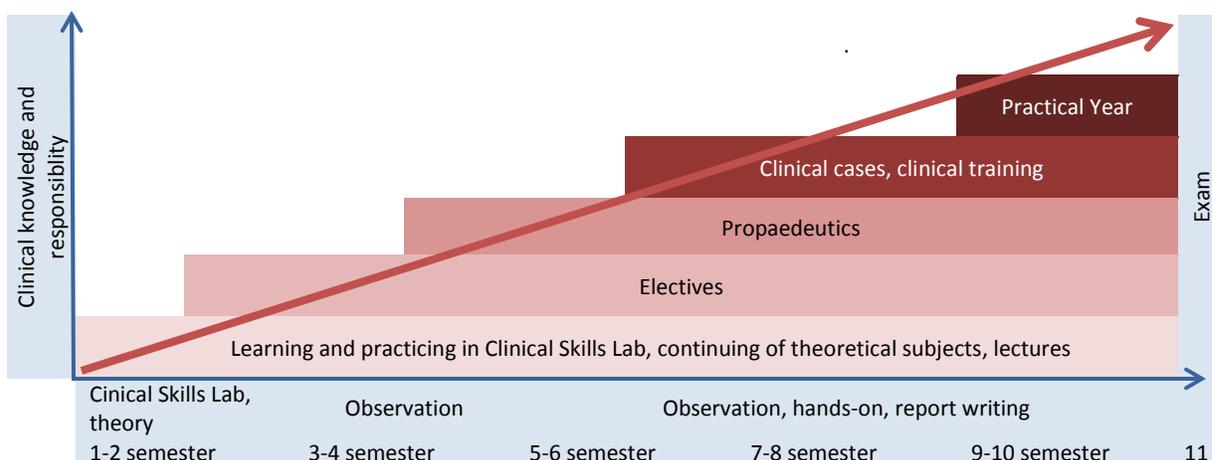


Fig. 3.3: Enhancement of knowledge and responsibilities

Additionally, every clinic assigns patients to each student for preparing a report including history (retrieved from patients file), findings of clinical examination, interpretation of such findings, detailed description of problem identification, plan or results of further diagnostics, diagnosis, differential diagnosis including reasons or elimination of alternatives, treatment-plan and prognosis. Each report is reviewed and rated by academic clinical staff. The student has to amend declined reports until acceptance. Further clinical training is provided during various electives or field trips. Veterinary professional training including for example ethical or communicational training are provided during lectures, seminars and electives.

3.1.5. Description of the core clinical rotations and emergency services and the direct involvement of undergraduate students in it

The Practical Year is well organised by Administration unit of student and academic affairs. Students can choose their individual rotation option from five clinical options and one paraclinical option (see Tab. 3.1.5). In each option, 10-20 students pass together the 10-14 weeks of one option. These groups are divided in small groups of 2-4 students per supervisor, which are assigned to the different services for 1 to

2 weeks and become involved with the management of the daily medical, surgical, intensive care, anaesthesia and emergency cases. This includes client communication, medical history, clinical examination, blood sampling, developing a diagnostic and a treatment plan and documentation. To ensure that each student on clinical rotation performs a minimum number of clinical procedures, they receive a log book with a syllabus of required procedures, which will be signed off by the clinician on duty after the student has performed this task. At the end of each rotation these log books have to be handed in and will be reviewed by the rotation coordinator to pass the rotation.

During the Practical Year students on rotation in the anaesthesia and intensive care service become involved in the daily management of elective and emergency procedures. During didactic morning rounds the cases of the day and their possible problems and special considerations are discussed with the students. Students will be assigned to 1 or 3 cases per day and will take part in the case management e.g. from premedication and anaesthesia induction to maintenance and monitoring, the recovery phase and planning the postoperative pain management and possibly intensive care measures; imaging procedures, surgery techniques etc.

On assigned cases students will practice physical examinations, blood sampling, placement of catheters, endotracheal intubation, local and regional anaesthesia techniques, handling of an anaesthesia machine, set up of infusion sets and handling of infusion devices and writing record in the different specialities. Depending on the case load, students will be involved in euthanasia cases and the preceding decision making.

The rotation option in the Clinic for Pigs, Small Ruminants and Forensic Medicine and the clinic for poultry (including Unit of Reproductive Medicine of the clinics and the Field Station for Epidemiology) includes herd health visits, ambulatory service, daily short-term farm visits and special training herd health service pigs (herd visits, herd investigation, necropsies, diagnostic/laboratory tests).

3.1.6. Description of the teaching in slaughterhouses and in premises for the production, processing, distribution/sale or consumption of food of animal origin

Food hygiene is taught by members of the Department of Food Sciences, taking place between the 5th and 8th semester. External Practical Training (e.g. in slaughterhouses) takes place in the Practical Year.

Food hygiene and technology is taught in the third and fourth years involving co-ordinated lectures and practical classes in food inspection (particularly products of food of animal origin, carcass inspection, inspection of processed food of animal origin). Furthermore, students have to complete an obligatory 100 hours of EPT (external practical training) in a slaughterhouse.

In addition, an interdisciplinary class in food hygiene is obligatory for students in the seventh and eighth semester. In this class (196 hours) students are taught by instructors from different disciplines to bring basic, paraclinical and clinical subjects and food hygiene into context and thereby practise problem-based teaching. Further, students are taught specific inspection techniques in electives.

An in-house facility for the training of students is available in the Institute of Food Quality and Food Safety. In order to obtain suitable material, the TiHo has access to a large number of slaughterhouses in Lower Saxony, from which carcasses can be collected for student teaching in the in-house facilities. The TiHo has a small in-house foodstuff processing unit which provides appropriate access for undergraduate students. A butcher is employed in the Institute of Food Quality and Food Safety to provide professional instruction in the practical aspects of meat processing and sausage production. To obtain additional material for teaching, the Institute maintains close contacts to several food processing companies which regularly provide samples and permit visits by groups of undergraduate students.

The obligatory practical training in food hygiene at the TiHo comprises a practical course organised by the Institute of Food Quality and Food Safety. Students receive 80 hours of practical training in food inspection (food of animal origin), food and meat technology and in the context of the interdisciplinary subjects aimed at problem-oriented teaching with clinicians (food chain).

There is obligatory practical training in meat hygiene and inspection in a small inspection hall on the TiHo Bischofsholer Damm Campus comprising a meat inspection course. In this course, groups of

approximately ten students each undergo training on carcasses and organs of pigs, cattle, sheep, game animals and poultry (24 hours).

In addition to this intramural training, obligatory extramural training periods are supervised by the teachers of the Institute of Food Quality and Food Safety. The lecturers of food hygiene subjects of all German educational institutes have made an arrangement with the slaughterhouses as to what should be taught in a practical training period. These documents are handed out to the students.

Every student is involved in the mandatory evaluation of the EPT in veterinary practices in accordance with the joint guidelines from the veterinary educational institutes.

The evaluation of the last few years are currently undergoing a detailed review process in which quality control is carried out with regard to the fulfilled tasks of each student in the respective internship location. The results obtained will be used to update and adapt the checklist of task, that have to be performed, the evaluation sheets due to amendments of the TAppV, as well as to develop a positive list for internships, to support students selection process.

3.1.7. Description of the selection procedures of the electives by the students and the degree of freedom in their choice

In the strategy of the TiHo to provide a cohesive framework for the future of occupation of students and to provide the described orientation phase, electives are classified as “basic subjects”, “research”, “food hygiene”, “aetiology”, “companion animals” and “farm animals”. Students can choose individually their preferred specialities and electives during the whole course of study time.

Electives are announced by the teacher at the end of the preceding semester. Students have to take a total of 308 hours of electives subjects. According to the TAppV 84 hours have to be taken in basic subjects and sciences, 126 hours in clinical sciences or food hygiene/public health. The remaining 98 hours can be chosen by each individual student, being seen as an orientation phase for their future profession. Electives are mostly taught on Wednesday and Friday afternoons to facilitate students` choices. Students select these electives on-line using an intranet-accessible program.

The size of the group depends on the amount of practical, clinical and/or laboratory work. The average group size is 20 - 30. In some instances groups are smaller than 10 (clinical subjects) or larger than 30 (theoretical subjects). Most elective subjects provide problem-based learning and integrate basic subjects and sciences with clinical subjects (catalogue of electives see download link in chapter 14)

Students have the possibility choosing the electives and their priority during a special period at the end of the previous semester. After the deadline, electives are allotted by the selection procedure described on the online learning platform. It considers the priority of the students for a specific elective, the amount of hours the students have already absolved for the specific examination phase and the amount of missing hours. Students in need of more hours have a better ranking score. There is no legal claim for attendance of a definitive elective, but TiHo tries to satisfy student`s wishes. Teachers provide more electives than needed for the number of students, try to extend favoured courses, add e-learning components and are looking for individual solutions. Students can contact the teachers directly asking for free places in a special course. Pregnant students, students with children and students engaged in TiHo self-administration (member of AStA etc.) receive special priority choosing electives concerning topics and timeslots.

In general, all students have the chance to get their favourite electives during their study years concerning their individual interests.

3.1.8. Description of the organisation, selection procedures and supervision of the EPT

Veterinary training in Germany is regulated by the TAppV, which reflects the requirements of EU Directive 2005/36 / EC and translates these into applicable German law. Thus, the conditions for EPT are the same for all veterinary establishments in Germany and are formulated by the following:

Quality assurance of extramural traineeships in the framework of veterinary medicine training in Germany

Apart from the subjects listed which have to be implemented by immediate teaching through the veterinary establishments (faculties, university), the TAppV defines requirements for content and training places of 1170 hours of obligatory practical extramural training. This practical training consists of the following four compulsory blocks:

- Exercise in Agriculture, Animal Breeding and Animal Husbandry (70 h)
- Practical training in a Veterinary Practice or Veterinary Hospital (850 h)
- Practical Training in Hygiene Control and Control of Foodstuffs and in the Inspection of Animals for Slaughter and Meat (175 h)
- Practical extramural training in the Public Veterinary Service (75 h)

The TiHo organises the practical work (agriculture) at the Farm for Education and Research in Ruthe. Other extramural work has to be organised by the students with help of the administration unit for student and academic affairs. The clinical training can be done with any veterinary surgeon fulfilling the requirements of Section 58 of the TAppV. To help students finding a good place for their extramural education the TiHo provides a list of positively evaluated private practices, or teachers give advice to individual students.

TiHo has good cooperation to professional associations like Federal Association of Practicing Veterinarians (BpT), and is in ongoing discussion concerning improving clinical training in private practice www.tieraerzverband.de/bpt/Studenten/ausbildungspraxis/03-index.php. The extramural work in a slaughterhouse must be performed in an EU-licensed establishment.

After having completed a section of their extramural training students receive a certificate signed by the veterinary surgeon responsible for their training. Students and veterinary surgeons have to evaluate the practical work (evaluation of the practical work, of the teacher and of the student) and provide data about their training. The TiHo has developed a form with relevant training contents. The evaluation reports are analysed on a regular basis.

3.1.9. Description of the procedures used to ascertain the achievement of each core practical/clinical activity by each student

	Procedures to ascertain achievement of learning goals
Pre-clinical, propaedeutic	<ul style="list-style-type: none"> • Attendance checks during clinical laboratory diagnostics and propaedeutic exercises (signature is required), Individual call of students • Possibility to catch up missing hours.
Clinical	<ul style="list-style-type: none"> • Daily attendance checks and individual call during clinical trainings (signature is required) • Obligation to prepare a patient report by each student (correction / feedback by scientific staff), over all clinics and year at least about 10 per student per study course. • Attestation of exercises in the skills lab, OSCE in Clinical Skills Lab, documentation of the interpretation of minimal 40 x-rays, log book for practical activities. • Possibility to catch up missing hours
Ambulatory clinics	<ul style="list-style-type: none"> • Attendance checks during farm visits with the ambulatory clinic • Analysis of herd health with presentation by students
External Practical Training	<ul style="list-style-type: none"> • Evaluation report by students and by supervisor • Official certificates of EPT

3.1.10. Description of how and by whom the core curriculum is decided, communicated to staff, students and stakeholders, implemented, assessed and revised

As described in 3.1.2, the TiHo cannot change the curriculum in general because of defined national curriculum and several additional by-laws, but has influence on the internal realisation of all processes and on the offer of electives (e.g., the elective “economics” was implemented together with stakeholders although the subject is not mentioned in TAppV). All decisions on curricular matters are discussed in the commission for curricular affairs and a recommendation is submitted to the Senate for approval. The allocation of hours among various subjects is given by the TAppV. The balance between theoretical and practical teaching is decided by the clinic or institute responsible for the subject and discussed in the four Expert Commissions. In general, teachers provide as much practical or clinical training as possible in every subject. Course contents are determined by the institute or clinic responsible for teaching, are discussed and decided in Expert Commissions and are published on the intranet to facilitate arrangement between different institutes and clinics. Fig. 3.4 displays the interaction with stakeholders, yearly meetings are performed in the Veterinary Faculty Association (Fakultätentag).

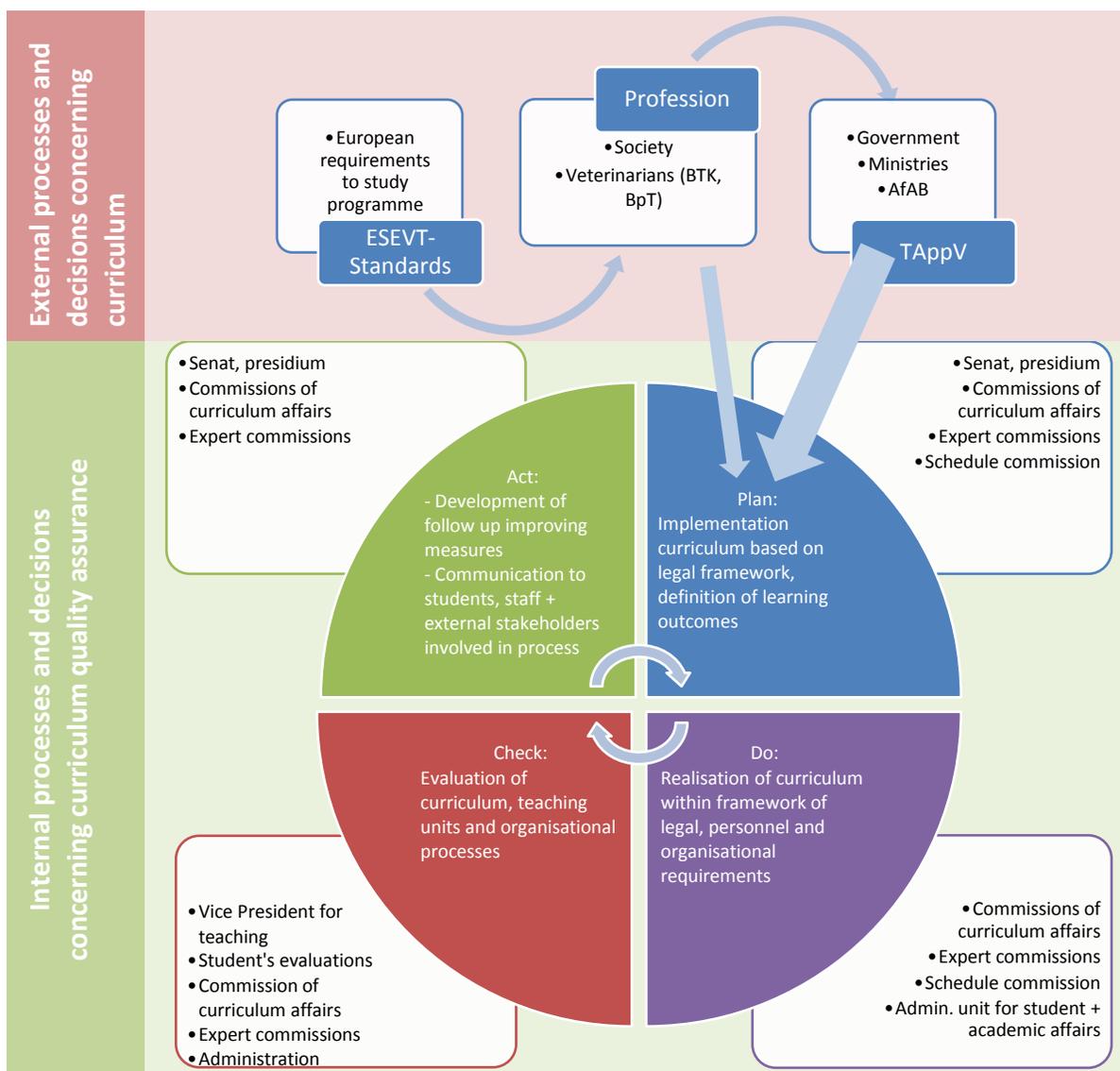


Fig. 3.4: Curriculum development processes with internal and external stakeholders

Important information (tables 3.1.1 and 3.1.2): In the national curriculum TappV supervised self learning (C) is not described. According to EU regulations on BSc and MSc, 1800 hours per year (contact hours and self learning) are mandatory. In diploma supplements provided by the TiHo and in the ECTS-system, rules exist for self learning as a preparation for classes and examinations.

Table 3.1.1 Curriculum hours in each academic year taken by each student

Academic year	Lectures	Seminars	Super-vised self learning	Labora-tory and desk-based work	Non-clinical animal work	Clinical animal work	Other: Electives	Total h (ECTS)
	A	B	C	D	E	F	G	H
1st	494	78	1008	84	80	0	56	1800
2nd	393	41	995	90	141	56	84	1800
3rd	535	14	913	116	0	166	56	1800
4th	456	40	824	168	56	186	70	1800
5th	0	85	240	275	100	1058	42	1800
6th (exam)			900					900
Total	1878	258	4880	733	377	1466	308	9900
Hours TAppV (without C)								5020

Table 3.1.2 Curriculum hours in EU-listed subjects taken by each student

No.	Subject	Lectures	Seminar s	Super-vised self learning	Labora-tory and desk based work	Non-clinical animal work	Clinical animal work	Other: Elective s (see no. 45)	Total h (ECTS)
		A	B	C	D	E	F	G	H
1. Basic subjects									
	Medical physics	48		64	8				120
1	Chemistry (inorganic, organic)	70	35	220					325
2	Animal biology, zoology and cell biology	28	8	60		20			116
3	Feed plant biology and toxic plants	54		62	2				118
4	Biostatistics	28		32					60
	1- Total number of hours	228	43	438	10	20	0	0	739
2. Basic sciences									
5	Anatomy (incl. histology and embryology)	126		415	88	108			737
6	Physiology	91	42	205	20	15			373
7	Biochemistry, cellular and molec-ular biology	84		200	28				312

No.	Subject	Lectures	Seminars	Supervised self learning	Laboratory and desk based work	Non-clinical animal work	Clinical animal work	Other: Electives (see no. 45)	Total h (ECTS)
		A	B	C	D	E	F	G	H
8	General and molecular genetics	56		68		28			152
9	Pharmacology, pharmacy and pharmacotherapy	98		130	14				242
10	Toxicology	14		59					73
11	Parasitology	7		36	56				99
12	Microbiology	28		66	44				138
13	Immunology	42		72	4				118
14	Virology	56		56	8				120
15	Epidemiology	21	14	25					60
16	Animal ethology, welfare, laboratory animal	98		140					238
17	Animal nutrition	46		82	52				180
18	2- Total number of hours	767	56	1554	314	151			2842
	3. Clinical Sciences								
19	Obstetrics, reproduction and reproductive disorders	80		182			36		298
20	Diagnostic Pathology including pathological anatomy	88	14	178	28		52		360
21	Medicine and surgery including anaesthesiology	42		59	32				133
22	Clinical training in all common domestic animal species	147	40	233	65		641		1126
23	Preventive medicine	21		9					30
24	Diagnostic imaging	38		78	4				120
25	State veterinary services and public health	21		44	40				105

No.	Subject	Lectures	Seminars	Supervised self learning	Laboratory and desk based work	Non-clinical animal work	Clinical animal work	Other: Electives (see no. 45)	Total h (ECTS)
		A	B	C	D	E	F	G	H
26	Veterinary legislation, forensic medicine and certification	14		16					30
27	Therapy in all common domestic animal species	119	40	213	65	0	620	0	1057
28	Propaedeutics of all common domestic animal species			300			112		412
29	Field veterinary medicine (ambulatory clinics)	12	5	29			5		51
	3- Total number of hours	582	99	1341	234	0	1466	0	3722
	4. Animal Production								
30	Animal production and breeding	14		20					34
31	Economics	7	14	28					49
32	Animal husbandry	14	20	12		50			96
33	Herd Health Management	14		16					30
	4- Total number of hours	49	34	76		50			209
	5. Food Safety and Quality								
34	Inspection and control of food and feed	14		23	58				95
35	Food hygiene and food microbiology	63		116	28	28			235
36	Food science including legislation	84		116	59	25			284
37	Practical work in places for slaughtering and food processing plants			37		103			140

No.	Subject	Lectures	Seminars	Supervised self learning	Laboratory and desk based work	Non-clinical animal work	Clinical animal work	Other: Electives (see no. 45)	Total h (ECTS)
		A	B	C	D	E	F	G	H
38	Food technology incl. Analytical chemistry	14		16					30
	5- Total number of hours	175		308	145	156	0	0	784
	6. Professional knowledge								
39	Professional ethics and behavior	21	7	56					84
40	Veterinary legislation	28		36	30				94
41	Veterinary certification and report writing		7	23					30
42	Communication skills	21	5	40					66
43	Practice management and business	7		12					19
44	Information literacy and data management		7	8					15
	6- Total number of hours	77	26	175	30				308
	Total number of hours fields 1 - 6	1878	258	3892	733	377	1466		8604
45	Electives (distribution see Tab. 3.1.3)			88				308	396
46	Examination 11. Sem			900					900
	Total	1878	258	4880	733	377	1466	308	9900
	Hours TAppV (without C)								5020

Table 3.1.3 Curriculum hours taken as electives for each student*

Subject	Lectures	Seminars	Super-vised self learning	Laboratory and desk-based work	Non-clinical animal work	Clinical animal work	Other: e-tutorials	Hours to be taken by each student per subject group (TappV)
	A	B	C	D	E	F	G	H
Basic subjects	*All students have to take 308 h electives during study programme according to their interests (TAppV). Therefore, it is not possible to assign the elective hours to the named subjects (see 3.1.7) TiHo offers 1,5 times more electives hours than needed.						84	98 (freely chosen)
Basic sciences								
Clinical sciences							126	
Animal production								
Food hygiene/ Public health								
Professional knowledge								
Total	308 hours							

Table 3.1.4 Curriculum hours (weeks) of External Practical Training (EPT) for each student

Subjects		Minimum duration (weeks)	Year of programme
Production animals (pre-clinical)	No preclinical EPT, but internal practical training	70 hours (2 weeks), 1.4 % of total study time on the TiHo teaching farm in Ruthe	after the 1 st year
Companion animals (pre-clinical)*	No preclinical EPT		
Production animals (clinical)	No differentiation between production and companion animals	150 hours (4 weeks), 3 % of total study time	after the 5 th or 6 th semester or later in the 5 th year (Practical Year)
Companion animals (clinical)*		700 hours (16 weeks), 14 % of total study time	
FSQ and VPH	Food hygiene	75 hours (3 weeks), 1.5 % of total study time	after the 3 rd year (6 th semester)
	Food hygiene (slaughter-house)	100 hours (3 weeks), 2 % of total study time	in the 5 th year (Practical Year)
	Food hygiene	75 hours (2 weeks), 1.5 % of total study time	in the 5 th year (Practical Year)

* As an option 350 hours (8 weeks) of this practical work can be served in a paraclinical institute, such as microbiology, virology etc., or at a veterinary public health office facility, artificial insemination station, in the pharmaceutical industry, or in a zoo. The figures represent the minimum resp. obligatory period (TAppV). If students stay longer this time is voluntary and is not calculated as obligatory study time. This period can also be taken in a TiHo clinic (2nd option offered for the practical year).

Table 3.1.5 Clinical rotations under academic staff supervision (excluding EPT)

Types	List of clinical rotations (Disciplines/Species)	Duration (weeks)	Year of programme
Intra-mural (VTH)	Choice from 6 individual clinical rotation options		
	1. Cattle (incl. ambulatory) or 2. Small Ruminants (incl. ambulatory), Clinic for Poultry, Field Station for Epidemiology or 3. Small animals or 4. Small mammals, reptiles and birds or 5. Horses 6. <u>Instead of intra-mural VTH Food Sciences or one paraclinical topic</u>	1. 10 weeks (460 hours incl. 20 h ambulatory) or 2. 10 weeks (460 hours incl. 20 h ambulatory) or 3. 11 weeks (460 hours) or 4. 10 weeks (460 hours) or 5. 10 weeks (460 hours) or 6. 10 -14 weeks (460 hours)	5 th (9 th or 10 th semester)
	- Reproduction	Integrated in all clinical disciplines	
Ambulatory clinics		22 hours (+ 20 h in case of VTH, see above)	3 rd or 4 th
FSQ & VPH	See table 3.1.4		3 rd or 4 th
Electives			

Table 3.1.6 Optional courses proposed to students (not compulsory)

Subjects	Lectures	Seminars	Supervised self learning	Laboratory and desk-based work	Non-clinical animal work	Clinical animal work	other	Total
	A	B	C	D	E	F	G	H
Instruction scientific work		x	x					
IT, statistics			x	x				
Special clinical treatments						x		
Clinical topics			x		x			
Current research topics		x	x					
Special lab. methods		x		x				
E-Learning tutorials			x				x	

3.2. Comments

In addition to the description of curriculum hours in Tab. 3.1.1, the TAppV requires compulsory "interdisciplinary subjects" (Querschnittsunterricht) in clinical education and in food hygiene (196 hours). In these interdisciplinary subjects contents of clinical subjects are implemented in combination e.g. with subjects dealing with the effect of ionising rays, environmental contamination as well as food, meat- and milk hygiene. All stages of food production (examination of live animals, diseases of live animals and their counterparts seen in carcasses) are integrated in this programme. Problem-based teaching is provided in small groups. Preclinical subjects are taught to a certain degree in an interdisciplinary content with clinical teachers in order to enhance students' interest in preclinical subjects. Virtual patients and interactive online learning programme in preclinical and clinical subjects amend the program.

3.3. Suggestions of improvement

The current TAppV needs a certain modification. Working with the respective authorities, stakeholders and the other four faculties teaching veterinary medicine in Germany the TiHo is involved to constantly review and modify the current TAppV.

4. Facilities

4.1. Factual information

4.1.1. Description of the location and organisation of the facilities used for the veterinary curriculum

The TiHo is primarily located on two sites approximately 4 km apart. The **Bischofsholer Damm Campus** is situated 2 km from the town-centre and is connected to the **Bünteweg Campus** by a tram line and a public road with a cycle track (maps are provided in the appendix).

In 2010, the new **Clinic Complex at Bünteweg** was opened with the three clinics Small Animal Clinic, Clinic for Horses and Clinic for Pets, Reptiles and Pet and Feral Birds. The Clinic Complex provides optimal facilities and equipment for teaching, research and services for these three clinics.

In 2011, the TiHo has reorganised and expanded its wildlife research and opened the **special field station in Büsum**, Schleswig-Holstein (approximately 300km apart at the Northern Sea) for research on marine mammals, including harbor seals, gray seals, harbor porpoises, dolphins and minke whales.

In addition, the TiHo maintains its Farm for Education and Research in **Ruthe** (20 km south of the site Bischofsholer Damm) and the Field Station for Epidemiology in **Bakum** (approximately 200 km to the north-west).

The recently inaugurated Research Centre for Emerging Infections and Zoonoses (RIZ) based at the TiHo is located in new state-of-the-art research buildings. Recommended by the German Council of Science and Humanities (Wissenschaftsrat), RIZ is financed by state and federal government. It spans, besides technical areas, more than 4.000 square meters scientific area for an estimated cost of about 40 million Euros, and includes stables to perform large animal experimental research and laboratories for biosecurity levels 2 and 3 work. This new centre houses interdisciplinary research groups from the TiHo and collaborating institutions and addresses One Health issues associated with food-borne, vector-borne, and emerging zoonoses as well as highly contagious animal infections.

4.1.2. Description of the premises for:

a) Lecture halls			
Bünteweg Campus (BW), Bischofsholer Damm Campus (BD)			
Campus	Size of lecture hall	number	Total places
BD	More than 190 places	3	887
BD	Less than 190 places	14	1.414
BW	More than 190 places	2	5.24
BW	Less than 190 places	9	8.10
	Total BD+BW	28	3.635
b) Premises for group work (<i>seminars, tutorials, ..</i>)			
Bünteweg Campus (BW), Bischofsholer Damm Campus (BD)			
Campus	Name of building	No of rooms	Total size in m ²
BD	Clinical Skills Lab	3	108
BD	Several institutes at BD	10	550
BD	Mensa etc.	2	147
BW	Clinic Complex	9	310
BW	Several institutes at BW	6	317
BW	TiHo-Tower	4	352
	Total BW+BD	34	1.784

c) practical work (<i>laboratories, rooms for clinical skills room on dummies, ..</i>)			
Bünteweg Campus (BW), Bischofsholer Damm Campus (BD)			
Campus	Name of building	No of rooms	Size in m ²
BD	Clinical Skills-Lab	13	265
BD	Clinics at BD	2	170
BD	Several Institutes at BD	18	1.545
BW	Several Institute at BW	8	450
BW	Teaching Buildings	11	1.050
BW	Clinic Complex	5	380
	Total BD + BW	57	3.860

4.1.3. Description of the premises for housing:

Species	No. places	Size in m ²
Wards for Healthy animals		
Dogs	55	330
Cats	50	300
Small Mammals	<2000 (laboratory animals)	<350
Reptiles (frogs)	20	15
Ornamental birds	29	15
Cattle	54	316
Horses	19	220
Pigs, Small ruminants, South American Camelids	43	480
Chicken, ducks, pigeons, turkeys	28	16
Fishes	2200	64
Wards for Hospitalised animals (day ward, intensive care units)		
Dogs	83	310
Cats	42	140
Small Mammals, ornamental and feral birds, reptiles	100	76
Cattle	93	930
Horses	50	600
Pigs, Small ruminants, South American Camelids	30	108
Fishes	20	10
Isolation wards		
Dogs	30	175
Cats	8	100
Small Mammals, ornamental and feral birds, reptiles	10	7
Cattle	19	190
Horses	4	51
Pigs, Small ruminants, South American Camelids	16	240
Fishes	Depends on no. of hospitalised and healthy fishes	

Premises for farm animals (Ruthe)

Health farm animals for teaching are kept at the Farm for Education and Research in Ruthe with about 236 ha incl. 41 ha of pasture.

Building	Species	No. places max.	Size in m ²
Hen house	Laying hens	3.664	463
Hen house	Young hens	3.927	114
Piggery	Sows	85	648

Piggery	Boars	2	
Piggery	Piglets	240	149
Sty for	Mini-Pigs	80	911
	Cattle	40	
Cattle barn	Dairy cows	110	1.912
	Cattle	47	
	Calves	33	
Housepoultry	Broilers	18.330	1.221
	Turkeys	4.716	1.229
	Broiler	9.457	569
	Peking ducks	3.250	571
Total		43.981	7.787

4.1.4 Description of the premises for:

a) Central clinical support services			
Species	Equipment	No of rooms	Total size in m²
Small animals	no. consulting rooms no. surgical suites	35 incl. special rooms (Xray etc.) 10 + preparation rooms	630 incl. special rooms (Xray etc.) 480 incl. preparation
Small mammals, reptiles and birds	no. consulting rooms no. surgical suites	16 incl. special rooms (Xray etc.) 2 + preparation rooms	180 incl. special rooms (Xray etc.) 77 incl. preparation
Equine	no. examination areas no. surgical suites	12 + special rooms (Xray etc.) 5 +preparation rooms	670 incl. special rooms (Xray etc) 350 incl. preparation
Cattle	no. examination areas no. surgical suites	8 5	260 incl. preparation 185
Small ruminants and pigs	no. examination areas no. surgical suites	3 incl. special rooms (Xray etc.) 2 + preparation	70 incl. special rooms (Xray etc.) 100 incl. preparation
Pigs (Bakum)	no. examination areas no. surgical suites	1 -	67
Other	no. examination areas no. surgical suites	1 for fishes	15
b) Diagnostic services including necropsy			
<p>Routine clinical laboratory diagnostics are performed in each clinic specialising in the respective animal species. In all diagnostic laboratories of the clinics and institutes relevant teaching is held; students are taught the techniques and spectrum of methods of analysis in small groups.</p> <p>Facilities are designed to host small students groups for teaching purposes.</p>			
Unit	Equipment	No of rooms	Total size in m²
Institute of Pathology	Necropsy	6	300
Bakum, Epidemiology	Necropsy	1	67
Others	Necropsy	2	30
	Total necropsy		400
Campus BD	Laboratories >25 m ²	About 77	3.000
Campus BW	Laboratories >25 m ²	About 100	5.000
Bakum, Epidemiology	Laboratories >25 m ²	5	100

Büsum ITAW	Laboratories >25 m ²	8	300
	Total diagnostic		8.400
c) FSQ & VPH (slaughterhouses, foodstuff processing units...)			
Unit	Equipment	No of rooms	Total size in m²
Institute of Food Quality and Food Safety	Foodstuff processing unit for training and teaching	3	Total 75
Institute of Food Quality and Food Safety	Slaughterhouse Facilities for training and teaching	3	Total 200

Slaughterhouse facilities

An in-house facility for the training of students is available in the Institute of Food Quality and Food Safety. In order to obtain suitable material, the TiHo has access to a large number of slaughterhouses in Lower Saxony, from which carcasses can be collected for student teaching in the in-house facilities. The contacts aid in training students in their practical period, for training graduate students and for research projects.

Foodstuff processing unit

The TiHo has a small in-house foodstuff processing unit which provides appropriate access for undergraduate students. A butcher is employed in the Institute of Food Quality and Food Safety to provide professional instruction in the practical aspect of meat processing and sausage production. To obtain additional material for teaching, the Institute maintains close contacts to several food processing companies which regularly provide samples and permit visits by groups of undergraduate students.

4.1.5. Description of the premises for:

a) Premises for study and self-learning			
Bünteweg Campus (BW), Bischofsholer Damm Campus (BD)			
Campus	Name of Building	No of rooms	Total size in m²
BW	Library	1	53
BW	Computer-Teaching, 3rd Floor	2	171
BW	Teaching Building 3, Foyer Institute of Pathology and RIZ	3	310
BW	Teaching Building 1, Pylorus	1	155
BD	Aula- old „Pylorus“	1	89
BD	Clinic for Cattle	3	52
BD	Institute of Anatomy	2	280
b) Premises for catering			
Bünteweg Campus (BW), Bischofsholer Damm Campus (BD)			
Canteens provided for students belong to the Hannover student services, which organize and administrate the related facilities of all Hannover universities.			
The TiHo Tower canteen is located at Bünteweg Campus. It is open from 8.10 a.m. until 2.30 p.m., with snacks on offer in the morning and a choice of various dishes for lunch (11.40 a.m. until 2.15 p.m.).			
The canteen Caballus belongs to the campus Bischofsholer Damm. It is open from 12 p.m. until 2 p.m. for lunch, i.e.; no breakfast or evening meals are served. For lunch, a complete cooked meal is offered with a choice of various dishes.			
A privately running cafeteria, the Pylorus on the Bünteweg in Teaching Building 1, is open from 7 a.m. until 5 p.m. and offers a meal of hot dishes, salads, sandwiches and snacks.			
Campus	Name of Building	Size in m²	
BW	Canteen TiHo Tower	250	
BW	Cafeteria “Pylorus” (private)	155	
BD	Canteen “Caballus”	262	
Ruthe	Teaching building, refectories	34 + 42	

c) Premises for locker rooms			
Bünteweg Campus (BW), Bischofsholer Damm Campus (BD)			
	Name of building	No. Room >10m²	Total size in m²
BD	Clinics at BD	10	150
BD	Institutes at BD	20	490
BD	Clinical Skills Lab	7	90
BW	Clinic Complex and Unit of Reprod.Medicine of the clinics	13	246
BW	Institutes at BW	12	324
	Total BD + BW	62	1.300
d) Premises for Accommodation for on call students			
Bünteweg Campus (BW), Bischofsholer Damm Campus (BD)			
BD	Institute of Physiology, Anatomy	2	25
BD	Clinics at BD	7	75
BW	Clinic Complex	12	110
	Total	22	210
e) Premises for leisure			
Bünteweg Campus (BW), Bischofsholer Damm Campus (BD)			
Veterinary students are entitled to use the main sports facilities of "HochschulSport" located next to the University of Hannover Campus and Medical University of Hannover			
BW	Parent-Child-Room in TiHo Tower, 1st floor	12	
BD	Parents-Child-Room "TiHo-Nest"	56	2 rooms (one with PC working station, one with kitchen), bathroom

4.1.6. Description of the vehicles used for:

Use	Number	Size	Equipment	Clinic, institute
a) students transportation	22 vans	7-9 places, Occasional rent/lease of busses for excursions and field trips		Most of the clinics and institutes
b) ambulatory clinics	6 vans, 2 trailers	Each van 7-9 places	Equipment for clinical treatments, trailers for claw trimming, scales for livestock animals	Clinics and others
c) live animals transportation	3 lorries, 6 vans, 3 trailers	1 for 2 horses, 2 for 2 cows, 6 for sows, piglets, goats, sheep, chicken	Equipment for animal transportation	Clinics, ambulatory clinic
d) cadavers transportation	2 vans, 3 trailers	3 trailers for cadavers up to size of a cow 2 vans for little species	Cool boxes	Institutes for pathology, food sciences, wildlife animals, genetics, clinic for poultry, others

4.1.7. Description of the equipment used for

a) teaching purposes

All lecture halls are equipped with modern technical facilities for teaching (beamer, in part with intercommunication systems and interactive smart boards, one hall especially equipped for lecture recording)). Small group teaching, practical work and supervised work in laboratory courses require a significant number of repetitions and a large number of rooms in which group work can be held. These rooms are equipped with modern technical equipment, like PC, beamer, in parts with smart boards and intercommunication systems, WLAN in all areas. The clinic for horses has observing areas for students to follow surgery treatments.

b) clinical service

The clinics and institutes are equipped with modern technical facilities for diagnostics and therapy. All students have access to state-of-the-art equipment.

4.1.8. Description of the strategy and programme for maintaining and upgrading the current facilities and equipment and/or acquiring new ones.

Administration unit real estates and technology compiles a priority list of building measures showing the category (technical or scientific requirement of clinics and institutes), the time line (short-term: 1-2 years, middle-term: 3-5 years, long-term: more than 5 years) and the estimated costs. After presidium discusses and approves this list, the measures are executed in the proposed sequence. This procedure applies also for special projects like measures for energy saving ("Ökoprofit").

4.1.9. Description of how and by whom changes in facilities, equipment and biosecurity procedures are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

c) Changes and developing in facilities, equipment

Presidium is responsible for all decisions concerning changes and developing in facilities and equipment. Presidium discusses these plans with the senate that confirm the plans. The supervision and monetary control is carried out by the Foundation Board on basis of annual reports, internal and external audits. Presidium gets the needed information for decision making from the department real estates and technology, where all information about facilities are bundled and which has an overview of necessary facility maintenance needs

d) Implementation Biosecurity (health & safety management for people and animals, including waste management)

TiHo has to consider many EU and national legal regulations, which are implemented by a top-down-process, see Fig. 4.1.

Safety training for students and staff

At the beginning of each semester students or new staff are informed by the training supervisors about emergency escape routes. Safety rules in seminar rooms (allowed number of persons, behaviour in case of fire) are described as well.

Before working/assisting in the laboratory, students receive a general introduction about protective clothing (lab coat, gloves etc.), high risk persons (e.g. pregnancy), hazardous chemicals, general behaviour in lab and hygienic regulations. Digital handouts of the safety instruction are provided via "Studis" online system to all students. The attendance of this safety instruction is obligatory for all students and is documented by a signature of each student.

At the TiHo all hazardous or dangerous chemicals are registered and documented in an online based system, the DAMARIS system (Dangerous Materials Registry Information System). The students are informed about this online information system and how they can have access to the system with all information about risk assessment and disposal of chemicals.

Before farm visits, students are instructed on behaviour on farm, hygienic provisions and animal handling by the accompanying researchers.

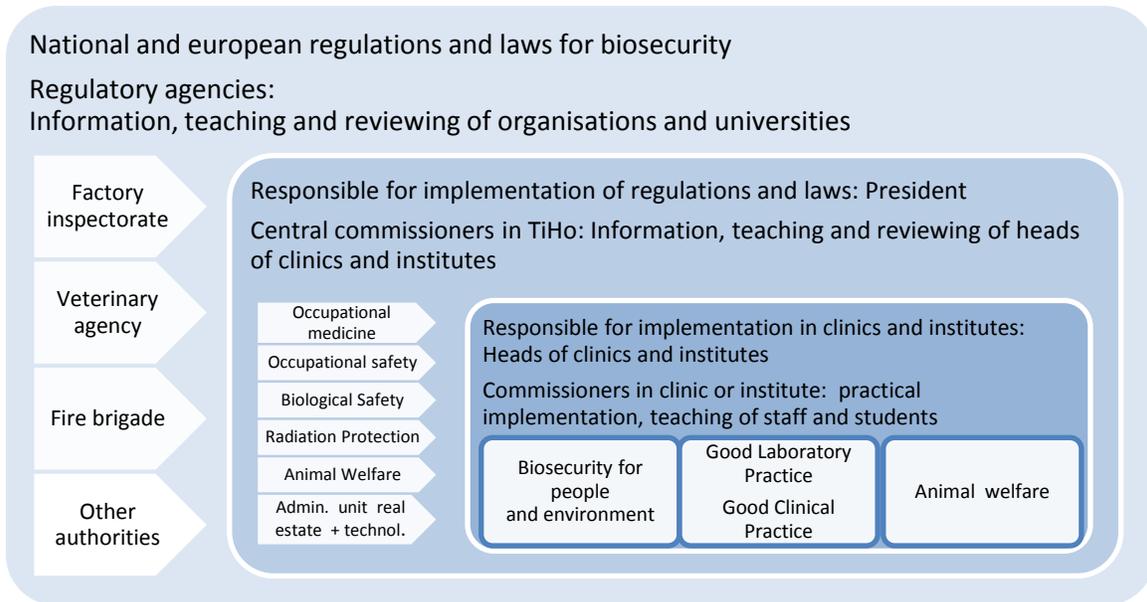


Fig. 4.1.

Waste Management (without carcasses, organs and tissue samples, see 5.1.5)

Waste management is organised according to the different types of materials on basis of several legal regulations.

Hazardous waste (such as used solvents, laboratory reagents) is collected separately in 5-10 litre containers in the laboratories and stored centrally until disposing according to national environmental regulations.

Household waste is classified either as recyclable or as disposable. These materials are collected in separate containers and are removed either by the municipal waste management authority or by TiHo employees. Disposable household waste also contains non-infectious waste from the various Institutes/Clinics (e.g., autoclaved bacteriological material). Infectious material is autoclaved before being disposed of with the household waste.

Non-infectious animal excretions such as urine and faeces are first collected with the straw bedding and placed in a container or on a muckheap. This manure is then either delivered to farmers in the surrounding area to be spread on their farmland or taken to the municipal dump. Milk from hospitalised cows is delivered as raw material to a bio-gas production facility.

The cleaning water used for cleaning the necropsy hall is collected in several tanks for possible subsequent thermal disinfection. Discarded formalin in the Institute of Pathology is collected separately in a underground tank which is cleared for final disposal by a specialised company.

Radioactive Waste with half-life under 100 days is disposed of on every property centrally in decaying storage facilities. There it is stored until the specific activity has gone below the critical value for every isotope. After the decaying time the residual materials are disposed of in the conventional manner (incinerated).

4.2. Comments

For researchers, an e-learning module is currently developed concerning handling for biosecurity in veterinary medicine.

The TiHo obtained the label "Ökoprofit", an audit concerning environmentally sound management of waste and energy, awarded by the city of Hannover.

4.3. Suggestions of improvement

In future, the module concerning biosecurity will be opened for all students (at least as elective).

5. Animal resources and teaching material of animal origin

5.1. Factual information

5.1.1. Description of the global strategy of the Establishment about the use of animals and material of animal origin for the acquisition by each student of Day One Competences

All patients are used for undergraduate and graduate student teaching and for research. Student groups take part during their clinical training and work and in every consultation and hospital rounds. In all clinics the students have possibilities for practical work. The clinics at the TiHo are organised in animal species clinics. This supports strongly the strategy in teaching of veterinary treatments and caring for animal patients in their entirety.

Besides large clinics with sufficient patient numbers of horses and companion animals, food producing animals are particularly well represented due to the location of the University in the State (Bundesland) Lower Saxony, the most important state for animal production in Germany. Therefore, herd health medicine is of paramount importance in the clinical services for farm animals. Herd health visits cover all food producing animals such as bovine, small ruminants, swine, fish and poultry. Due to the fact that pigs and poultry and to an increasing extent cattle are kept in Lower Saxony in large units with increasing biosecurity measures, the preventive herd health management and consulting is of utmost importance for the TiHo's teaching. Students accompany all herd health visits via the ambulatory clinic and the herd health service for small ruminants, via field visits during clinical rotation and in the practical year in Bakum as well as during EPT in veterinary practices. To meet the increasing need for specialised large animal practitioners the TiHo places emphasis on teaching in food animal herd health medicine.

The number of necropsies of all species is remarkably high. Additionally for students focusing on pig medicine, diagnostic necropsies of pigs are demonstrated and taught in the Field Station for Epidemiology in Bakum in the context of herd health visits.

5.1.2. Description of the specific strategy of the Establishment in order to ensure that each student receives the relevant core clinical training before graduation, e.g. numbers of patients examined/treated by each student, balance between species, balance between clinical disciplines, balance between first opinion and referral cases, balance between acute and chronic cases, balance between consultations (one-day clinic) and hospitalisations, balance between individual medicine and population medicine

The number of patients is balanced for the need of teaching and research in all clinics, a balance between complicated referral cases and first opinion cases is aimed for. About two third of patients are referrals, the clinics can control the acceptance of such patients. With one third first-opinion-cases, the need for teaching such cases is satisfied. For controlling purposes, the internal auditing provides periodical information about number of cases in the clinical units. Additional purchase of animals, especially cattle small ruminants and pigs, occurs for particular practical exercises such as bovine caesarean sections, anatomy and special surgical techniques.

The volume (hours and content) of clinical education is based on TAppV and comprises 518 hours. 460 of these hours are taken by the students in the "Practical Year" (9th and 10th semester). Prior to this Practical Year every student has balanced access to all species, clinical subjects, individual and herd medicine, referrals and first opinion cases, hands on and theory, because of practical training (Quoten), electives and small group practicals. The organisation of the Practical Year depends on a rotation principle of small groups up to 20 students between the clinical units. Within the clinical unit the groups are divided in parts down to two students per supervisor (see 5.1.6). So, every student gets the compulsory hours and contents (clinical disciplines, species) during this year. All students in Practical Year are involved in regular and emergency consultations including night and weekend shifts. In hospital rounds they learn about treatment and special needs of hospitalized patients, communication with the owners and organisational matters in a clinical setting.

5.1.3. Description of the organisation and management of the teaching farm(s) and the involvement of students in its running

TiHo has a modernised Farm for Education and Research on an area of 236 ha in the community of Ruthe about 25 km away from the TiHo in Hannover. About 175 ha are used for growing wheat, barley, sugar beet, maize and rape in a conventional way. About 41 ha of pasture are used for producing grass silage and hay. The livestock of the farm consists of 90 dairy cows and 10 beef cows in a herd of 200 cattle. 80 breeding sows are kept, their weaned piglets are sold to fattening farms. The offspring of 30 Mini-Lewe-Pigs is sold for research in human medicine. Furthermore, the farm has the capacities for 3700 laying hens, 4000 growing laying hens, 23400 broiler, 3000 turkey and 3300 ducks. All facilities are designed equivalent to those on current commercial farms.

After the second semester, all students (about 250 per year) have to spend 70 hours (2 weeks) in a **practical course** on the farm learning about animal genetics and husbandry, housing techniques, animal health, animal welfare, animal feeding, animal hygiene, botanic etc. Besides the practical training for all students in handling and management of food-producing animals (livestock farming at the Farm for Research and Education in Ruthe) they are involved with the routine work in the care and handling of cows, pigs and different kinds of poultry. All students are instructed in small groups about the risks of transmitting highly contagious animal diseases (primarily FMD).

Furthermore, the students receive instruction in veterinary measures necessary for evaluating and defining housing and feeding conditions (such as measuring air quality within stables, feeds and feeding quality; monitoring water supply techniques; prophylactic treatments such as vaccination; and hygiene management). Finally, computer-based management systems for cows, sows, and poultry that are widely used in modern livestock production are demonstrated to the students.

Interdisciplinary co-ordination takes place in the practical course at the Farm for Education and Research in Ruthe. All subjects related to animal production and food-producing animals are taught using a multidisciplinary approach, beginning at the farm level and reaching as far as potential influences on food quality is concerned. The aetiological disciplines in particular work together with the clinicians for cattle, swine and poultry to combine their specific knowledge and experience in order to optimise conditions for producing animal food products, including aspects of animal breeding, housing, feeding, animal welfare and risks to food safety such as bacterial contamination or antibiotic residues or resistance.

All animal keeping facilities on the farm are furthermore used for **researches** in sustainable subjects of animal health and welfare, animal nutrition, breeding and animal hygiene.

Moreover the farm is used for internal supplies of farm animals for different institutes and clinics in the TiHo.

5.1.4. Description of the organisation and management of the VTH and ambulatory clinics

All clinics except clinic for poultry, offer at 52 weeks per year general consulting 5 days per week from 8 a.m to 5 p.m. completed by emergency service at night (5. p. m. to 8 a.m.) and 24h at weekends. Hospitalisation, emergencies and intensive care units are offered by all clinics except by the clinic for poultry and ambulatory service.

Species/Clinic	Specialised consultations
Horses	Internal medicine (incl. cardiology), surgery (incl. orthopedics, traumatological surgery, anaesthesia), dermatology, neurology, diagnostic imaging, ophthalmology, dentistry, obstetrics and gynecology, andrology
Small Animals	Internal medicine (incl. cardiology), surgery (incl. orthopedics, traumatological surgery), anaesthesia, dermatology, neurology, oncology (chemo-, radiotherapy), physiotherapy, diagnostic imaging, ophthalmology, dentistry, reproduction
Small mammals, reptiles, birds	Internal medicine and surgery, diagnostic imaging in small mammals, reptiles, ornamental birds
Cattle	Internal medicine, surgery, orthopaedics, obstetrics, gynaecology, andrology
Pigs, small ruminants	Internal medicine, surgery, orthopaedics, reproduction in pigs, small ruminants (sheep, goats), South American camelids

Poultry	Commercial and backyard poultry, vaccination service for hobby farmers Consultings Monday 9 – 11 a.m., Thursday 2-4 p.m.
Ambulatory clinic	Mobile consultations (home visits) for cattle, pigs, small ruminants, horses in the region of Hannover

5.1.5. Description of how the cadavers and material of animal origin for training in anatomy and pathology are obtained, stored and destroyed

Anatomy

All cadavers dissected by students are either fresh (shortly after euthanasia), or cooled, or frozen and thawed, or stored in a saline solution. Single formalin-fixed cadavers of small ruminants are used to demonstrate in vivo situs of the digestive tract. Isolated organs of all body cavities used for studying in dissection courses or demonstration during anatomy and embryology lectures are stored in formalin or Peters' solution.

Pathology

Cadavers for training of necropsies are either obtained from animals regularly submitted for diagnostic purposes or from animals submitted for nonhazardous disposal. This includes animals from university clinics and from external sources (e.g. veterinary clinics, veterinary practitioners, owners). Cadavers are either fresh (shortly after euthanasia or death), cooled or frozen and thawed. After necropsies, interesting organs / tissues / cases were either cooled (for short term use), frozen (for long term storage) or fixed in 10% neutral buffered formalin (for long term storage and multiple uses). Furthermore, interesting biopsy samples, submitted fixed in 10% neutral buffered formalin for diagnostic purposes, are preserved for teaching purposes.

All formalin-fixed specimens (anatomy and pathology) are rinsed several times with water until the fixative is removed before the students come into contact with the samples.

Students should be exposed to a variety of animals and diseases entity to learn how to make descriptions of alterations, formulate diagnoses and to distinguish pathological changes from post-mortem artefacts. Moreover, students will learn to apply different terminology for diagnosis, differential diagnoses, morphological and etiological diagnoses. Finally analysis of necropsy findings will provide a better understanding of diseases mechanism and pathogenesis. Furthermore, investigations of various species will foster comparative diagnostic skill in veterinary medicine in general. Additional sources of material for the teaching of necropsies and pathological anatomy, including slaughterhouse material:

- Small Animal Clinic and Clinic for Small Mammals, Reptiles and Birds: euthanised patients
- Clinic for Pigs, Small Ruminants and Forensic Medicine: organs from slaughtered animals (genitals, lungs and extremities)
- Clinic for Cattle: distal phalanxes, udders, tails, uteri, heads, intestines, pieces of skin, pieces of ruminal walls, pieces of abomasal walls, testicles with scrotum, complete abomasi, vaginae, frozen calves, animals for ruminotomy, pregnant animals for sectio caesura
- Clinic for Horses: horses heads and limbs
- Clinic for Poultry: organs, blood and faecal samples from poultry, pet and feral birds
- Institute of Parasitology: fresh bovine liver
- Institute of Food Toxicology and Chemical Analysis: udders, skin biopsies
- Institute of Animal Breeding: cattle, pigs

Zoology

For courses in zoology, animals are obtained from commercial providers like fisheries or hunters (birds). Breed lab animals for research (rats) are obtained from Medical School Hannover (MHH). They will be killed shortly before usage (fish, rats) or are stored frozen at -20 C. After classes cadavers are disposed at the Institute of Pathology of TiHo.

Carcasses, organs and tissue samples of necropsied animals are stored separately in walk-in refrigerators until removed by the local rendering plant. The material is separated into one of four different hazard and price categories and disposed of appropriately (once or twice a week):

- Necropsied and intact carcasses of large animals including horses, cattle, large zoo and wild animals are collected twice a week with individual registration of the species.
- Carcasses and internal organs of calves and small domestic ruminants and internal organs of necropsied large ruminants are removed once a week.
- Carcasses and organs of pigs, poultry, ponies, donkeys and foals are collected once a week.
- Carcasses of dogs, cats, small laboratory animals and small zoo and wild animals are collected once a week.

5.1.6. Description of the group size for the different types of clinical training (both intra-mural and extra- mural)

Type of clinical training	Group size
The group size differs not only for the different types of clinical training, but also within training sessions in accordance with the Peyton's 4-Steps-Approach, a widely used method of skill training: Demonstration (step 1) and deconstruction (step 2) take place in large groups, comprehension (step 3) and execution (step 4) take place in smaller groups.	
Intra-mural (see 3.1.4, curriculum)	
Clinical Skills Lab 1 st -11 th semester	Practical training: 1-5 students
Propaedeutic 4 th – 8 th semester	Groups of 5-10 students
Clinical trainings (Quote) 6 th – 8 th semester	50-80 (observation), 1-2 students assist in every "Quote" (practice, in the lecture hall), in addition hands on training in the stable with 3-5 students (outside the lecture hall) Referred patients (examination and report writing): 1-2 students Field clinical training, herd health visits: 2-4 students
Practical Year in clinics 9 th – 10 th semester	Rotation groups of 10-20 students for 10 -14 weeks, , the groups are divided down to 2-4 students per patient
Electives	2-10 students (clinical subjects)
Extra-mural (TAppV sections 54 and 55)	
Private practice or clinic 1x4 weeks, 2x2 months (16 weeks)	In most cases: 1 student, in big clinics partly up to 4, depends on organisation of clinics.
Governmental or private institutes in food hygiene (including slaughterhouse hygiene) and consumer protection 2x3 weeks	About 2-4 students, depends on organisation of institutes
Public veterinary service 1x2 weeks	About 1-2 students

5.1.7. Description of the hands-on involvement of students in clinical procedures in the different species, i.e. clinical examination, diagnostic tests, blood sampling, treatment, nursing and critical care, anaesthesia, routine surgery, euthanasia, necropsy, report writing, client communication, biosecurity procedures (both intra-mural and extra-mural)

a) intra-mural

At beginning of training in the clinics, students get guidelines and instructions for their behaviour in clinical settings. They are informed about special clothes (e. g. special kind of shoes, which colour for which area), biosecurity procedures and organisation issues in the special clinic. This information is also available on internet platform StudIS and bill-boards. On farm visits and in the clinic they are going through biosecurity procedures before they enter barns, bird rooms or necropsy hall.

After initial training clinical and communication skills (i.e. endotracheal intubation, intravenous catheterization, suturing techniques, blood sampling, set up of an anaesthetic machine, use of anaesthesia monitoring equipment, aseptic preparation, scrubbing in, etc.) with dummies in the Clinical Skills Lab, students will rotate through the specialty services of the different clinics and carry out all hands-on procedures. In groups of 2-4, students are assigned to the different services for 1 to 2 weeks and become involved with the management of the daily medical, surgical, intensive care, anaesthesia, emergency cases and nursing of hospitalized patients. This includes client communication, medical history, case report writing, clinical examination, blood sampling, developing a diagnostic plan and a treatment plan and documentation. Students are trained in reproductive and obstetrical treatments including cesarean sections and castration methods. Depending on the case load, students will be involved in euthanasia cases and the preceding decision making.

To ensure that each student on clinical rotation performs a minimum number of clinical procedures, in most cases they receive a log book with a syllabus of required procedures, which will be signed off by the clinician on duty after the student has performed this task. At the end of each rotation these log books have to be handed in and will be reviewed by the rotation coordinator to pass the rotation.

In the ambulatory clinic and the Field Station for Epidemiology students are involved in farm visits, herd health service and herd investigation including necropsies, diagnostic/laboratory tests. Practical Year students will participate in at least 2-3 additional farm visits during the collaborative cycles of clinic for poultry and the Clinic for Pigs, Small Ruminants and Forensic Medicine, while students choosing a full Practical Year cycle exclusively in the Clinic for poultry, will have the chance to see farms on a weekly basis.

Each student has to write several case reports: During clinical trainings and in Practical Year at least one per semester in every clinic and at least one in each clinical examination (over the whole study time total of at least 10 reports), which are discussed with veterinarian staff and other students.

b) extra-mural

For all extra-mural practical trainings, the TiHo offers guidelines and checklists (see download link in chapter 14) for the veterinary surgeons or animal clinics with all hands-on learning targets according to TAppV and the European System of Evaluation of Veterinary Training (ESEVT). These criteria are coordinated and agreed with the Federal Association of Practicing Veterinarians (BpT, see 3.1.8 and 5.1.6), which awards a certificate for qualified veterinary surgeries. Therefore, students can be sure to get qualified extramural practical trainings. The practical period of EPT are evaluated by students and supervisors (see download link in chapter 14). Demanded hand-on goals are for example kinds of examination techniques and injections, orthopaedics, cardiology, skin-disease, illness of the stomach/intestinal, communication with the owners, nursing etc. At least ten categories should be provided by the supervisor. Students get a certificate from the supervisor about these subjects. This is, together with the independent evaluation questionnaires of supervisors and the students, the important feedback tool and proof for TiHo (see 3.1.8).

5.1.8. Description of the procedures used to allow the students to spend extended periods in discussion, thinking and reading to deepen their understanding of the case and its management

Students deepen their critical thinking and understanding of case management in several problem-oriented learning courses during exercises in Clinical Skills Lab, clinical training (Quote), clinical lectures and in the Practical Year. Special e-learning tools (e. g. CASUS-programmes), interdisciplinary courses and courses in communication skills complete the learning programme.

During the clinical education students work on cases and prepare a presentation of the case including diagnostic strategy, differential diagnosis, pathogenesis, prophylaxis and treatment. In addition they receive histological and laboratory cases, which they will solve themselves and provide differential diagnosis, pathogenesis, prophylaxis and treatment during a discussion with a teacher. Also, they discuss their own reports with their peer group and with their supervisor, which encourage them in critical thinking.

During the Practical Year students on rotation in clinical routine and intensive care service become involved in the daily management of elective and emergency procedures. During didactic morning rounds the cases of the day and their possible problems and special considerations are discussed with the students. Students will be assigned to 1 or 3 cases per day and will take part in the case management of the whole clinical treatment (e.g. from premedication and anaesthesia induction to maintenance and monitoring, the recovery phase and planning the postoperative pain management and possibly intensive care measures).

All students have access to the relevant literature about the special diseases, management, nutrition, and hygiene, either in the library at the TiHo or at the clinics. They take part at journal clubs, where current clinical topics are discussed.

5.1.9. Description of the patient record system and how it is used to efficiently support the teaching, research, and service programmes of the Establishment.

The patient record system used is EasyVet. It was started in 2010 and is in use in all clinics at the University of Veterinary Medicine Hannover. All patient records including DICOM pictures of X-ray, CT, MRT and ultrasound, photos and movies (endoscopy, treadmill, examinations, surgery) and laboratory data are collected in one system and all is available at about 450 PCs and workstations. The high availability of all data supports internal communication, teaching and owner communication. The use of standardized input mask allows not only a reliable documentation of patient data, but also a retrospective availability for statistics that can be used for research and teaching. Also, financial data can be easily obtained. EasyVet also allows live transmissions of proceedings in the operation theatres, which is also used for teaching.

EasyVet contains about 250.000 cases (including old data imported from previously used systems) and adds 3-4 TB of picture data per year. Students have the possibility to read the data to prepare case discussions or record writing. The system is also used during clinical examinations.

5.1.10. Description of the procedures developed to ensure the welfare of animals used for educational and research activities

All institutions of the University of Veterinary Medicine, who want to keep animals for educational or research reasons, have to apply for permission from the competent authority. Housing conditions are controlled regularly by the competent authority together with the animal welfare officers of the university according to the Directive 2010/63/EU on the protection of animals used for scientific purposes. To support the animal welfare officers the university has appointed an animal welfare committee (members see 1.1.5)

Institutions/researchers/teachers, who intend to use animals for experimental or other scientific purposes, with known or unknown outcome, or educational purposes, which may cause the animal a certain level of pain, suffering, distress or lasting harm equivalent to, or higher than, that caused by the introduction of a needle in accordance with good veterinary practice needs have to apply for a notification or authorization by the competent authority. All applications have to be evaluated and approved by the animal welfare officers of the university before final submission to the authority. Animal welfare officers are appointed by the University according to the Directive 2010/63/EU on the protection of animals used for scientific purposes. Projects within the context of doctoral theses and PhD programmes are also registered by the university and have to be checked by the animal welfare officers, if all relevant animal experiments are notified or authorized by the competent authority (LAVES, Lower Saxony State Office for Consumer Protection and Food Safety).

5.1.11. Description of how and by whom the number and variety of animals and material of animal origin for pre-clinical and clinical training, and the clinical services provided by the Establishment are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

The steps of decision making and communication concerning the number and variety of animals and material of animal origin for pre-clinical and clinical training are shown in fig. 5.1.

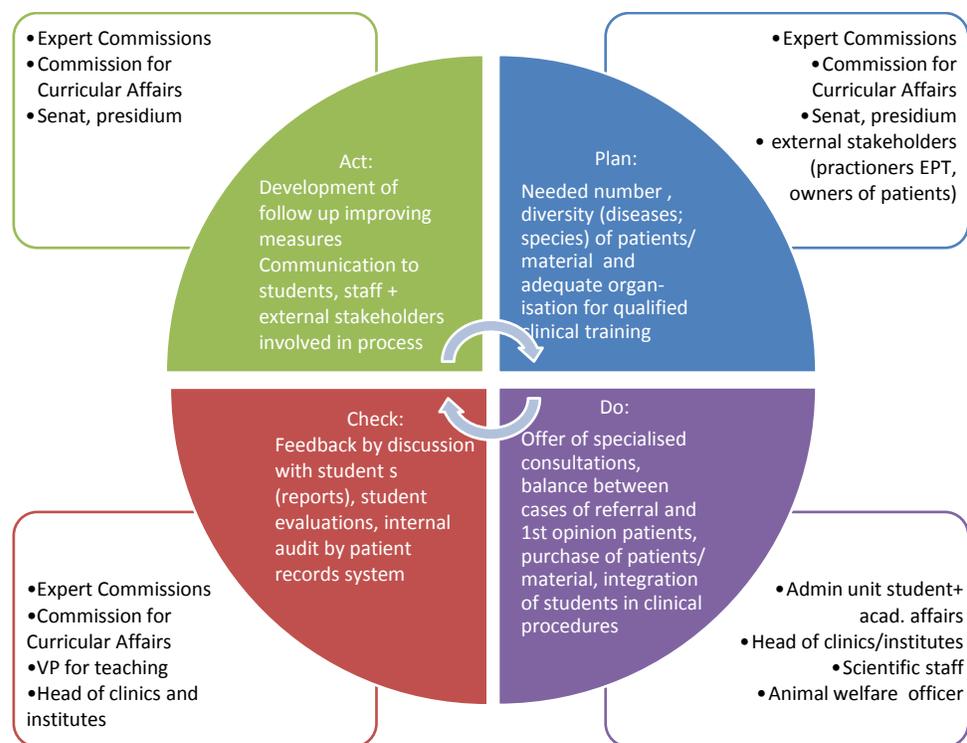


Fig. 5.1: Processes concerning needed animals and material of animal origin for teaching

Table 5.1.1. Cadavers and material of animal origin used in practical anatomical training

Notice: The constant values due to nearly constant number of students per year.

Species	2016	2015	2014	Mean
Cattle	8	8	9	8
Small ruminants	50	50	50	50
Pigs	47	47	47	47
Companion animals	60	60	60	60
Equine	14	14	14	14
Poultry & rabbits	146	146	146	146
Exotic pets	42	42	42	42
Others (specify) Reptiles	50	50	50	50

Table 5.1.2. Healthy live animals used for pre-clinical training (animal handling, physiology, animal production, propaedeutic)

Species	2016	2015	2014	Mean
Cattle	66	69	64	66
Companion animals	56	56	56	56
Equine	17	20	11	16
Fishes	40	40	40	40
Pigs	164	201	196	187
Small ruminants	85	128	113	109
Small mammals	3	3	3	3
Reptiles	5	5	5	5
Birds	100	100	100	100

Table 5.1.3. Number of patients* seen intra-murally (in the VTH)

* Each patient has to be officially recorded in the electronic patient record system of the Establishment and has to be individually examined/treated by at least 1 student under the supervision of at least 1 member of staff. Each live animal affected by one specific clinical episode is counted as 1 single patient, even if it has been examined/treated by several departments/units/clinics.

Species	2016	2015	2014	Mean
Cattle	1.191	1.296	1.224	1.237
Small ruminants	540	543	487	523
Pigs	189	266	189	215
Companion animals	15.650	15.407	14.267	15.108
Equine	3.213	3.322	2.901	3.145
Poultry	1.554	1269	14	946
Fishes	380	415	380	392
Small mammals, reptiles, birds, exotic	6.472	6.377	5.745	6.198
Pigeons	42	16	3	20

Table 5.1.4. Number of patients* seen extra-murally (in the ambulatory clinics)

* Each patient has to be officially recorded and has to be individually examined/treated by at least 1 student under the supervision of at least 1 member of staff. Each live animal affected by one specific clinical episode is counted as 1 single patient.

Species	2016	2015	2014	Mean
Cattle	5.870	5.951	4.693	5.505
Pigs	3.284	3.233	3.116	3.211
Small ruminants	2.168	1.337	1.703	1.736
Companion animals**	0	0	0	0
Equine**	125	150	131	135
Poultry (backyard)	57	149	264	157
Pigeons	100	0	500	200
Fishes	300	240	240	260
**extra-murally patients are seen mainly in EPT				

Table 5.1.5. Percentage (%) of first opinion patients used for clinical training (both in VTH and ambulatory clinics, i.e. tables 5.1.3 & 5.1.4)

Species	2016	2015	2014	Mean
Cattle	87%	88%	85%	87%
Small ruminants	80%	80%	80%	80%
Pigs	25%	25%	25%	25%
Companion Animals	33%	35%	39%	36%
Equine	37%	35%	38%	37%
Poultry	92%	96%	90%	93%
Pigeons	76%	25%	86%	62%
Fishes	95%	95%	95%	95%
Small mammals, reptiles, birds, exotic pets*	60%	60%	60%	60%

*about 25% of these animals consist of native wildlife patients brought to the clinic directly by the fire department/animal emergency ambulance

Table 5.1.6. Cadavers used in necropsy

Species	2016	2015	2014	Mean
Companion animals	340	361	338	346
Cattle	182	191	142	172
Small ruminants	67	49	49	55
Pigs, Pathology	169	176	236	194
Pigs, Field station Bakum	1.521	1.696	1.128	1.448
Equine	142	124	120	129
Poultry, rabbits	186	81	105	124
Exotic pets:				
Reptiles, amphibian	12	28	12	17
Aviary birds, wild birds	81	86	76	81
Insectivores, spiders	5	8	2	5
Mustelids	12	7	11	10
Rodents	63	72	48	61
Camelids	14	17	17	16
Cervids	19	12	17	16
Lagomorphs	3	0	0	1
Large Felids	4	3	4	4
Macropods	2	2	13	6
Marine Mammals	12	7	25	15
Primates	7	21	22	17
Wild canids	12	9	12	11
Wild ruminants	36	32	44	37
Fishes	248	204	204	219
others	21	26	20	22
Total	3.158	3.212	2.645	3.005

Other Species:

The unit “Fish Pathology and Fish Farming” treats ornamental fish. Here the patient number is constantly increasing, particularly for koi carp. The Institute possesses tanks with insulation possibilities. In addition, contracts exist between the Institute and fish farms for fish herd health management courses. The pathological examinations are undertaken by the Institute itself.

The associated Institute of Wildlife Research looks after various wildlife species in Lower Saxony in its teaching and research

Table 5.1.7. Number of visits in herds/flocks/units for training in Animal Production and Herd Health Management

Species	2016	2015	2014	Mean
Cattle (Ambulatory Clinic and Clinic for Cattle)	1.484	1.562	1.648	1.565
Small ruminants	394	342	299	345
Pigs	484	309	363	384
Poultry	38	52	39	43
Fishes	18	18	19	18
Horses (teaching farm)	26	28	28	27

Table 5.1.8. Number of visits in slaughterhouses and related premises for training in FSQ**Important information:**

The number of visits in slaughterhouses and related premises for training in FSQ are visits in intern organised elective courses at TiHo. They are a further offer **in addition to the obligatory external practical training with an amount of at least 100 hours in slaughterhouses (see 3.1.6).**

Species	2016	2015	2014	Mean
Ruminant's slaughterhouses				
Pig's slaughterhouses	1	1	1	1
Poultry slaughterhouses	3	1	1	2
Dairy processing plants	1	1	1	1
Dairy farms	1	1	1	1
Food-processing plants with a special focus on dairy products	1	1	1	1

5.2. Comments

The TiHo aims continuously at providing best possible educational support by an appropriate number of animals and material of animal origin in the broadest possible variety as a reflection of animals kept in agriculture and as pets in the community.

5.3. Suggestions for improvement

- Enforce further integration of the Clinical Skills lab in practical training,
- Continuous checks if the number of specialised cases in clinics are still appropriate for education
- Continuous improvement of the electronical recording of patients

6. Learning Resources

6.1. Factual information

6.1.1. Description of the main library of the Establishment:

The TiHo library provides books, journals, Doctoral and PhD-theses, proceedings, microforms and further media for all students and employees of the TiHo. Furthermore, it hosts the core collection of literature in the fields of veterinary science and general parasitology funded by the German Research Foundation (DFG) between 1949 and 2014. In 2015, the TiHo library has established the online discovery system *VetSearch* including an integrated access to relevant databases and catalogues.

The number of loans of physical items amounted to 51.238 in 2016. E-book access sums up to about 15.000 chapters used online and 1.500 downloaded books per year. While the number of subscription to printed journals has decreased during the last years, the number of subscribed e-journals is steadily increasing. A large number of electronic journals have been made available through consortia. TiHo students and staff can access licensed items within the complete local IP-range or read licensed e-journals and e-books via remote access at home or at other working places.

The TiHo Library is closely linked with the libraries of other universities in Hannover. All students and faculty members of all establishments of higher education have access to all libraries with a single admission pass. Students have the opportunity to receive a basic introduction to databases on a regular basis from library staff members.

a) Staff (Full-time equivalent, FTE) and qualifications

The head of the TiHo Library and her deputy have backgrounds in veterinary medicine, biology and library and information science. A library committee oversees the services of the library and advises on issues concerning co-operation between the library and clinics, departments and institutes. Needs and wishes of students and scientists as well as their satisfactions with library facilities and equipment have been monitored in 2015 and 2016.

14 FTE: 1 head librarian (Dr. vet. med. habil., Master in Library and Information Science (MA LIS)), 1 deputy librarian (Dr. phil. nat. academic librarian), 1 veterinarian, 6 graduate librarians, 2 library assistants, 3 further staff members.

b) Opening hours and days

The learning space of the TiHo library is open to the public for 51 hours on 6 days a week.

Monday - Thursday 09:00 - 19:00h, Friday 09:00 - 17:00h, Saturday 10:00 - 13:00h

c) Annual budget (excluding personnel, building maintenance)

2014 € 648.000 + € 227.000 Third party funds + € 45.000 Study quality budget

2015 € 648.000 + € 212.000 Third party funds + € 87.000 Study quality budget

2016 € 648.000 + € 58.000 Third party funds + € 97.000 Study quality budget

Study quality budget enable the purchases of textbooks and e-books and an adjustment of opening hours according to students' and teacher's requests.

d) Facilities: location in the campus, global space, number of rooms, number of seats

Campus Bünteweg: Bünteweg 2, Building 262,

global space 1.765 sqm, thereof: 921 sqm freehand magazine and reading rooms with 95 workplaces, 348 sqm closed magazine space.

e) Equipment: number of computers, number of electrical connections for portable PC

W-LAN for mobile devices is available in the complete learning space of the library, furthermore, there are 11 computers, 5 electrical connections for portable laptops. Electronic resources of the library are available within both sites of the TiHo (via IP range) including computer study rooms for students and from abroad.

f) Available software for bibliographical search

Since 2015 the TiHo library has established the discovery system *VetSearch* (EDS from EBSCO Information Services). The unified index of this system includes databases and catalogues, works with modern search engine technology and presents a frontend with basic or advanced search options.

The searches are run in parallel in the GVK-PLUS catalogue and the databases CAB Abstracts, MEDLINE, Science Citation Index/Web of Science, AGRIS, DOAJ, BASE, SciELO as well as further databases from journal publishers and other institutions. Results can be refined, limited or expanded and may be saved or exported.

The OPAC (Online Public Access Catalogue) shows the local holdings and is part of the GVK-PLUS catalogue, which covers the holdings of about 84.7 million records of more than 500 GBV member and associated libraries, including 43,2 million articles from over 27.900 scientific periodicals. Via Inter Library Loan (ILL) or subito document delivery service a total of over 105,3 million separate catalogue entries of books, conference proceedings, periodicals, articles, dissertations, microfilms and electronic resources as well as the periodicals of all subito-supplying libraries and other university libraries from Germany can be ordered online (<https://gso.gbv.de>).

The software for bibliographic search and the underlying licensed content is accessible within the IP-range of the campus or via remote access (Shibboleth or EzProxy).

Open access: the TiHo promotes open access via publication of doctoral thesis on a TiHo server <http://elib.tiho-hannover.de/dissertations/dissertations.html> (via an institutional membership with BMC and via a publication fund supported by the German Research Foundation (DFG)). Open access consultation is part of the library service.

Catalogues: OPAC, GVK Plus incl. Online Contents, and further catalogues

Databases: CAB Abstracts, Web of Science and free databases like PubMed etc.

Discovery System: VetSearch, a unified index including databases and catalogues

g) Number of veterinary books and periodicals

Library stock, end of 2016:

27.109 veterinary monographs, 9.677 textbooks

71.699 dissertations (incl. 11.000 online resources)

7.705 veterinary proceedings, 574 journals in print

h) Number of veterinary e-books and e-periodicals

E-books are accessible from the homepage of the library, via the local catalogue or via the discovery system. Commercial e-Books are made available (by purchase or loan) as an addition to printed resources. Decisions follow student's requests or are the consequence of e-book trial periods and their usage statistics. As of end 2016 over 14.000 titles are available that can be accessed simultaneously by an unlimited number of users.

Library stock, end of 2016:

274 veterinary e-books, 2.894 e-books of related life sciences, 7.296 licensed e-journals

11.000 electronic dissertations, 1.436 digitized historical veterinary monographs

i) Number of other (e)books and (e)periodicals

Library stock, end of 2016:

Total of 259.299 units, 14.059 e-books

Access to free e-journals: 7.164 from medicine, 3.093 from biology, 1.652 from agriculture, plus various numbers from further subjects.

Historical books are electronically available through digitalization projects of TiHo library. The "Digital Library Veterinary Medicine" actually contains 1.436 monographs published between 1.550 and 1.908 (<http://viewer.tiho-hannover.de/viewer/browse/>).

6.1.2. Description of the subsidiary libraries (if any)

Clinics, departments and institutes have small subsidiary libraries. Journals and books present in these libraries are not catalogued in the main library. Faculty members and students have access upon request and permission of the respective institute during working hours.

6.1.3. Description of the IT facilities and of the e-learning platform (dedicated staff, hardware, software, available support for the development by staff and the use by students of instructional materials)

State-of-the-art IT-Infrastructure is available to support veterinary education, research and services. The "Department Information Technology and Data Processing (IDS)" (head: veterinarian and specialist for IT and documentation) provides the IT-administration services, consisting of four sub-teams (each comprising two to four employees with special vocational training or study grade):

1. PC and User- Support

Support is provided for both 1.200 employees and 2.400 students and approx. 1.600 Desktop-PCs and Laptops.

The lifecycle of PCs is administered by the use a centralized PC-Management. The lifecycle of human accounts is administered by the use a centralized identity management system importing account data from both CMS (see below) and human resource information system. Access to both data (home and group directories, mail) and applications is then granted using a standard directory service.

A campus management system, CMS for short, is an IT system covering all the business processes within the "lifecycle" of a student, such as application and admission matters, change of university, enrollment, change of subject or module, removal from the register of students, and the guest student program application. The TiHo has used the HIS – Software (Hochschul-Information-System) for over a decade and decided update to the actual software version (His In One), in December 2016.

An in-house developed management platform (TiHoStudIS/DozIS) with restricted access to students and staff, provides access to instructional materials, online lectures, learning programmes, important dates and information and grants access to self service functions provided for students.

A standard learn management platform (Moodle) was established by the beginning of 2017 and starts to enhance self - service functions for educational purposes.

2. Server and Storage

The central infrastructure for server and storage consists of:

- 3 Server rooms providing adequate space, electricity, cooling, Access to 10 GBit/s-Ethernet-and 8 GBit/s-FC-Backbone, access control and supervising options in different buildings.
- 16 Blade servers (2-Slot-Intel-Xeons, up to 2 x 24 Core CPU and up to 512 GB RAM) running vMware vSphere operation system as hosts for virtualization purposes.
- 250 virtual machines providing services and applications required at the Vet School.
- A fibre channel based Storage Area Network for linking Storage capacities for virtual machines /databases including two separated storage nodes and storage virtualization
- Four three node Network attached storage clusters for storage unstructured data (Home-Drive, shared Storage for groups). Access to these storage systems is also provided by means of a web based cloud interface
- A fibre channel attached backup device enabling fast backup and restore capabilities by means of in place deduplication.

3. Network

LAN and WAN Capacities are provided for Data and Voice based Services for Employees and Students.

4. Electronic medical records (head: veterinarian and specialist for IT and documentation)

Two central systems provide access to electronic medical records for both clinical data and laboratories. Support, Service and teaching requirements for staff and students raised by these EMR systems are fulfilled by two veterinarians qualified for the task (see 5.1.9).

6.1.4. Description of the available electronic information and e-learning courses, and their role in supporting student learning and teaching in the core curriculum

Searches in library, bibliographic database management

Using library and bibliographic database management systems are essential and in general for study and teaching, especially for writing case reports and running research projects. Four online tutorials give an introduction into searches in the library, the catalogue, the discovery system, and the electronic journals library. They are available on the service pages of the library and within the TiHo YouTube channel. A campus license for the software EndNote enables students and staff to benefit from this research and reference manager. The library offers introductory workshops to the usage of EndNote for study, research and writing purposes.

E-Learning Service / E-Learning consulting

E-learning offers support for the classical teaching methods and 1,5 FTE (veterinarians) are allocated for this service. Students can deepen independently their knowledge, teachers have the possibility for flexible lectures. E-Learning consulting is embedded in the networks competence centre for e-learning, didactics and education research of veterinary medicine (KELDAT) in Germany and Network Of Veterinarians In Continuing Education (NOVICE)), which improve and enhance markedly the offer for students and staff and seeks to extend the use of digital media tools in veterinary education and lifelong learning.

E-Learning Service / E-Learning consulting in general

The following tools and programs are completing the curriculum

- Videos and online tutorials on YouTube channel (e.g. e-examination, instructions, literature research) , esp. for skills lab stations
- Case-based learning and authoring tool CASUS® with 375 cases (long case and Key Feature, multimedia learning and authoring system, restricted access for students and staff, training for staff by the e-learning-department, + online tutorials)
- Online lectures, Podcasts, Recordings, training programmes, incl. Adobe Connect webinars from universities in Lower Saxony (project: eCULT+) and other veterinary faculties (KELDAT)
- Learning programmes for histology, Heartsound Library, Virtual Microscope (Cytology, histology, and microscopic anatomy)
- Videos (anatomical dissection Horse, Food- and Hygiene-examinations)
- assistance with the use of PowerVote, an audience response system or other web-based feedback systems, support for the use of AdobeConnect
- Sample of electronic examination, support for the use of the e-examination platform
- In general manuscripts and powerpoint presentations of lectures on platform (TiHoStudIS/DozIS)

E-Learning Service / E-Learning consulting: Electives:

- Elective courses with use of e-learning (blended learning) using Adobe Connect as videoconference tool, or CASUS® cases as interactive learning tool
- Elective course for first year students about e-learning and e-examinations
- Introduction “how to learn”: “Prokrastination” and learning tools at TiHo (1.Sem)
- Economics for veterinarians (5./7.Sem)
- Progress Test Veterinary medicine (1./3./5./7.9./11.Sem)
- E-Learning Echocardiography (5./7.Sem)
- E-Learning cardiological propaedeutic (5./7.Sem)
- Molecular pathomechanism (3./5./7. Semester)
- Biochemistry of infection (3./5./7. Semester)

6.1.5. Description of the accessibility for staff and students to electronic learning resources both on and off campus (Wi-Fi coverage in the Establishment and access to Virtual Private Network (VPN))

Several IT services (e. g. e-mail, file services, library, TiHo-cloud) are available for staff and students via a Web Interfaces as well from abroad. TiHo runs approximately 450 WiFi antennas. Due to the participation to both EduRoam and Shibboleth Federation members of the Vet University can be authenticated against

services from other academic institutions as well as external academic guests can use parts of our IT-equipment, or might gain access to WiFi by a ticket system.

6.1.6. Description of how the procedures for access to and use of learning resources are taught to students.

At beginning of every semester, the support staff of IT administration gives introduction to central IT facilities for new students. They impart the essentials for access and using IT infrastructure (e. g. TiHo-Card, E-mail account, file service and printing) and show the possibilities of the information platform TiHoStudIS. IDS offers several printed tutorials for the most common software, e. g. MS-Office, and e-tutorials (e. g. for connections between TiHo-account to smartphones and private PCs). Furthermore, IDS offers personal consulting hours. With this knowledge, it is easy to access several-learning offers, the online tutorials and information available on platform StudIS/DozIS. Newsletter from IT-service and E-learning consulting ensure the continuing information about new technologies for students and staff.

The introduction into the library starts during the welcome week of the first year. It is accompanied by introductory online tutorials on the service pages of the library and personal guidance from the help desk at the library upon request. When requested by the responsible professors, librarians participate in graduate courses.

“Searching for literature” is the title of an introductory, facultative seminar for undergraduates and graduates. It is followed by “Effective searching - an update”, a seminar for graduates and PhD students. These seminars teach the features of search engines, different kinds of databases, catalogues and discovery systems. Students elaborate effective search strategies and discuss the requirements of narrative versus systematic reviews.

Bibliographic database management is covered in workshops for undergraduates, graduates and PhD students. These workshops teach how to manage bibliographic data effectively, including retrieval and display and changes in format to suit the requirements of journals publishers when submitting a paper. The features of EndNote are explored by means of various examples.

The deputy librarian also works as open access officer and serves as an interface between the library and the interests of the institution’s students and scientists. She introduces students and staff to open access topics and offers consultations.

6.1.7. Description of how (procedures) and by whom (description of the committee structure) the learning resources (books, periodicals, databases, e-learning, new technologies, ..) provided by the Establishment are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

Library

Books, periodicals and databases are bought or licensed by the TiHo library. Selection criteria for the books are expected usage of newly available books as anticipated by library experts and recommendation and purchase requests from professors in yearly queries. The students have the possibility to express their requests in a letter- and book-box outside of the library or in the students` evaluation. Periodicals are purchased or licensed upon requests from the faculty or as part of publisher packages within consortia negotiations. So-called *Big deals* of journal packages or databases are licensed in collusion with TiHo presidium. The application for an open access fund was carried out by the presidium. The library was in charge of its preparation, i.e. comparison of subscription versus publication costs on the basis of usage and publication statistics, and is now managing the publication fund.

New publication lists show newly available books, they are available on the library homepage and in a special newsletter. Photocopies of new book covers are presented in the entrance of the library. Students and staff receive information on tests and purchases of new e-books, new e-journal packages or new databases via e-mail communication. The library commission includes representatives from the groups of professors, scientific as well as technical assistants and students. The head of the library reports regularly to this committee on new developments in the library and receives feedback and advises from the committee on issues concerning co-operation between the library and clinics and institutes.

Library staff makes the purchased or licensed resources available, brings them into the catalogue and the electronic journals library, and is responsible for the communication of TiHo access variables (IP ranges, Shibboleth) to the journal publishers and to the providers of databases.

The library requests usage statistics from the publishers to gain insights into accesses and downloads of journal articles and e-book chapters. These usage statistics are the basis for subsequent subscription negotiations or for the cancellation of subscriptions.

E-Learning-Consulting

New supplies of e-learning tutorials and conceptions are discussed with teachers in the e-learning commission and decided from presidium and vice president for teaching. Many of new conceptions are developed within the framework of thesis projects. This ensures the participation and perspective of (former) students and helps to create tutorials on the basis of student's needs. The tutorials are available via StudIS, Youtube or in special electives online available via StudIS or in special electives.

Network among national and international veterinary establishments was supported and further developed. Funds were raised and projects were completed or started leading to an increase of e-learning materials by producing and sharing, further focus on more effective usage and evaluation of acceptance and effectiveness (VETlife, NOVICE, N²E², FERTHIK, vetVIP, KELDAT, AMeVITH, eCULT+). Within the project eCULT+ an interdisciplinary exchange about e-learning tools and utilities with 13 universities and 2 associations in lower Saxony was established (<http://www.tiho-hannover.de/studium-lehre/el/laufende-projekte/>).

New information technologies

Demand for new electronic data processing devices is based on the IT-developmental planning providing "state of the art" support by the "administration unit information technology and data processing (IDS)". Requirements of the university units emerging from their scientific or teaching activities are also considered. The IT-developmental planning and larger expenditures and investments need the approval of the presidium (steering committee).

6.2. Comments

To fulfil the special needs of veterinary issues, the heads of the library, the unit for e-learning and the unit of IDS including support of the medical record system medicine are veterinarians. Student's need of eLearning tools is conceived in research projects and downloads are gathered regularly. Regular updates of interactive cases (CASUS) and other learning resources are claimed by the eLearning consulting group. TiHo emphasises on the development of e-learning and e-library and on adjustments of its resources. Open Access-Publications are supported by the TiHo under considerations of the guidelines of the German Research Foundation (DFG).

6.3. Suggestions for improvement

The TiHo shall aim to enhance students' willingness to use e-learning resources at large to enforce continuous learning through advertising by teachers or introducing inverted classrooms.

7. Student admission, progression and welfare

7.1. Factual information

7.1.1. Description of how the educational programme proposed by the Establishment is advertised to prospective students

The TiHo advertises the study programme on following information ways:

- Detailed internet information about the study programme on www.tiho-hannover.de and further internet portals like www.studieren-in-niedersachsen.de, www.wissen-hannover.de or others (Youtube).
- Two “University’s Information Days” on campus for pupils in their last school years, every year in September: About 120 pupils per year use this possibility to receive information about the study programme and career possibilities for veterinarians.
- “Open Day” every two years: Interested people have the chance to see the facilities and have possibilities to receive information about study and working at the TiHo.
- Participation at the “Ideas Expo” (Ideenexpo) in Hannover, a well-visited biennial fair for pupils with special information about career possibilities in sciences, organised by government of Lower Saxony (last time in June 2017).

7.1.2. Description of the admission procedures for standard students:

a) Selection criteria

All issues related to “standard student” admission are laid down in a “Staatsvertrag” (state contract) between the 16 Federal States and the Federal Government of Germany. “Standard student” is here defined as applicant for first semester and coming from Germany or other EU-countries including associate countries. All standard students have to apply to a central Foundation for University Admissions (SfH, www.hochschulstart.de), in the city of Dortmund. Students originating from Non-EU countries and all applicants for second and higher semester send their application directly to the TiHo.

Veterinary medicine is a so-called “Numerus clausus” discipline; this means that the number of applicants is higher than the number of places at universities. In 2017 about seven applicants for each place in veterinary medicine at the TiHo were recorded. In comparison, the ratio of all applicants (5,762) to all places at all the faculties of veterinary medicine in Germany (1,050) was 5.5. The selection of students takes place at the Foundation for University Admissions, and is primarily based on the grade of the final exam at school. Currently, a grade of better than 2 on a scale from 1 (best) to 6 (worst) is required to have a chance of direct admission. The Foundation for University Admissions allocates 20 per cent of student places directly to applicants with excellent school leaving grades, a further 20% to those after a waiting period (at present about 4 years).

The remaining 60 per cent of the student places are allocated directly by the universities. The Foundation for University Admissions implements a pre-selection procedure among the eligible applicants, who have named the TiHo as first choice university and give proof of average grades of university entrance qualification up to 2.5. The applicants nominated by Foundation for University Admissions can participate in a veterinary medical orientated motivation test at the TiHo for ascertaining particular suitability. The test has been validated with veterinary surgeons in the various professional specialities. The questions are randomized every year and were evaluated and updated by an external specialized and accredited institute in 2016. The test lasts ca. 30 min. and is performed in parallel by 25 students at University computer terminals.

The TiHo compiles the ranking list for admission on the basis of the results of this test (weight 1/3) and the average grade of the schools final exam (weight 2/3). Furthermore, a bonus system grades natural sciences in school and additional vocational training related to veterinary profession lasting for at least 2 years.

Single students may be admitted without baccalaureate (Abitur) but with special qualifications.

Students from Non-EU-countries and students applying for higher semesters send their applications directly to the TiHo. The commission for admission prepares the ranking list on the base of the average

marks of former certificates. Furthermore, the commission for admission has the task to verify the equivalence of former study programmes. All procedures for these cases are described in the regulation for admission.

e) Policy for disabled and ill students

For disabled or ill applicants two per cent of the places are reserved. The potential students are checked and decided by Foundation for University Admissions.

f) Composition and training of the selection committee

The selection commission and the Presidium check the results of the internal selection process. The motivation test described above is evaluated and approved by a specialized institute. The admission is executed by the accredited body Foundation for University Admissions.

g) Appeal process

There is no appeal process due to legal regulation of capacity and admission (see 7.1.2). Only legal action against the calculated admission number of students is possible.

h) Advertisement of the criteria and transparency of the procedures

The criteria and the procedure for application are described on detail at www.hochschulstart.de.

Students from abroad (Non-EU states) have to send their application directly to TiHo, 3 per cent of the places are reserved for these potential students.

7.1.3. Description of the admission procedures for full fee students

The TiHo has no full fee students.

7.1.4. Description of how the Establishment adapts the number of admitted students to the available educational resources (facilities and equipment, staff, healthy and diseased animals, material of animal origin) and the biosecurity and welfare requirements

The number of students admitted each year is restricted. This number is calculated yearly on the basis of budget-staff and is fixed in the objective agreement with the ministry for sciences and culture about study offer (Studienangebotszielvereinbarung).

The **Teaching Obligation Regulation of Lower Saxony (LVVO)** is a state by-law. It specifies the fixed number of hours to be taught per year by each faculty member. The sum of the individual teaching hours to be given results in the **total teaching capacity** of an establishment.

The **Teaching Capacity Regulation of Lower Saxony (KapVO)** of Lower Saxony is a state by-law which, together with the teaching obligation regulation, forms the basis for the number of students to be admitted each semester; the number is calculated by dividing the total teaching capacity by the so-called Curriculum Norm Value (CNW). This abstract value given in the Teaching Capacity Regulation of Lower Saxony is a measure for the amount of teaching required per student in a certain subject. The CNW for veterinary medicine is 7.6. Due to these regulations the TiHo has a teaching load of 1,893.6 hours (WS 2017/18) for the total budgeted scientific personnel. These hours together with the adjustment of a certain dwindling factor 1,014 (set-off for students withdrawing from university course of studies, those changing their place of study) divided by the CNW have resulted in 254 student places/year for the TiHo from this year (WS 2017/18).

The TiHo has to adapt welfare, biosecurity and environment to the number of students. This adaption is only possibly by repetition of teaching hours gaining smaller student groups if necessary in respect to biosecurity and welfare.

7.1.5. Description of

a) the progression criteria and procedures for all students:

The requirements are regulated by the TAppV and by the specific conditions of study of the TiHo. The examinations are divided into three parts (See Chapter 3). Passing one part is a prerequisite for entering

the subsequent one. Failed examinations must be repeated in the following semester. Students will only be admitted to examinations if they can show proof of regular and successful participation in courses defined by the study programme.

b) the remediation and support for students who do not perform adequately:

The progress made by students in their studies is generally good because students are highly motivated. The veterinary studies are fairly regulated, most students completing their studies in the regular study time of 5.5 years. Progress is verified through interactive teaching and by examinations. More than 80% of the students, admitted at the first year, graduate. For some years, the "Progress Test Tiermedizin" is offered to the students. It is an optional offer to check the study progression and performance online-based by oneself.

In cases of failed examinations the students have the possibility to appeal against it in written form or orally at the head of the administration unit students affairs, the presidium or the liaison lecturer. These people also invite Students with repetitively bad marks to a personal consultation. For students with obvious learning problems a contact to the psychological service is made. TiHo also offers elective courses for methods of learning.

For students with disability or chronic illness alternative examination formats in the frame of TAppV are offered, if they cannot take part at normal examinations.

c) the rate and main causes of attrition:

The average attrition is about 1-2 % over all study years (in 2017, the attrition quote was 1,4 %, see 7.1.4) About 10-15% of the students, who started their study at TiHo, leave the TiHo before final exams. In most cases, they changed the university or the study programme in the first 2 years. Free places are refilled with students from other universities (admission for higher semester).

d) the exclusion and appeal procedures:

The exclusion procedure is fixed in the examination regulation and in the study regulation. The student can complain against the exclusion after consulting the head of the examination commission (Prüfungsausschuss) or at last on the way of a legal process.

e) the advertisement to students and transparency of these criteria/procedures

All procedures concerning learning progress, exclusion and appeal are published on bill-boards or e-boards (StudIS) and can be downloaded from internet pages. In the beginning of the study the students are guided by tutors one week. When there are special individual problems, students get help from staff in students affairs office.

7.1.6. Description of the services available for students (i.e. registration, teaching administration, mentoring and tutoring, careers advice, listening and counselling, assistance in case of illness, impairment and disability, clubs and organisations, ..).

In the main building of administration on Bünteweg Campus, students find the important services customer friendly together in the first floor:

- Administration unit students affairs:
All important affairs concerning registration, teaching administration, assistance in case of illness and disability, are concentrated here in this locality. Furthermore, at the Unit Students Affairs the TiHo offers guidance to students with academic problems. Furthermore, students can consult the Vice-President for Teaching, the liaison lecturers or individual faculty members of their choice (for help with study problems, career development, job selection, personal problems). Disabled and ill students are represented and consulted by the head of administration unit students affairs.
- Academic Foreign Affairs Office
Nearby, for partnership and exchange programmes the TiHo provides an Academic Foreign Affairs Office. The activities of the Office are discussed and decided on in a Committee for International Affairs. Responsibilities of the Office include providing information and assistance to students wishing to study abroad, and the organisation of exchange programmes such as ERASMUS/SOCRATES. Each visiting student from abroad is offered help should he/she encounters any kind of problem. The Office tries to alleviate difficulties which may arise while the newcomer is

adapting to his/her new surroundings. Assistance is also offered in dealing with the local authorities.

- Diversity and equal opportunities office with a parents-child-room (another is located you find at Campus Bischofsholer Damm)
Female students receive specific assistance from the TiHo's Equal Opportunity Office Representative with special emphasis on problems related to pregnancy and child care. Here students with children find help and information concerning family affairs.
- Medical consultation office
The students are prepared for zoonoses in the subjects covering infection medicine. In case of an acute hazard (e.g. bird flu), the TiHo has a special emergency plan, also to protect students. In general protective clothes are obligatory and supplied by students, in case of practicals in clinics or institutes these are provided by the TiHo.
- Outpost of Hannover student services with weekly consulting hours
Students are informed of special support offered by Hannover student services, where they can receive professional guidance free of charge, e.g., at the Psychological Outreach Clinic, the Welfare Help Desk and the Legal Advice Office.
- Society of Friends of the University of Veterinary Medicine Hannover
For a low annual subscription, the students are enabled, for example, to present their research results at conferences, to participate in seminars on setting up a business or to organize social events at the TiHo. In addition, members receive the TiHo-Anzeiger several times a year and are therefore well informed about all developments at the TiHo.

For all students' affairs, the General Students Committee (AStA) supports all students in manifold questions and mediate between administration, professors and students.

Students and employees of TiHo can use the offer of Centre for University Sports (www.hochschulsport-hannover.de) to go in for sports together. This is located at the university sport centre and is easily reached by tram. Furthermore, there is also a link to the two student parishes, i.e., the Protestant Student Parish and the Roman Catholic Student Parish, which are members of the circle of Hannover Institutions of Higher Education.

7.1.7. Prospected number of new students admitted by the Establishment for the next 3 academic years
255 – 260 students p.a. are expected for the next years, due to legal regulations (see 7.1.4).

7.1.8. Description of how and by whom the admission procedures, the admission criteria, the number of admitted students and the services to students are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

Calculation of the number of study places on the basis of Teaching Capacity Regulation of Lower Saxony by QA management, confirmation by presidium and communicated to senate and ministry		
Definition of number of study places in objectives agreement with ministry official publication in legal regulations (by ministry) and communication in information media (by TiHo)		
Application for study programme Veterinary Medicine at TiHo		
1st semester, EU-state member (standard students, see 7.1.2)	1st semester, 3% for not EU states	Higher semester, all states
Application to Foundation for University Admissions (SfH, www.hochschulstart.de)	Application to TiHo	
60% of applicants absolve the motivation test at TiHo Admission commission and presidium decides about ranking list of applicants on the basis of the results of this test (weight 1/3) and the average grade of the schools final exam (weight 2/3) and additional criteria (see 7.1.2)	Admission commission and presidium decides about ranking list of applicants on the basis of the average grade of former examinations	
Applicants get notice of admission or rejection from www.hochschulstart.de	Applicants get notice of admission or rejection from TiHo	
With notice of admission follows enrolment at TiHo by the administration unit for student and academic affairs		
Responsibility for students welfare: Administration unit of student and academic affairs (incl. office for foreign affairs), commissions for study and assessment, equal opportunity office, representatives for disabled people, representatives of students Hannover student services, etc.		
Responsibility for review of admission procedures, motivation test and services: Intern: Senate, several commissions, representatives of students, etc. Extern: SfH-Commission Veterinary Medicine, Veterinary Faculty Association		

Table 7.1.1. Number of new veterinary students admitted by the Establishment

	2016	2015	2014	Mean
Standard students	255	256	253	255
Full fee students	Not relevant	Not relevant	Not relevant	Not relevant
Total	255	256	253	255

Table 7.1.2. Number of veterinary undergraduate students registered at the Establishment

	2016	2015	2014	Mean
First year	261	261	257	260
Second year	268	262	272	267
Third year	253	265	256	258
Fourth year	272	261	270	268
Fifth year	249	261	248	253
Sixth year 11th S.	246	231	240	239
>11 Sem.	65	80	71	72
Total	1.614	1.621	1.614	1.616

Table 7.1.3. Number of veterinary students graduating annually

	2016	2015	2014	Mean
Standard students	241	237	238	239
Full fee students	Not relevant	Not relevant	Not relevant	Not relevant
Total	241	237	238	239

Table 7.1.4. Average duration of veterinary studies

The total duration of the studies matches the minimum number of years of the programme

	5,5 years + 0 year	5,5 years + 1 year	5,5 years + 2 years	5,5 years + 3 years	5,5 years + > 3 years
% of the students	87,2	8,3	2,5	1	1

Table 7.1.5. Number of postgraduate students registered at the Establishment

Programme	2016	2015	2014	Mean
Interns	not registered as students at TiHo			
Residents*	54	50	46	50
PhD students	128	103	128	120
Dr. med. vet.	596	607	614	606
Dr. rer.nat.	38	44	44	42
Total	762	754	786	767

*See Tab. 10.1.1, not registered as students at TiHo

Table 7.1.6. Number of postgraduate students graduating annually

Programme	2016	2015	2014	Mean
PhD-programmes	36	33	32	34
Dr. med. vet.	138	134	123	132
Dr. rer.nat.	5	7	7	6
Total	179	174	162	172

7.2. Comments

Due to the Teaching Capacity Regulation of Lower Saxony, TiHo has no direct influence on the number of study places. Every further budgeted scientific position leads to higher number of undergraduate students.

The overall attrition is low. Despite all information given before the actual study period, a low percentage of students will reorient in the first two years. Some students also have the strategy to apply in different universities for human and veterinary medicine in parallel and change shortly after enrolment. Since student request is very high, the study places can be immediately filled by very motivated students.

All universities in Hannover are closely networked in the action "Initiative Wissenschaft Hannover" (<https://wissen.hannover.de/en>). General offers are open for all students in Hannover.

7.3. Suggestions for improvement

TiHo had several years a tutor system, which had less and less attendance. The TiHo will find a new approach to extend the tutor system for the first year students.

8. Student assessment

8.1. Factual information

8.1.1. Description of the global student's assessment strategy of the Establishment

The TiHo has examination regulations (Prüfungsordnung, PO) based on the TAppV. The exam is a state exam regulated for Germany. In undergraduate teaching the examiners are appointed upon suggestion of the TiHo by the local Ministry of Nutrition, Agriculture and Consumer Protection. Duly execution of all state exams are supervised by two Examination Committees (Preclinic and Clinic) established at the TiHo and represented by the two Examinations Committees chairs. The TiHo strategy and goal concerning assessment procedure are that all students know the required condition for assessments, are fairly treated by examiners and are objectively assessed. Therefore, the TiHo offers all needed support to students and examiners, like information and guidance to develop sensible assessments in the frame of legal regulations. Every Institute/Clinic has to provide information on the exam procedures to the Administration unit of student and academic affairs and the aforementioned Chairpersons (PO Sections 1 and 2) which is confirmed by senate and published.

The examinations follow the lectures and courses (PO Section 3). There are 3 examination sections: the First Preclinical Examination (Vorphysikum), Second Preclinical Examination (Physikum) and the Veterinary Clinical Examination (Tierärztliche Prüfung). The examinations take place after each semester (2-5 examinations in the lecture-free period).

During the semester students have to pass accompanying certificates (PO Section 4) which decide about permission for examination. The clinics and institutes provide regulations for practical training (Praktikumsordnung) about form and content of these continuous examinations, which are controlled by commission of curricular affairs.

According to PO Sections 5 and 6, written (mostly electronic, Multiple Choice, MC, scattered by other question formats), oral (Structured Oral Exam, SOE) and practical (Objective Structured Practical/Clinical Examination, OSPE, OSCE) examinations are possible (more see 8.1.2. and 8.1.3). Examiners are introduced in these formats and are supported by tutorials (E-Learning consulting).

8.1.2. Description of the specific methodologies for assessing:

The TiHo uses two global categories of assessment methods in study programme:

1. Formative assessment: To get information about improvement of knowledge, students can absolve the „Progress Test Tiermedizin (PTT)“, solve e-learning cases in CASUS and control themselves with PowerVote quizzes during lectures. Objective Structured Clinical Examination (OSCE) during the Practical Year test their knowledge and practical skills.
2. Summative assessment: Assessments covering all topics according to TAppV are performed during the lectures free periods and in the 11th semester (see Tab. 8.1).

a) theoretical knowledge

Theoretical knowledge is in general assessed by Multiple Choice (MC) examinations, which are prepared and assessed by the institutions responsible for the subject. These MC-exams are conducted using electronic input devices. Written assessments consider not only declarative but also procedural knowledge with the formats of question: Key Feature, Image Analysis, Multiple Choice Typ A (explanation see annex 2 of PO). Structured oral exams for theoretical subjects are used by single institutes.

Since 2008, TiHo uses the electronic assessment system Q [kju:]/Q-Exam of a private provider (company IQuL GmbH - Institut für Qualitätsmanagement in der universitären Lehre, Bergisch Gladbach). This usage is continuously increased and is now used in 23 subjects with more than 35 assessments (more than 44.000 single assessments) are currently carried out. The examination questions are collected on a special platform used by teachers/examiners and reviewers. Questions are reviewed concerning formal and content-related criteria and compose after a successful multistage review process the special written exam. Since 2017 the new examination management platform Q-Exam® is installed, whereby the review takes place online. Examiners of an institution or clinic define a blueprint with corresponding rules for

each examination. The multistage review process (formal review and a content-related review) is performed in the online platform: IQUL company provides tablet PCs for each student in the lecture hall and is responsible for the technical process of examination. The answers and results are analysed immediately after examination within the platform and the quality of the questions is assessed with different indices. After final approval by the examination coordinator, results are published online in StudIS for individual access by each student.

b) pre-clinical practical skills

To assess pre-clinical skills, written and oral exams as well as OSCE (formative) in Clinical Skills Lab and MC (for most theoretical subjects) are used.

For oral state exams students form groups of four (maximum five), and examination dates at appropriate intervals according to PO Section 6 and TAppV are assigned to these groups by the Administration unit of students and academic affairs.

c) clinical practical skills

Clinical practical skills are assessed as formative procedure as OSCE in Clinical Skills Lab and as summative procedure as Structured Oral(-practical) Examination (SOE). The annex 3 of PO describes these formats in detail.

Tab. 8.1:

Subject	Methods of examination (Abbr.: MC = Multiple Choice, SOE= Structured Oral(-practical) Examination, OSPE = Objective Structured Practical Examination, OSCE = Objective Structured Clinical Examination)
1st Preclinical exam	
Physics	MC
Chemistry	MC
Zoology	SOE
Botany	MC/OSPE (50%/50%)
2nd Preclinical exam	
Anatomy	SOE, Oral and practical (80%/20%)
Histology	MC/OSPE (80%/20%)
Physiology	SOE, Oral and practical (70%/30%)
Biochemistry	MC
Animal Breeding, Genetics	MC/SOE (60%), (40%)
Veterinary Clinical Examination	
Radiology	MC
Virology	MC
Bacteriology and mycology	MC/SOE (80%/20%)
Parasitology	MC/SOE (66%/34%)
Animal Nutrition	SOE, Oral – practical (75%/25%)
Animal Husbandry/ Animal Hygiene	MC
Pathology	MC, SOE, practical (necropsy, evaluation of 2 organs and 3 slides), written papers
Internal Medicine	MC, SOE including report writing (40%/60%)
Surgery and Anaesthesiology	MC, SOE including report writing (40%/60%)
Reproductive Medicine	MC, SOE (40%/60%)
Poultry diseases	MC
Pharmacology and Toxicology	MC
Animal Welfare	SOE
Animal Epidemics, Epidemiology and Preventive Medicine	MC
Food Science and Food Hygiene	MC, SOE (60%/40)
Milk Hygiene	MC, SOE (60%/40)

Subject	Methods of examination (Abbr.: MC = Multiple Choice, SOE= Structured Oral(-practical) Examination, OSPE = Objective Structured Practical Examination, OSCE = Objective Structured Clinical Examination)
Meat Hygiene	MC, SOE (60%/40)
Pharmacy, drug and narcotics laws	MC, SOE (60%/40%)
Forensic Veterinary Medicine, professional knowledge	MC
Propaedeutics	SOE (100%)
Diagnostics	

8.1.3. Description of the assessment methodology to ensure that every graduate has achieved the minimum level of competence, as prescribed in the ESEVT Day One Competences

The TiHo examination regulations on basis of TAppV rules the examination formats. These regulations determine that students in general have to pass an examination before continuing course of study. If examinations are not passed the student has to repeat that particular examination in the following semester. Registrations for the Second Preclinical Examination have to be received at the latest 1.5 years after passing the First Preclinical Examination. Exceptions to the rule have to be submitted by the student to the respective Examination Committee. TiHo has no influence on this procedure due to TAppV, but this rule ensures, that only student with required knowledge and competences reach the next step in the study course.

Teachers have the obligation to formulate the learning goals of the topics in the catalogue of learning goals (Lernzielkatalog), which are integrate into assessments. The learning goals according to TAppV and EAEVE Day One Competences are updates on a regular basis. All students have access to this catalogue published in the intranet (catalogue of learning goals see download link in chapter 14).

To facilitate the continuous improvement of this process a current education research project is performed with the aim to improve competency based teaching and assessment measures.

8.1.4. Description of the processes for:

a) ensuring the advertising and transparency of the assessment criteria/procedures;

Following measures ensure the transparency about assessment criteria:

Examination Regulations with detailed definitions and description of examinations are available in inter- and intranet pages. In an elective course and tutorial on YouTube-Chanel „TiHoVideos“ students can inform and learn about the procedure of electronic examinations at the TiHo. Further, more examples of written examination are published in intranet.

For teachers, a workshop offers support for “Examination with Multiple Choice Questions” and videotutorials inform about question formats.

b) awarding grades, including explicit requirements for barrier assessments;

Following examination marks with following binding assessment framework are used (PO section12):

Grade	General definition	Binding assessment framework
'very good' (1)	An excellent performance	90% or more of all points
'good' (2)	Significantly above average requirements	80% to < 90% of all points
'satisfactory' (3)	Satisfies the average requirements in every respect	70% to < 80% of all points
'adequate' (4)	Meets the requirements despite its shortcomings	60% to < 70% of all points
'not passed' (5)	Does not meet requirements due to significant shortcomings	< 60% of all points of the maximum achievable performance were attained

Before start of assessment, lecturers and examiners have to define the total number of points which are the basis of the assessment framework.

**c) providing to students a feedback post-assessment and a guidance for requested improvement;
Progress Test**

The assessment regulation in accordance to TAppV (see 8.1.3) has the disadvantage for students to find out only at the end of a study year if their learning outcomes are achieved to continue the study. Therefore, the TiHo made much effort in the past to give students possibilities to check their competences before assessments at the end of a study year. One important tool is the Progress Test Tiermedizin (PTT), a tool for students to receive feedback on knowledge for their individual learning strategy. The PTT has been offered to students in Hannover since 2013 due to the common initiative of all German-speaking institutions for veterinary education. The participation is voluntary, however in 2016 the number of more than 400 students participated.

The content of PTT is referring to day one competencies as defined by the European Association of Establishments for Veterinary Education (EAEVE) and consists of 136 multiple-choice questions covering 34 subjects in undergraduate education.

Students, who take part several times, get information about their improvement in relation to former participation, see example in Fig. 8.1.

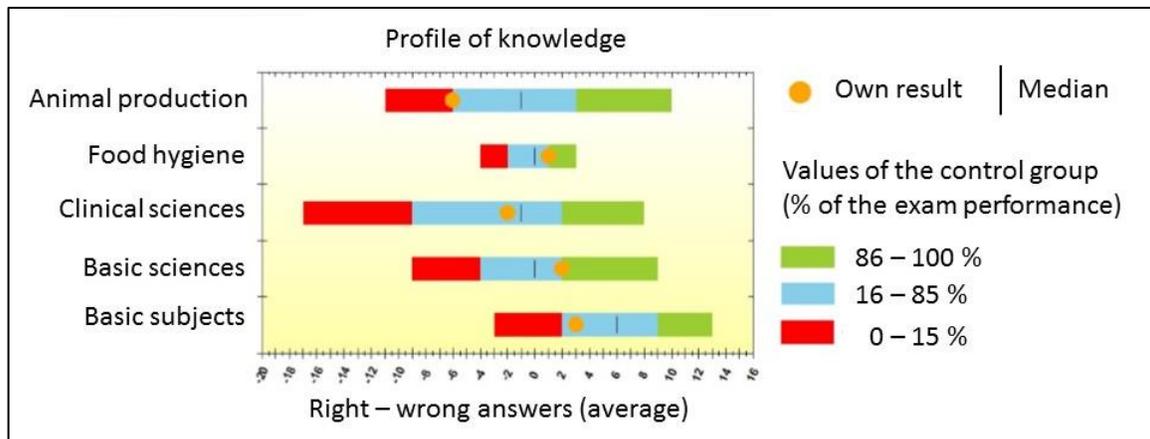


Fig. 8.1: Profile of knowledge (example)

Other measures or after assessment feedback

Other feedback measures are the continuously performed formative examinations during the lectures and clinical trainings, for example oral or written Pre- and Posttests. Regular and successful participation forms a prerequisite for admission to the examination (PO section 4). Further, discussions and reviews with lecturers, for example in the case of report writing, encourage student to reflect their learning strategy. After written exams students have possibilities to access the examination documents and can complain and discuss it in the online platform.

d) Appealing

Retakes of examination in case of failing

In general a maximum of two retakes of an examination is allowed (PO Section10, according to TAppV). For the second and final retake of undergraduate veterinary exams the attendance of the chairperson of the respective Examination Committee or of the appointed representative is mandatory. On demand of students these regulations can also apply for the first retake. Students have to pass the examinations within a certain time; this time can be extended on application by the student.

Appealing

According to PO Section 13(3) and Section18 (5), any student has the right to look at the complete examination documents and to file a protest against the decision of examiners. The appropriate Examinations Committee has to handle the appealing and make a decision.

8.1.5. Description of how and by whom the student's assessment strategy is decided, communicated to staff, students and stakeholders, implemented, assessed and revised

Quality assurance of assessments is described in PO Section 25.

The examination office in the Administration unit of student and academic affairs shall compile an overview of the grade distribution in the individual examinations once per year for the examination committee. For written and practical examinations, item analyses, grade distributions and examination records may also be analysed in the context of quality management with the aim of improving future examinations. Fig 8.3 shows the circle of quality improvement of assessments.

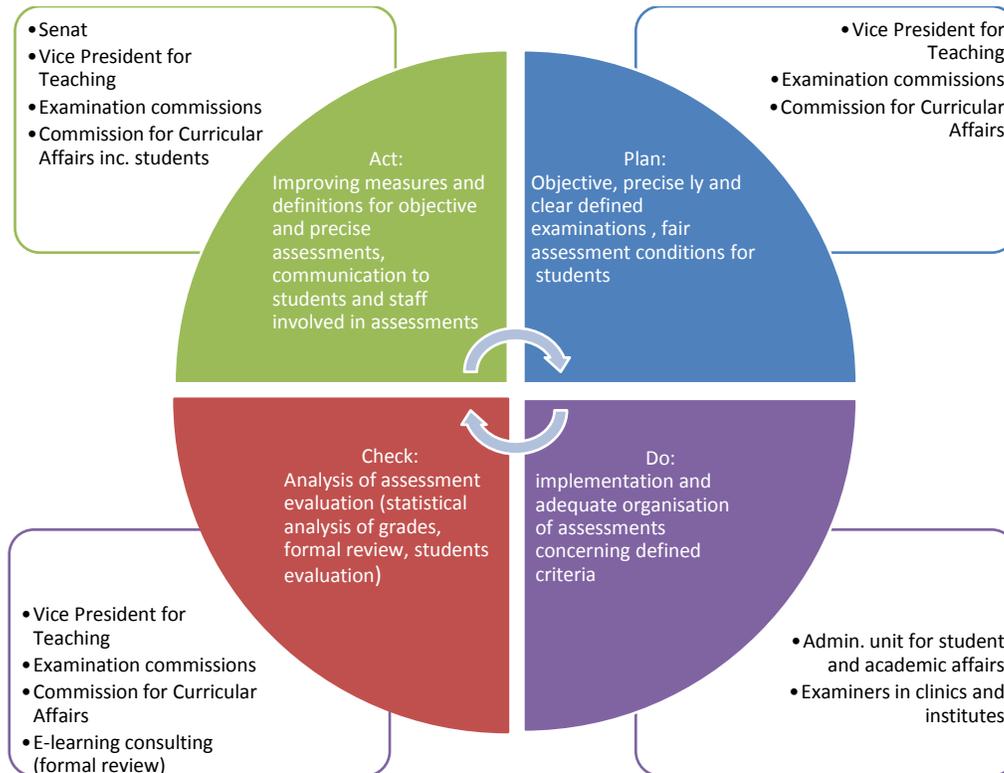


Fig. 8.3: Quality assurance of assessments

8.2. Comments

The TiHo developed with the company IQUL GmbH a new online assessment platform to allow a formal and content related online review system, which was implemented in 2017.

8.3. Suggestions for improvement

The TiHo continues to thrive improving their assessments procedures through research projects. It is planned to include the Clinical Skills Lab not only in formal but also in summative assessment.

9. Academic and support staff

9.1. Factual information

9.1.1. Description of the global strategy in order to ensure that all requested competences for the veterinary programme are covered and that staff are properly qualified and prepared for their roles

The appointment procedure of professors follows the Intern Guideline for Appointment. The first step is formulation of a profile paper which considers the objective agreement with state government and the strategic plans of the TiHo. The profile paper and the following advertisement describe the requested competences in sciences, teaching and others on detail. The commission for appointment has the important task to select the most suitable person for the vacancy. The last decision is taken by the foundation board.

The appointment procedure of scientific and support staff is task of the heads of departments or clinics. They formulate the profile and are responsible for advertisement and selection and pay attention to needed qualifications of applicants. After announcement of position (internet, newspaper, journals), heads of department or clinic invite and select the applicants on basis of needed qualifications, which are usually proved by their certifications of vocational trainings. After all, the department of HR is responsible for the contract of employment. All needed steps from advertising until employment are described in the guideline selection and recruiting of department human resources, which is communicated per intranet.

9.1.2. Description of the formal programme for the selection, recruitment and training to teach and assess students (including continuing education) of the academic staff

a) Selection, recruitment

The appointment procedure of professors is based on Lower Saxony University Law (NHG) and follows the Intern Guideline for Appointment. Selection and recruiting of scientific staff are a mixture of local activities of institutes or clinics and central processing of administration, described in a guideline of department human resources (see 9.1.1.)

It is essential for academic staff to absolve a training in teaching and assessing students. If young and new staff has no or only few experiences in these topics, the TiHo offers the long-term in-house training "Professional Teaching", which ends after two semesters with a certificate. The programme is made up of ten one-day seminar modules on the most important themes from the field of university didactics. Furthermore, the programme encourages the participants to apply what they have learned in their teaching practice. They are supported in this by regular and continuous coaching sessions under professional supervision. The training certification should be seen as a system to reward commitment to teaching excellence. After finishing the course, the participants meet four times per year in so called "Experts Groups" led by professional coaches, for exchanging their experiences with the new learned didactic skills. A similar course at Competence Centre for University Didactic of Lower Saxony in Braunschweig (60 km from Hannover) is also offered for TiHo staff.

Furthermore, the E-Learning-Consulting of the TiHo offers several workshops, tutorials and consultations around the year concerning teaching and assessment procedures. In order to augment the development and implementation of e-learning (computer supported or internet based learning) at the TiHo within teaching of students and continuing education an e-learning commission has been appointed and an e-learning adviser taken on. The aims are:

- Improvement of teaching by interactive, up-to-date and high-quality teaching materials
- Creation of possibilities for self-directed learning independent from time and place
- Implementation of blended learning (combination of e-learning and presence teaching)
- Preparation for life-long learning
- Enhancement of interdisciplinary learning
- Direct (personal) control of learning success and state of knowledge (formative and summative assessment)

9.1.3. Description of the formal programme for the selection, recruitment and training to perform their specific duties (including continuing education) of the support staff

Selection and recruiting

Selection and recruiting are a mixture of local activities of institutes or clinics and central processing of administration, the same as for scientific staff, described in guideline of administration unit human resources (see 9.1.1.)

Training and continuing education

The heads of departments and clinics have to describe the needed qualifications for the announced positions, e.g. biosecurity and QA procedures. The selection for the applicants follows on the basis of these qualifications, which are usually proved with their certifications of vocational trainings. The heads of departments and clinics have the task to review the needed skills for the different jobs. If missing knowledges are expected or recognised, e. g. due to new scientific technologies, the heads of departments and clinics offer special trainings or send the employees to suitable seminars. Furthermore, staff in laboratories and animal housing is instructed at regular intervals in topics of biosecurity and animal handling. General seminars are offered by the central administration, like seminars about First Aid, waste in laboratories or training in standard computer software (MS-Office, Outlook). Furthermore, the TiHo is member of a consortium for trainings and seminars especially designed for university employees, which mainly offers seminars on subjects of administration and management.

9.1.4. Description of the formal programme for the appraisal, development, promotion criteria and procedures, supporting and mentoring of both academic and support staff

The general procedure of appraisal, development, supporting and mentoring of both academic and support staff is carried out on an individual basis in the departments and clinics. The heads of departments and clinics together with their staff are specialists in their working field and needed skills, depending on their research fields and teaching duties. In individual meetings, the actual and future needs for each individual are defined and course of action is agreed. Academic staff is especially encouraged and supported to absolve residency training of the European Colleges or training for the national board certified veterinary specialist.

The support of female scientist is an important political issue of the government, because the percentage of women in science, in particular professorships, is still under 50 percent. For academic female staff pursuing a career as professor, the TiHo offers the possibility for special trainings, e. g. mentoring, coaching or financial support to visit scientific meetings. Furthermore, female scientists who are in the final stage of their postgraduate training (Habilitation) can get exoneration from routine duties by hiring substitutes. This method should help to facilitate finishing the thesis or the needed publications. The TiHo provides an annual budget to the Equal Opportunities Office. The TiHo follows here the political goals of the "Dialog Initiative for Equal Opportunities and Quality Management" of the government of Lower Saxony with all universities.

Furthermore, there are narrow internal and external networks of staff concerning their special tasks, which offer special trainings and exchange of information (e. g. meetings of heads of administration units of all universities in Lower Saxony).

9.1.5. Description of the formal rules governing outside work, including consultation and private practice, by staff working at the Establishment

Additional business is regulated by law respectively collective bargaining law. Additional business is permitted for a defined time period, when no conflict of interest might occur. Before starting additional business scientific and support staff has to notify in written format the President of the TiHo. In case of conflict of interests TiHo is entitled to enjoin staff from carrying out the additional business.

For the heads of clinics there is the possibility to enter a so called "Chefarztvertrag". This contract defines profit sharing for the professor. Privat liquidation is not practiced.

9.1.6. Description of the formal programme of the Establishment for the assessment of teachers by students and its outcome

The assessment of teaching quality by students follows the internal regulation of evaluation (Evaluationsordnung) according to the requirements given in the Lower Saxony University Law. In the TiHo two questionnaires are distributed to students by the President's Office via the internet: one concerning the general teaching environment and the other concerning individual teachers and subjects. In order to enforce the process the students are obliged to evaluate at least 5 courses before they can register on-line for electives.

The teachers are informed personally about their individual results. After the vice president for teaching gets the individual and overall comments correcting measures are derived from the students' feedback. The results concerning the general teaching climate will be published in the Presidential Report and in the Teaching Report. Likewise, the measures and improvements, based on the evaluations, are presented.

9.1.7. Prospected number of FTE academic and support staff of the veterinary programme for the next 3 academic years

In June 2017, the follow-up contract of university development was signed by government and all universities of Lower Saxony. This agreement ensures the financial resources for universities and their budget for staff until the end of the year 2021. The TiHo expects the same FTE (budgeted posts) for academic and support staff in the next three years.

9.1.8. Description of how and by whom the strategy for allocating, recruiting, promoting, supporting and assessing academic and support staff is decided, communicated to staff, students and stakeholders, implemented, assessed and revised

Once a year, the Foundation Board of Trustees decides the staffing plan with the budgeted posts as part of the business plan. Approval of the Foundation Board of Trustees is required when increasing the staffing plan. Cost neutral changes in posts in the University facilities can be made by the Presidium during the current business year. The staffing plan contains as an enclosure an overview of the distribution of the posts to the individual TiHo institutes.

The allocation of budgeted staff follows the teaching load at large and is relatively constant due to constant duties. Teaching personal is backed by special student assistants to enhance small group and peer teaching. Employment follows the actual need of teaching resp. for organisational support. Presidium can decide for additional posts in emergency cases like illness, pregnancy. At all steps of decision and implementation in personnel matters the employee committee and the equal opportunity commissioner are involved.

Important statistical information about personnel:

There are no budget posts solely for teaching or research. Instead, all academic staff employed in budget posts is required to spend their working time for teaching and research. For this staff, the **Teaching Obligation Regulation of Lower Saxony (LVVO)** orders teaching load of 9 hours per semester week for professors, 10 hours for permanent scientific staff and 4 hours for temporary scientific staff. Seminars, group work and demonstrations are calculated as half or less. The semesters amount to 28 weeks per year (14 weeks in the winter semester and 14 in the summer semester). Academic staff in non-budgeted posts is not considered in capacity calculation.

Neither the biologically equipped Institute of Zoology nor the Institute of Animal Ecology and Cell Biology are listed here since the teaching obligation is included under biology (BSc course of studies).

Table 9.1.1. Academic staff of the veterinary programme

Type of contract	2016	2015	2014	Mean
Permanent (FTE, budgeted)	194	196	195	195
Temporary (FTE, non-budgeted, research grants)	104	87	86	92
Temporary (FTE, non-budgeted, clinical income)	25	27	25	26
PhD students (FTE, budgeted)	3	17	7	9
PhD students (FTE, non-budgeted)	49	56	58	55
Practitioners (FTE)	n.a.	n.a.	n.a.	n.a.
Total (FTE budgeted)	197	213	202	204
Total (FTE, unbudgeted)	178	170	169	173

(Interns and residents: see Tab. 10.1.1.)

Table 9.1.2. Percentage (%) of veterinarians in academic staff

Type of contract	2016	2015	2014	Mean
Permanent (FTE, budgeted)	73%	71%	72%	72%
Temporary (FTE) (non-budgeted)	68%	66%	62%	65%
Total (FTE)	71%	69%	69%	70%

Table 9.1.3. Support staff of the veterinary programme

Type of contract	2016	2015	2014	Mean
Permanent (FTE, budgeted)	274	265	264	268
Temporary (FTE, non-budgeted)	52	52	54	53
Total (FTE)	326	317	318	320

Table 9.1.4. Research staff of the Establishment

Type of contract	2016	2015	2014	Mean
Permanent (FTE, budgeted)	There are no budget posts solely for research!			
Temporary (FTE, non-budgeted)				

9.2. Comments

Students assistants (undergraduate students) of the veterinary programme

The student/teacher ratio is tightly fixed by the legal capacity regulation and cannot be altered by the TiHo. However, to facilitate small group and peer teaching student assistants for organisational tasks are employed, partly financed by budget for study quality (SQM.)

Type of contract students assistants	2016	2015	2014	Mean
Temporary (FTE, budgeted),	12,86	11,37	11,35	11,9
Temporary (FTE, budget for study quality)	8,19	6,20	5,46	6,6
Temporary (FTE, non-budgeted)	5,11	6,93	9,34	7,1
Total (FTE)	26,16	24,5	25,85	25,5

9.3. Suggestions for improvement

Since October 2016, the TiHo is member of the network „eCompetence and Utilities for Learners and Teachers“ (eCULT+). This network of 13 universities in Lower Saxony, funded by the Federal Ministry of Education and Research, has the goal to improve the conditions concerning e-learning in teaching and studying and to better educate teachers. The coaching system should be enhanced to help keeping academic personnel in academia.

A further aim of the TiHo is to build up a centre for teaching and learning, where didactics, e-learning, e-teaching, e-assessment, skills lab and educational research measures and projects are combined.

10. Research programmes, continuing and postgraduate education

10.1. Factual information

10.1.1. Description of how the research activities of the Establishment and the implication of most academic staff in it contribute to research-based undergraduate veterinary education

Based on published literature, undergraduate teaching is regularly updated and results of TiHo research are transferred into lectures, clinical trainings, electives and clinical rotations. The combined presentation and discussion of actual external and internal research topics ensures a continuous up-to-date state of knowledge of the undergraduate students.

During Practical Year or elective period, students have opportunities to choose places where they will run their own small research project (see 10.1.3c). These undergraduate students will receive an insight in cutting-edge research activities (laboratory and desk based work).

10.1.2. Description of how the postgraduate clinical trainings of the Establishment contribute to undergraduate veterinary education and how potential conflicts in relation to case management between post- and undergraduate students are avoided

A prerequisite for high quality teaching of undergraduates is a well-educated academic staff. It is also made sure that the entire academic staff has a high degree of continuous education based on its active participation both in external (national and international congresses, workshops) and internal meetings (seminars, journal clubs, etc.).

Routine surgeries in patients, including patient admission, treatment, diagnostic procedures, as well as for example field case management at field station for epidemiology and other subjects, are performed by the postgraduate staff including residents, actively assisted by undergraduate students. Therefore students take part at rotation through different specialist areas, have chances to talk with the owners and assume responsibility.

The case load in all clinics is sufficiently high for post- and undergraduate trainings.

To ensure that the basic surgical skills can be acquired by undergraduate students, surgery wet labs are organised partwise with purchased animals (e.g. cesarean section, rumenotomy), continuously housed healthy animals (e.g. rectal palpation skills) and purchased tissues/organs (e.g. teat surgery, castration, orthopaedic surgery, dehorning).

Postgraduate students are invited to participate in all clinical cases for the undergraduate students. Vice versa, undergraduate students are invited to get an insight in practical and experimental work of the postgraduate students. By this, synergy of learning is achieved.

10.1.3. Description of how undergraduate students:

a) are made aware of the importance of evidence-based medicine, scientific research and live-long learning;

Students are made aware of evidence-based medicine, Good Scientific Practice (Guidelines to Safeguard Good Scientific Practice) and ethical topics by highlighting relevant clinical examples, but also during seminars as part of compulsory elective courses and Journal Clubs. In these seminars, undergraduate students are requested to catch up on current topics of relevant research by bibliographic search. Thus, these courses provide students with basic knowledge on scholarly methods and make them aware of important research questions.

The institutes offer lectures in methods of Evidence based Veterinary Medicine (EbVM-quality schemes, narrative, systematic reviews, meta-analyses and pooled analyses; Standard operating procedures (SOP) of clinical and epidemiological studies; principles of meta-analyses; integration of case descriptions in the lectures in association with new publications in the field; POL (problem orientated learning) cases for students in the Practical Year and the possibility of access to current literature.

The duty to lifelong learning after examination is always visible for all students, because the TiHo offers many courses in continuous education, where students are entitled and invited to participate and are

often involved in the organisation. In general in Germany all veterinarians are legally obligated to lifelong learning, at least 20 hours annually (Veterinary Medicine Association's professional code of conduct of Lower Saxony, §7). But most of the graduated veterinarians go for more and aspire to receive a doctorate, PhD, European Diplomate or national specialist title.

b) are initiated to bibliographic search, scientific methods and research techniques, and writing of scientific papers;

Online tutorials and an introduction to “where, how and what to search” teaches the features of search engines, different kinds of databases, catalogues and discovery systems and the elaboration of effective search strategies. A workshop on bibliographic database management teaches students the effective management of bibliographic data, the retrieval and display of data, and the requirements of publishers when submitting a paper.

In the veterinary medicine study programme there is no demand for a graduate (Master) thesis (see TAppV). Every student has to prepare case reports and in the Practical Year they have to give a scientific report/presentation about an actual disease, health problem or clinical patient or on base of a literature project.

c) are offered to participate to research programmes on a non-compulsory basis

Undergraduate students are regularly offered to participate in research programmes on a non-compulsory basis, e.g. in field trials, where they can accompany researchers on the field trips. In their last year of study, undergraduate students have the opportunity to perform a specific research practical of 10-14 weeks duration (research traineeship during the Practical Year), where they work on their own small research project, which commonly is part of a larger scientific project. The obtained scientific results can be used as part of a doctoral thesis as postgraduate student later on. A doctoral thesis is performed by about 75% of the graduates.

For many research programmes, there are announcements for undergraduate student research assistants. These are very good possibilities to get first-hand experiences in research processes. Undergraduate students are invited to take part at scientific meetings and presentations of doctorate and PhD-students at the TiHo.

There is regular information on summer schools advertised by TiHo or different universities at an international level (e.g. French-German Summer school). This includes also The Leadership Programme for Veterinary Students at Cornell University, a unique summer research experience for veterinary students, who seek to broadly influence the veterinary profession through a science-based career.

10.1.4. Description of how the continuing education programmes provided by the Establishment are matched to the needs of the profession and the community

In accordance with its mission, the TiHo sees it as an important task to offer continuing education at the University. The TiHo is in constant exchange with practitioners and external experts and involves them as speakers and chairpersons in several continuing education courses at the TiHo. Some of the continuing trainings take place in cooperation with the Chamber of Veterinarians of Lower Saxony (TÄK) or with state institutes such as Lower Saxony State Office for Consumer Protection and Food Safety (LAVES) and are recognised by Academy for Veterinary Continuing Education (ATF). Furthermore, teachers of the TiHo are frequent guest speakers in externally organised Continuous Professional Education (CPE) programmes e.g. BpT-congress and DVG (German Veterinary Society) meetings. The main areas of CPE-involvement are: clinical subjects, veterinary public health, animal welfare, reproduction, infectious diseases. WHO symposium on veterinary public health, poultry specialist talks, current themes of animal welfare and the conference on swine diseases have been established for decades.

The quality of continuing education of the TiHo is exceptionally high and combines current themes with up-to-date scientific research findings. The number of veterinarians who participate in further training events at the TiHo is large since the high quality of the events is well-known.

In addition to conferences the TiHo also offers e-learning and blended learning as continuing education. For example, in cooperation with the Chamber of Veterinaries of Lower Saxony (TÄK) and the State Office

for Consumer Protection and Food Safety (LAVES) an eLearning training course exists for veterinary surgeons on actual epizootic diseases in a crisis situation. In the pilot project “avian flu” lectures are digitally prepared by experts and made available per internet.

Furthermore, the mandatory refresher course in radiation safety is being developed as an e-learning course and will be offered via blended learning in future.

At the TiHo diverse lectures and scientific conferences have already been digitalised in quick-time format as online lectures and been made available via the internet www.tiho-hannover.de/de/studium-lehre/el.

Furthermore, the TiHo offers structured and formalised continuing education programmes:

- New certificate and master programmes in Veterinary Public Health and Laboratory Animal Science are developed.
- Various programmes in European Colleges, Resident Education, and national veterinary specialists (Fachtierarzt) exist in the different TiHo clinics and some paraclinical institutes (See Table 10.1.1.)

10.1.5. Prospected number of students registered at post-graduate programmes for the next 3 academic years

The TiHo offers the following postgraduate doctoral programmes:

- Dr. med. vet.: about 75% of graduates in veterinary medicine continue their education in research with a doctoral thesis, which leads to the degree Dr. med.vet.
- Three PhD-Programmes (Veterinary Research and Animal Biology”, Animal and Zoonotic Infections”, Systems Neuroscience”) are offered for graduates who see their future in science and research
- Dr. rer.nat.: this doctoral programme is offered for graduates in biology and other disciplines

The TiHo expects prospected number of post-graduated students registered on the same level or higher (see Tab. 10.1.2). The TiHo is striving to increase the number of funds for PhD-programmes and offers information, lectures and Graduate School days to recruit students for these programmes. Professors also address directly highly motivated and well performing students.

10.1.6. Description of how and by whom research, continuing and postgraduate education programmes organised by the Establishment are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

The PhD-programmes are joined in the Hannover Graduate School for Veterinary Pathobiology, Neuroinfectiology, and Translational Medicine (HGNI). The objective of the HGNI is to provide outstanding national and international students and young scientists a structured doctoral programme of guaranteed quality.

The HGNI is composed of the following organisational units: assembly of members, board of directors, speaker of the HGNI, speakers of the three PhD courses, doctoral candidates' representative, international scientific advisory board. The tasks of the scientific advisory board are in particular: recommendations and evaluations for defining the HGNI qualification concept, recommendations and evaluations for scientific and/or structural development of the HGNI, as well as participation in internal evaluation of the HGNI. The structured programme of study and the doctoral degree and the procedures of the individual PhD programmes are defined in the PhD Regulations.

The programmes Dr. med. vet and Dr. rer. nat. have a more loose structure, a regulatory framework is published in the internet. Students have to absolve obligatory courses (e. g. statistics, scientific writing). The tasks of the commissions regulating “Dr. med. vet.” and “Dr. rer. nat.” programmes are selection of applicants, verifying and controlling their projects (ethical issues, animal welfare, feasibility), supervision and assessment. On admission to the Graduate Programme, each doctoral candidate enters into a supervision agreement with his or her teams of supervisors in which the rights and duties are laid down.

Table 10.1.1. Number of students registered at postgraduate clinical training

European Diplomat offered at the TiHo see

<http://www.tiho-hannover.de/en/studies-education/further-education/training-diplomate/>

Residents at the TiHo for the title of European Diplomates	2016	2015	2014	Mean
ECAR	9	9	8	9
ECBHM			1	1
ECPHM	1	1	1	1
ECPVS	3	3	0	2
ECSRHM	3	3	3	3
ECVCN	5	4	3	4
ECVP	21	21	21	21
ECVPH	3	3	3	3
ECVPT	2	2	2	2
ECZM WPH	1	0	0	0
ECEIM	2	2	2	2
ECVS	3	2	2	2
ECVAA	1	1	1	1
ECVDI (alternative programme)	1			1
ECVN	2	2	2	2
ECVAA	3	3	3	3
Total	54	50	46	50
Interns	15	14	12	14
"Fachtierarzt" National Specialist for	2016	2015	2014	Mean
Animal Behavior	1	1	1	1
Animal Hygiene	11	7	5	8
Animal Nutrition	3	3	3	3
Animal Welfare	2	1		2
Birds	2	2	2	2
Cattle	14	13	12	13
Companion Animals	8	8	8	8
Equine	2	2	2	2
Equine Reproduction	8	6	6	7
Fish	3	2	2	2
Food Hygiene, Milk Hygiene	14	13	16	14
Laboratory Animal Sciences	3	2	2	2
Laboratory Diagnostic	2	2	1	2
Microbiology	2	2	2	2
Parasitology	3	1	2	2
Pharmakology and Toxikology	4	4	4	4
Porcine Reproduction	3	1	1	2

Poultry	3	4	4	3
Reproduction	2	0	0	2
Small Animal Reproduction	6	7	7	7
Small Mammals	2	0	0	2
Small Ruminants	6	6	5	6
Swine	9	8	8	8
Wildlife Population	1	0	0	0
Total	110	92	91	98

Table 10.1.2. Number of students registered at postgraduate research training

Programme	2016	2015	2014	Mean
PhD-Programme: Veterinary Research and Animal Biology	40	34	52	42
PhD-Programme: Systems Neurosciences	56	40	63	53
PhD-Programme Animal and Zoonotic Infections"	32	29	32	31
Dr. med. vet. (see chapter 7)	596	607	614	606
Dr. rer. nat.	38	44	44	42
Total	762	754	786	767

Table 10.1.3. Number of students registered at other postgraduate programmes (including any external/distance learning courses)

Programme	2016	2015	2014	Mean
Total	n.a	n.a	n.a	n.a

Table 10.1.4. Number of attendees to continuing education courses provided by the Establishment

Notice: The data are derived from the documentation of central event management, number of attendees are the mean of min and max. of in advance estimated number of participants.

Clinic/institute	2016	2015	2014	Mean
Small Animal Clinic	0	140	20	80
Clinic for Horses	290	280	290	287
Clinic for Cattle			460	460
Clinic for Pigs, Small Ruminants and Forensic Medicine	150	150	150	150
Unit of Reproductive Medicine of the Clinics	0	0	155	155
Institute of General Radiology and Medical Physics	30	40	40	37
Institute of Biometry, Epidemiology and Information Processing	250	495	150	298
Institute of Biochemistry	0	75	60	68
Institute of Terrestrial and Aquatic Wildlife Research	0	112	0	112
Field Station for Epidemiology in Bakum	0	100	0	100
Institute of Microbiology (Dept. of Infectious Diseases)	170	0	0	170

Clinic/institute	2016	2015	2014	Mean
Institute of Virology (Dept. of Infectious Diseases)	85	0	0	85
Institute of Food Quality and Food Safety	140	180	290	203
Institute of Animal Breeding and Genetics	300	60	50	137
Institute of Animal Nutrition	150	0	0	150
Institute of Pharmacology, Toxicology and Pharmacy	0	120	0	120
Institute of Pathology	130	150	335	205
Institute of Animal Hygiene, Animal Welfare and Behaviour of Farm Animals	330	355	330	338
Institute of Animal Welfare and Behaviour (Pets, Laboratory Animals and Horses)	80	80	140	100
E-Learning, Clinical Skills Lab	50	150	40	80
Total	2155	2487	2510	2384

Table 10.1.5. List of the major funded research programmes in the Establishment which were on-going during the last full academic year prior the Visitation

Programme 2016	Scientific topics	grant/year (€)	Duration (Yrs)
Every year, the TiHo publishes the list of funded research projects with information about units, the scientific topic, duration and amount of grants and their purchaser. You find this information			
a) Funded research projects in 2016 (208 projects, in total 49 Mio EUR) (pdf-file, 13 pages): http://www.tiho-hannover.de/fileadmin/user_upload/tiho_hannover/kliniken_institute/01_verwaltung/Presse/Drittmit tel/Drittmittelprojekte_2016.pdf			
b) in the online database of research projects http://www.tiho-hannover.de/nc/de/forschung/forschungsprojekte-suchen/			

10.2. Comments

The TAppV includes no mandatory research project for undergraduate students. However, highly formalized research projects are performed in postgraduate studies (PhD, Dr. med. vet.).

To compensate the potential deficiency for undergraduate students in their process of learning and developing critical thinking several possibilities conducting or participating in scientific projects are offered and highly recommended to interested students.

The TiHo supports the education to European Diplomate and requires this graduation for new positions of veterinarian professorships.

The TiHo supports teaching staff in attendance at continuing education like special master programmes in medical education.

10.3. Suggestions for improvement

The TiHo will further encourage post-graduate students to absolve a PhD programme instead of Dr. med. vet. or an European College instead of national board certified veterinary specialist (Fachtierarzt).

11. Outcome Assessment and Quality Assurance

Important information: All other quality assurance aspects are described in chapters 2 – 10!

11.1. Factual information

11.1.1. Description of the global strategy of the Establishment for outcome assessment and Quality Assurance (QA), in order to demonstrate that the Establishment:

- has a culture of QA and continued enhancement of quality;
- operates *ad hoc*, cyclical, sustainable and transparent outcome assessment, QA and quality enhancement mechanisms;
- collect, analyse and use relevant information from internal and external sources for the effective management of their programmes and activities (*teaching, research, services*);
- informs regularly staff, students and stakeholders and involves them in the QA processes;
- closes the loop of the QA Plan-Do-Check-Act (PDCA) cycle;
- is compliant with ESG Standards.

The global strategy of the TiHo for outcome assessment and Quality Assurance is

- to integrate the cyclical analysis of quantitative and qualitative indicators for achievement of objectives in future plans and developing teaching and research environment
- to discuss all plans with the relevant commissions
- to directly and precisely inform all staff, students and other stakeholders

Thereby, all relevant external conditions, like laws, legal regulation, ESG standards for external evaluations, are considered.

Fig. 11.1. shows the circle of quality assurance (QA) at the TiHo

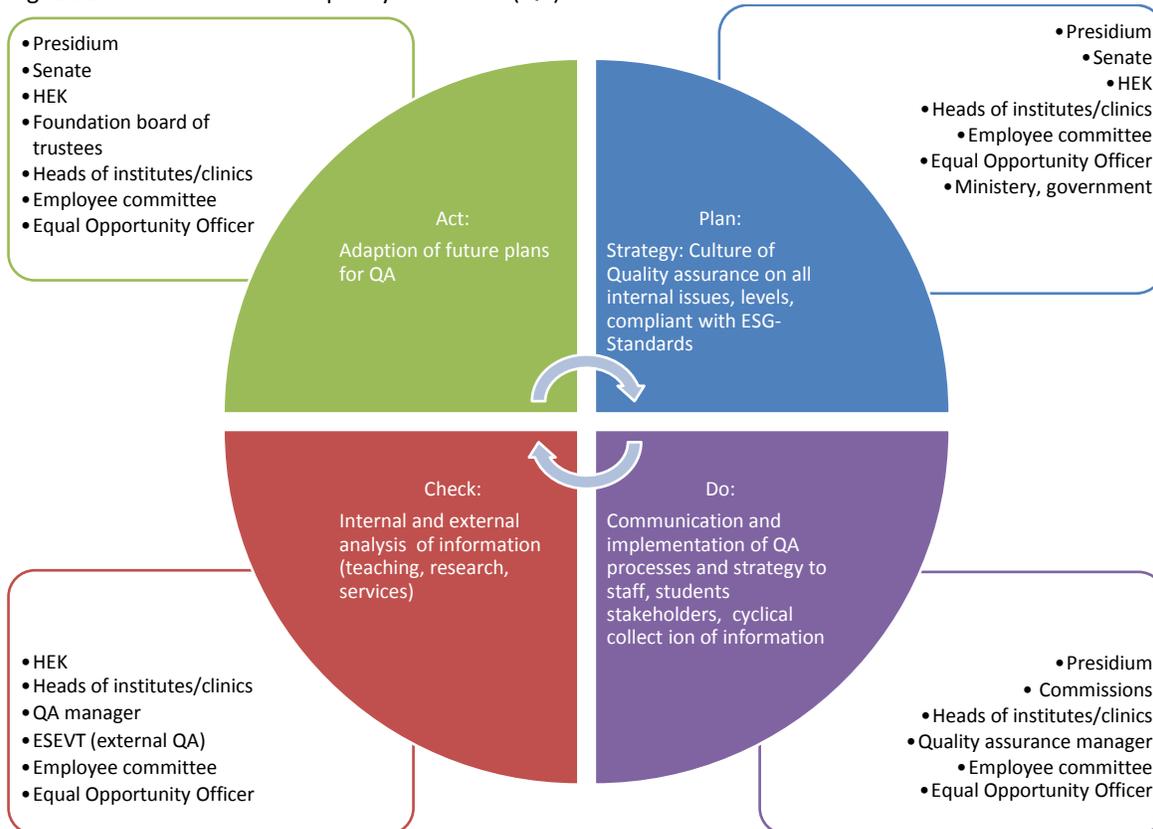


Fig. 11.1 Circle of quality assurance

The process map Fig. 11.2 below shows the entirety of processes at the TiHo and the interfaces of their duties for achievement of the general objectives and improvements in respect to QA. There is for every task and issue a special commission or working group, in which the representatives of all status groups are involved. The group of students represents at least half of the members of a commission, if the issue is relevant for students, for example commission for curricular affairs or commission for study quality budget.

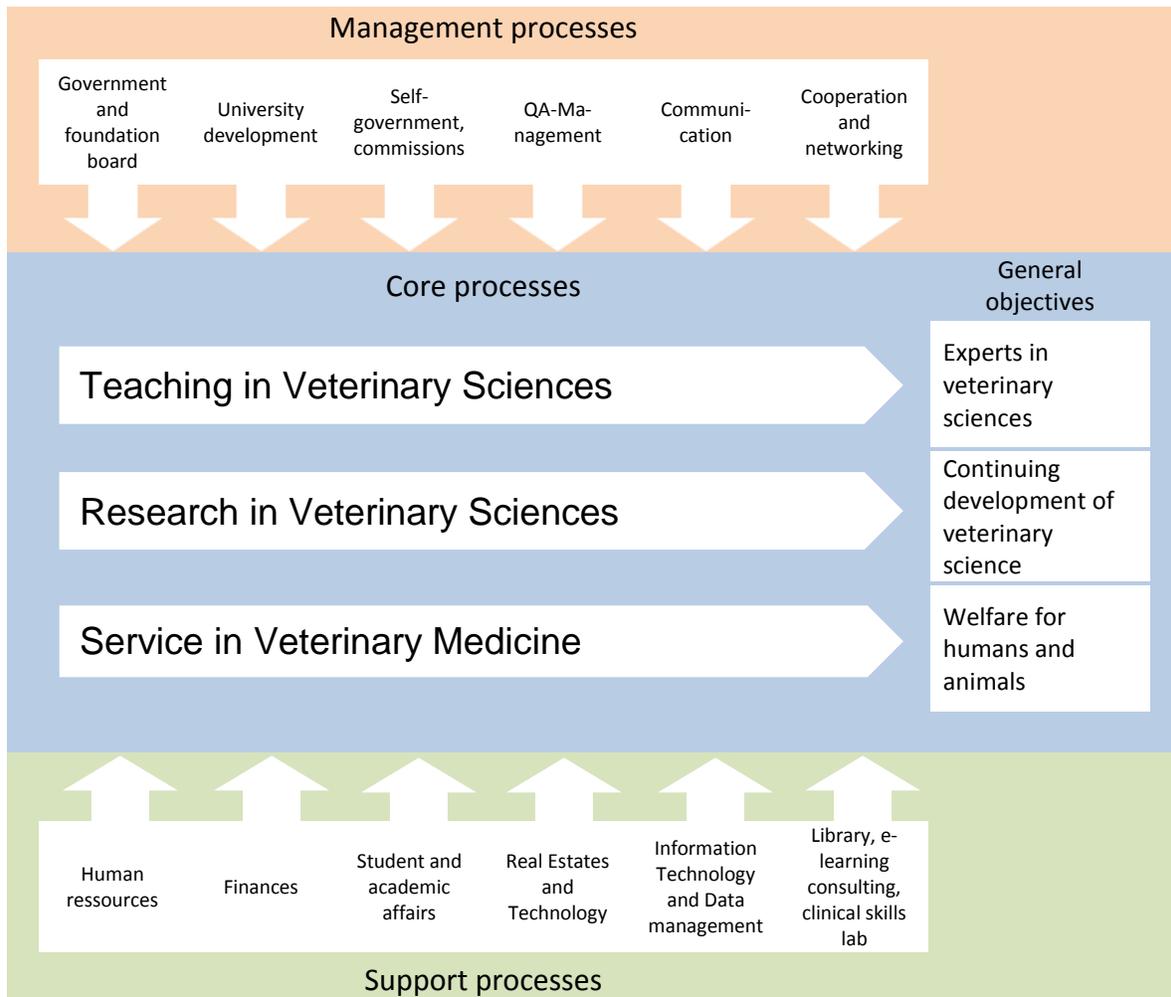


Fig. 11.2 Process map supporting outcome assessment and quality assurance

11.1.2. Description of the form by which the strategy, policy and procedures are made formal and are publicly available

Formal basics for strategies, policies and procedures are published on external and internal available webpages:

- External legal regulations, especially governmental laws like NHG, TAppV, admission procedure
- Mission statement
- Internal regulations and guidelines of the TiHo: <http://www.tiho-hannover.de/universitaet/veroeffentlichungen/>
- Many information, forms and circular letters concerning policies and procedures available on internal webpages (only for staff and enrolled students)
- "TiHo-Anzeiger" – TiHo-journal of current issues, available for TiHo employees, students and stakeholders.

- Information about special awards:
 “Ökoprofit-Siegel”: Environmental protection award of the city of Hannover
 “Total E-Quality Siegel”: Family friendliness award

11.1.3 Description of the regular publication of up to date, impartial and objective information, both quantitative and qualitative, about the educational programmes and awards the Establishment is offering.

a) Internet information

All regular publications about the educational programmes and awards are available on the internet homepages of the TiHo, especially:

- Relevant information about all study programmes at the TiHo (undergraduate, graduate, continuing education)
 - ESEVT-report of expert group on the visit at the TiHo (last time in 2007)
 - Information for enrolled students and teaching staff available on intranet platforms StudIS, DoZIS
 - Teaching reports, including analysis of student evaluations
 - Annual reports of presidium, research reports,
 - Lists of publications and research grants
 - Information about prizes and honours awarded by TiHo
- b) Public meetings and protocols (e. g. public senate meeting, university wide senate protocols, semester messages, newsletters, intranet, AStA meetings).
- c) General announcement, personal approach to apply for student and research grants and prizes

Timeframe of reports:

Reports	Cyclus	Target group
Annual report	annual	Board of Trustees, public
Research	annual	Senate, public
Teaching	annual	Senate, public
Business /economics	annual	Board of Trustees, Government
Internal audit	annual	Presidium
Achievement of objectives	annual	Government
External evaluation: SER EAEVE and others	every 7 -10 years	Public
Landesbericht, Hochschulkennzahlen	annual	Government
Research index of the TiHo (Hochschulindex)	annual	Presidium, Heads of institutes and clinics
Animal welfare, animal numbers for trials	annual	Government
Equal opportunity	annual	German Research Foundation (DFG), public

11.1.4. Description of the QA processes not yet described in the other 10 Standards

The TiHo has a tool for quality assurance in research called “Hochschulindex”. This index considers the summary of quantitative measures about amount of research grants and publications per year for each institute and clinic. The result is a ranking list of all units of the TiHo. The index is being reviewed annually and is a basis for decision making in presidium, university developmental commission (HEK) and senate for future developments. Furthermore, it leads to internal performance-related allocation of investment budget.

The presidium (president, vice-president for teaching) discuss at least once/semester actual problems with student representatives (ASTA, Studentenparlament). Urgent matters can be brought in a fast and direct way to involved personnel or to respective commissions for decision making.

11.1.5. Description of how and by whom the QA strategy of the Establishment is decided, communicated to staff, students and stakeholders, implemented, assessed and revised

Presidium is responsible for all decisions concerning quality assurance strategy. The presidium discusses the QA strategy with the senate, who confirms it after review in commissions. An important commission in this circle of QA is the university developmental commission (HEK).

Presidium gets the needed information for QA strategy and decision making from board position quality management in close cooperation with strategic controlling, where all information concerning quality assurance is centrally bundled. The measures and data come from board position strategic development incl. controlling and internal audit and from the administration units (finances, human resources, student and academic affairs, real estates and technology, IDS) and units.

After decision about future strategy of QA processes, this is communicated to staff and students by protocols, official journal/gazette, internet information, newsletter and others. The external stakeholders are informed by external available webpages and the TiHo-journals.

The implementation, assessment and revision are performed by administration, relevant commissions and finally by senate and presidium.

11.2. Comments

The close contact of TiHo to alumni and external stakeholders, who take part intensively at scientific and social events of the TiHo or give feedback to students after their external rotations, leads to many inspirations and ideas for future developing. Such contacts could be increased to help improving strategic planning of curriculum development (TAppV). The 5 vice-presidents for teaching in Germany are currently discussing common problems in regard to curriculum development, which is not yet performed on a formalised basis.

11.3. Suggestions for improvement

Further formalisation of the structures of quality assurance with regard to

- Internal review processes
- Improving the networking with alumni
- Improving the networking with external stakeholders

to improve curriculum teaching contents and the conditions for study.

12. ESEVT Indicators

a) Calculated ESEVT indicators:

Name of the Establishment:	University of Veterinary Medicine Hannover, Foundation (TiHo)			
Date of the form filling:	30th September 2017			
Calculated Indicators from raw data	TiHo values	Median values ¹	Minimal values ²	Balance ³
I1 n° of FTE academic staff involved in veterinary training / n° of undergraduate students	0,12*	0,16	0,13	-0,01
I2 n° of FTE veterinarians involved in veterinary training / n° of students graduating annually	0,59*	0,87	0,59	0,00
I3 n° of FTE support staff involved in veterinary training / n° of students graduating annually	1,12	0,94	0,57	0,56
I4 n° of hours of practical (non-clinical) training	1.100,00	905,67	595,00	505,00
I5 n° of hours of clinical training	1.466,00	932,92	670,00	796,00
I6 n° of hours of FSQ & VPH training	287,00	287,00	174,40	112,60
I7 n° of hours of extra-mural practical training in FSQ & VPH	250,00	68,00	28,80	221,20
I8 n° of companion animal patients seen intra-murally / n° of students graduating annually	63,30	70,48	42,01	21,29
I9 n° of ruminant and pig patients seen intra-murally / n° of students graduating annually	8,28	2,69	0,46	7,81
I10 n° of equine patients seen intra-murally / n° of students graduating annually	13,18	5,05	1,30	11,88
I11 n° of rabbit, rodent, bird and exotic seen intra-murally / n° of students graduating annually	26,08	3,35	1,55	24,54
I12 n° of companion animal patients seen extra-murally / n° of students graduating annually	0,00	n.a.	n.a.	n.a.
I13 n° of individual ruminants and pig patients seen extra-murally / n° of students graduating annually	43,79	15,95	6,29	37,50
I14 n° of equine patients seen extra-murally / n° of students graduating annually	0,57	2,11	0,60	-0,03
I15 n° of visits to ruminant and pig herds / n° of students graduating annually	9,61	1,33	0,55	9,06
I16 n° of visits of poultry and farmed rabbit units / n° of students graduating annually	0,18	0,12	0,04	0,14
I17 n° of companion animal necropsies / n° of students graduating annually	1,45	2,07	1,40	0,05
I18 n° of ruminant and pig necropsies / n° of students graduating annually	7,83	2,32	0,97	6,86
I19 n° of equine necropsies / n° of students graduating annually	0,54	0,30	0,09	0,45
I20 n° of rabbit, rodent, bird and exotic pet necropsies / n° of students graduating annually	2,77	2,05	0,69	2,08
I21 n° of FTE specialised veterinarians involved in veterinary training / n° of students graduating annually	0,52	0,20	0,06	0,46
I22 n° of PHD graduating annually / n° of students graduating annually	0,72	0,15	0,09	0,63
1 Median values defined by data from Establishments with Approval status in April 2016				
2 Recommended minimal values calculated as the 20th percentile of data from Establishments with Approval status in April 2016				
3 A negative balance indicates that the Indicator is below the recommended minimal value				

*I1, I2:

Due to the Teaching Capacity Regulation of Lower Saxony, the indicators are calculated on the basis of budgeted academic staff.

Every further budgeted scientific position would lead to higher number of undergraduate students.

Non-budgeted temporary academic staff is not considered in the calculation of the students number due to the Teaching Capacity Regulation of Lower Saxony. But staff payed by clinical

income is involved in the instruction of students, e.g. in the practical year. If considering this group in the calculation, the indicator I 1 rises up to a value of 0,14.

Considering also student assistants (Tab. in 9.2, Comments), the value of indicator I 1 grows up to 0,15.

b) Raw Data for the indicators:

Name of the Establishment:		University of Veterinary Medicine Hannover, Foundation							
Date of the form filling:		30th September 2017							
Raw data from the last 3 full academic years		2016	2015	2014	Mean	Tab. in SER			
1	n° of FTE academic staff involved in veterinary training	194	196	195	195	9.1.1	9.1.1	9.1.1	
2	n° of undergraduate students	1.614	1.621	1.614	1.616	7.1.2	7.1.2	7.1.2	
3	n° of FTE veterinarians involved in veterinary training	142	139	140	140	9.1.2	9.1.2	9.1.2	
4	n° of students graduating annually	241	237	238	239	7.1.3	7.1.3	7.1.3	
5	n° of FTE support staff involved in veterinary training	274	265	264	268	9.1.3	9.1.3	9.1.3	
6	n° of hours of practical (non-clinical) training	1.100	1.100	1.100	1.100	3.1.1.1, D+E	3.1.1.1, D+E	3.1.1.1, D+E	
7	n° of hours of clinical training	1.466	1.466	1.466	1.466	3.1.1.1, F (incl. EPT)	3.1.1.1, F (incl. EPT)	3.1.1.1, F (incl. EPT)	
8	n° of hours of FSQ & VPH training	287	287	287	287	3.1.2, without no.9 (EPT)	3.1.2, without no.9 (EPT)	3.1.2, without no.9 (EPT)	
9	n° of hours of extra-mural practical training in FSQ & VPH	250	250	250	250	3.1.4	3.1.4	3.1.4	
10	n° of companion animal patients seen intra-murally	15.650	15.407	14.267	15.108	5.1.3	5.1.3	5.1.3	
11	n° of ruminant and pig patients seen intra-murally	1.920	2.105	1.900	1.975	5.1.3	5.1.3	5.1.3	
12	n° of equine patients seen intra-murally	3.213	3.322	2.901	3.145	5.1.3	5.1.3	5.1.3	
13	n° of rabbit, rodent, bird and exotic patients seen intra-murally	6.534	6.391	5.749	6.225	5.1.3	5.1.3	5.1.3	
14	n° of companion animal patients seen extra-murally	0	0	0	0	5.1.4	5.1.4	5.1.4	
15	n° of individual ruminants and pig patients seen extra-murally	11.322	10.521	9.512	10.452	5.1.4	5.1.4	5.1.4	
16	n° of equine patients seen extra-murally	125	150	131	135	5.1.4	5.1.4	5.1.4	
17	n° of visits to ruminant and pig herds	2.360	2.211	2.310	2.294	5.1.7	5.1.7	5.1.7	
18	n° of visits of poultry and farmed rabbit units	38	52	39	43	5.1.7	5.1.7	5.1.7	
19	n° of companion animal necropsies	340	361	338	346	5.1.6	5.1.6	5.1.6	
20	n° of ruminant and pig necropsies	1.939	2.112	1.555	1.869	5.1.6	5.1.6	5.1.6	
21	n° of equine necropsies	142	124	120	129	5.1.6	5.1.6	5.1.6	
22	n° of rabbit, rodent, bird and exotic pet necropsies	737	615	632	661	5.1.6	5.1.6	5.1.6	
23	n° of FTE specialised veterinarians involved in veterinary training	126	124	125	125				
24	n° of PhD graduating annually	179	174	162	172				

Appendix explaining the calculation of the indicators					
All values represent an annual average calculated from the last 3 complete academic years. All values (except I22) concern the training of undergraduate veterinary students.					
1	Total number of full-time equivalent (FTE) academic staff in veterinary training (e.g. 100 persons employed full-time (100%) + 50 persons employed half-time (50%) + 10 persons employed quarter-time (25%) = 127,5 FTEs). Post-graduate students who are registered for a specialised or doctoral degree (i.e. interns, residents, PhD students or equivalent postgraduate students) are not included in these figures unless they are paid and trained to regularly perform structured practical and/or clinical training (for a minimal of 10% and for a maximum of 50% of their annual workload) and are supervised by permanent academic staff (e.g. 10 residents employed half-time (50%) for clinical training of undergraduate students + 8 PhD students employed quarter-time (25%) for practical training of undergraduate students = 7 FTEs). Researchers, invited speakers, unpaid lecturers and other persons who only occasionally contribute to the training of undergraduate students are not included in these figures but should be reported for information in the SER.				
2	Total number of undergraduate veterinary students. These students have to be officially registered in the database of the Establishment.				
3	Total number of FTE veterinarians (DVM or equivalent degree) in veterinary training				
4	Total number of graduate veterinary students. These students have to be officially granted the veterinary degree (i.e. at least five years of full-time theoretical and practical study in agreement with the EU Directives) provided by the Establishment being evaluated.				
5	Total number of FTE support staff involved in veterinary training. Only support staff who are dedicated to administrative, teaching or research tasks related to students and to care of facilities, equipment or animals in the Establishment are taken into account in the Indicators.				
6*	Total number of hours of supervised practical (non-clinical) training. It includes inter alia laboratory experiments, microscopic examination of histological and pathological specimens, work on documents and idea-formulation without the handling of animals (e.g. assay work, clinical case studies, handling of herd-health monitoring programmes, risk assessment for VPH, computer-aided exercises), work on normal animals (e.g. physiology, ante mortem inspection), work on cadavers, carcasses and organs (e.g. dissection, post mortem inspection, Food Safety and Quality).				
7*	Total number of hours of supervised clinical training. This training strictly focuses on hands-on procedures by students, which include the relevant diagnostic, preventive and therapeutic activities in the different species. It concerns individual patients, herds and production units and normal animals in a clinical environment. Propaedeutic, diagnostic necropsies, therapeutic and surgical hands-on activities on cadavers, organs and animal dummies are also classified as clinical training but may not replace the hands-on training on live patients. Simply observing the teacher doing clinical tasks is not considered as				
8*	Total number of hours of theoretical and practical training in Food Safety and Quality(FSQ) and Veterinary Public Health (VPH).				
9*	Total number of hours of extra-mural practical training in FSQ& VPH (e.g. slaughterhouses, meat inspections, VPH institutes).				
10**	Total number of companion animal (dogs and cats) patients seen at the VTH. Each patient has to be officially recorded in the electronic patient record system of the Establishment and has to be individually examined/treated by at least 1 student under the supervision of at least 1 member of				
11**	Total number of ruminant and pig patients seen at the teaching hospital/clinic. Each patient has to be officially recorded in the electronic patient record system of the Establishment and has to be individually examined/treated by at least 1 student under the supervision of at least 1 member of				
12**	Total number of equine patients seen at the teaching hospital/clinic. Each patient has to be officially recorded in the electronic patient record system of the Establishment and has to be individually examined/treated by at least 1 student under the supervision of at least 1 member of staff.				
13**	Total number of rabbit, rodent, bird and exotic pet patients seen at the VTH. Each patient has to be officially recorded in the electronic patient record system of the Establishment and has to be individually examined/treated by at least 1 student under the supervision of at least 1 member of staff.				
14**	Total number of companion animal (dogs and cats) patients seen extra-murally (e.g. dispensaries). Each patient has to be officially recorded and has to be individually examined/treated by at least 1 student under the supervision of at least 1 member of staff. Patients seen during EPT are not taken into account in the Indicators.				
15**	Total number of individual ruminant and pig patients seen extra-murally (e.g. ambulatory clinics). Each patient has to be officially recorded and has to be individually examined/treated by at least 1 student under the supervision of at least 1 member of staff. Patients seen during EPT are not taken into account in the Indicators.				
16**	Total number of equine patients seen extra-murally (e.g. training centres). Each patient has to be officially recorded and has to be individually examined/treated by at least 1 student under the supervision of at least 1 member of staff. Patients seen during EPT are not taken into account in the Indicators.				
17	Total number of visits to ruminant and pig herds under the close supervision of academic staff.				
18	Total number of visits to poultry and farmed rabbit units under the close supervision of academic staff.				
19	Total number of post-mortem examinations carried out on whole carcasses of companion animals (dogs and cats).				
20	Total number of post-mortem examinations carried out on whole carcasses of ruminants and pigs.				
21	Total number of post-mortem examinations carried out on whole carcasses of equines.				
22	Total number of post-mortem examinations carried out on whole carcasses of rabbits, rodents, birds and exotic pets. Necropsies of other animals (e.g. sea mammals, wild animals) must be mentioned in the SER in table 5.1.6. in the item 'others'.				
23	Total number of FTE specialised veterinarians in veterinary training. The specialised veterinary status must be officially recognised by the relevant National Accreditation body for national specialisations and/or by the European and/or American Board of Veterinary Specialisation (EBVS/ABVS).				
24	Total number of graduate students who are officially granted a third cycle degree (PhD or equivalent doctoral degrees in agreement with the relevant EU directives).				
*	The number of hours given in items 6 to 9 must apply to ALL undergraduate veterinary students, independently of electives/tracking. Specific data for each track (i.e. pre-specialisation) may be given in an annex.				
**	Each live animal having received a given procedure (e.g. vaccination, surgery) or treated for one specific clinical episode during a year is counted as 1 single patient, even if it has been examined/treated by several departments/units/clinics (including revisions). Only other visits of the same animal with a different condition would be considered as a different patient in the given year.				

13. Glossary and Abbreviations

13.1. German - English

German	English	Abbreviation
Akademie für Tierärztliche Fortbildung	Academy for Veterinary Medical Further Training	ATF
Allgemeine Wahlpflichtkurse	General electives	
Allgemeiner Studierendenausschuss,	Student committee	AStA
Arbeitsgemeinschaft der leitenden Veterinärbeamten der Länder	Working community of senior veterinarian officials of the Federal States	AfAB
Arbeitsgruppe E-Learning	Workgroup e-learning	
Berufsordnung der Tierärztekammer Niedersachsen	Veterinary Medicine Association's professional code of conduct of Lower Saxony	
Berufsverband	Professional association	
Berufungskommission	Commission for appointment	
Berufungsleitfaden	Intern Guideline for Appointment	
Bundestierärztekammer	Federal German Chamber of Veterinaries	BTÄK
Bundesverband Praktischer Tierärzte	Federal Association of Practicing Veterinarians	BpT
Curricularnormwert	Curriculum Norm Value	CNW
Deutsche Forschungsgemeinschaft	German Research Foundation	DFG
Deutsche Veterinärmedizinische Gesellschaft	German Veterinary Society	DVG
Dezernat Finanzen	Administration unit of finances	
Dezernat Informations- und Datenverarbeitungsservice	Administration unit of Information technology and data processing	IDS
Dezernat Liegenschaften und Technik	Administration unit of real estate and technology	
Dezernat Personal	Administration unit of human resources	
Dezernat Studentische und Akademische Angelegenheiten	Administration unit of student and academic affairs	
Drittmittelstelle	Non-budgeted position	
Erprobungsklausel	Trial clause	
Fachkommissionen für	Expert Commissions for...	
Fachtierarzt	National board certified veterinary specialist	FTA
Fakultätentag Tiermedizin	Veterinary Faculty Association	
Gewerbeaufsichtsamt	Factory inspectorate	
Gleichstellungsbeauftragte	Equal Opportunity Officer	
Gleichstellungsbüro	Equal Opportunity Office	
Gremien	Committees	
Grundordnung der TiHo	Basic Governing Principles of the TiHo	
Hochschule in der Trägerschaft einer rechtsfähigen Stiftung des öffentlichen Rechts	Endowed university within a legally autonomous public foundation	
Hochschulentwicklungskommission	University Developmental Commission	HEK
Hochschulentwicklungsvertrag	Guarantee contract for university development	
Hochschulsport	Centre for University Sports	
Intensivklinik	Intensive week spent in a single clinic	
Klinikum am Bünteweg	Clinic Complex at Bünteweg	
Kommission für Gleichstellung	Commission for Equal Opportunity	
Kommission für Studienqualitätsmittel (SQM)	Commission for study quality budget	
Kompetenzzentrum Hochschuldidaktik für Niedersachsen	Competence Centre of University Didactics for Lower Saxony	
Kosten-Leistungsrechnung	Cost and management accounting	
Krankenbericht	Case report	
Niedersächsische Kapazitätsverordnung	Teaching Capacity Regulation of Lower Saxony	KapVO

German	English	Abbreviation
Niedersächsische Lehrverpflichtungsverordnung	Teaching Obligation Regulation of Lower Saxony	LVVO
Niedersächsisches Gesetz- und Verordnungsblatt	Lower Saxony legislative record	
Niedersächsisches Hochschulgesetz	Lower Saxony University Law	NHG
Niedersächsisches Landesamt für Verbraucherschutz und Lebensmittelsicherheit	Lower Saxony State Office for Consumer Protection and Food Safety	LAVES
Niedersächsisches Ministerium für Ernährung, Landwirtschaft und Verbraucherschutz	Ministry of Nutrition, Agriculture and Consumer protection of Lower Saxony	ML
Niedersächsisches Ministerium für Wissenschaft und Kultur	Ministry of Science and Culture of Lower Saxony	MWK
Personalrat	Employee committee	
Physikum	Second preclinical examination	
Planstelle	Budgeted position	
Praktisches Jahr	Practical Year	
Praktikumsordnung	Regulations for practical training	
Progress Test Tiermedizin	Progress Test Veterinary Medicine	PTT
Promotionskommissionen	Commission for postgraduate education	
Promotionsordnung	Rules for obtaining a doctorate	
Prüfungsausschuss	Examinations Committee	
Prüfungsordnung	Examination regulation	PO
Querschnittsunterricht	Interdisciplinary subjects	
Quote	Clinical training in groups	
Schwerbehindertenvertretung	Representative for disabled employees	
Spezielle Wahlpflicht	Special electives	
Staatsexamen	State examination	
Stellenplan	Disposition of staff	
Stiftung für Hochschulzulassung, www.hochschulstart.de	Foundation for University Admissions (in Dortmund)	SfH
Stiftungsrat	Foundation board of trustees	
Studentenwerk Hannover	Hannover student services	
Studienordnung	Conditions of study (of an establishment)	
Studienqualitätsmittel	Budget for study quality	SQM
StudIS / DozIS	Intranet management platform for students and teachers	
Stundenplankommission	Commission for Schedule planning	
Tierärztekammer Niedersachsen	Chamber of Veterinarians of Lower Saxony	TÄK
Tierärztliche Approbationsverordnung	Ordinance concerning the Certification of Veterinary Surgeons	TAppV
Tierärztliche Hochschule Hannover	University of Veterinary Medicine Hannover	TiHo
Tierärztliche Prüfung	Veterinary Clinical Examination	
Veterinäraufsichtsamt	Veterinary Regulatory Agency	
Vorphysikum	First preclinical examination	
Wahlpflichtveranstaltungen	Obligatory elective subjects	
Wissenschaftsrat	German Council of Science and Humanities	WR
Zentrale Studienkommission	Commission for Curricular Affairs	ZSK
Zielvereinbarung mit Land	Agreement on Objectives	
Zulassungskommission	Commission for Admission	
Zulassungsordnung	Regulation for admission	
Zweiter Teil des Staatsexamens	Second section of the clinical examination	

13.2. English - German

English	German	Abbreviation
Academy for Veterinary Medical Further Training	Akademie für Tierärztliche Fortbildung	ATF
Administration unit of finances	Dezernat Finanzen	
Administration unit of human resources	Dezernat Personal	
Administration unit of Information technology and data processing	Dezernat Informations- und Datenverarbeitungsservice	IDS
Administration unit of real estate and technology	Dezernat Liegenschaften und Technik	
Administration unit of student and academic affairs	Dezernat Studentische und Akademische Angelegenheiten	
Agreement on Objectives	Zielvereinbarung mit Land	
Basic Governing Principles of the TiHo	Grundordnung der TiHo	
Budget for study quality	Studienqualitätsmittel	SQM
Budgeted position	Planstelle	
Case report	Krankenbericht	
Centre for University Sports	Hochschulsport	
Chamber of Veterinarians of Lower Saxony	Tierärztekammer Niedersachsen	TÄK
Clinic Complex at Bünteweg	Klinikum am Bünteweg	
Clinical training in groups	Quote	
Commission for Admission	Zulassungskommission	
Commission for appointment	Berufungskommission	
Commission for Curricular Affairs	Zentrale Studienkommission	ZSK
Commission for Equal Opportunity	Kommission für Gleichstellung	
Commission for postgraduate education	Promotionskommissionen	
Commission for Schedule planning	Stundenplankommission	
Commission for study quality budget	Kommission für Studienqualitätsmittel (SQM)	
Committees	Gremien	
Competence Centre of University Didactics for Lower Saxony	Kompetenzzentrum Hochschuldidaktik für Niedersachsen	
Conditions of study (of an establishment)	Studienordnung	
Cost and management accounting	Kosten-Leistungsrechnung	
Curriculum Norm Value	Curricularnormwert	CNW
Disposition of staff	Stellenplan	
Employee committee	Personalrat	
Endowed university within a legally autonomous public foundation	Hochschule in der Trägerschaft einer rechtsfähigen Stiftung des öffentlichen Rechts	
Equal Opportunity Office	Gleichstellungsbüro	
Equal Opportunity Officer	Gleichstellungsbeauftragte	
Examination regulation	Prüfungsordnung	PO
Examinations Committee	Prüfungsausschuss	
Expert Commissions for...	Fachkommissionen für	
Factory inspectorate	Gewerbeaufsichtsamt	
Federal Association of Practicing Veterinarians	Bundesverband Praktischer Tierärzte	BpT
Federal German Chamber of Veterinaries	Bundestierärztekammer	BTÄK
First preclinical examination	Vorphysikum	
Foundation board of trustees	Stiftungsrat	
Foundation for University Admissions (in Dortmund)	Stiftung für Hochschulzulassung, www.hochschulstart.de	SfH
General electives	Allgemeine Wahlpflichtkurse	
German Council of Science and Humanities	Wissenschaftsrat	WR
German Research Foundation	Deutsche Forschungsgemeinschaft	DFG

English	German	Abbreviation
German Veterinary Society	Deutsche Veterinärmedizinische Gesellschaft	DVG
Guarantee contract for university development	Hochschulentwicklungsvertrag	
Hannover student services	Studentenwerk Hannover	
Intensive week spent in a single clinic	Intensivklinik	
Interdisciplinary subjects	Querschnittsunterricht	
Intern Guideline for Appointment	Berufungsleitfaden	
Intranet management platform for students and teachers	StudIS / DozIS	
Lower Saxony legislative record	Niedersächsisches Gesetz- und Verordnungsblatt	
Lower Saxony State Office for Consumer Protection and Food Safety	Niedersächsisches Landesamt für Verbraucherschutz und Lebensmittelsicherheit	LAVES
Lower Saxony University Law	Niedersächsisches Hochschulgesetz	NHG
Ministry of Nutrition, Agriculture and Consumer protection of Lower Saxony	Niedersächsisches Ministerium für Ernährung, Landwirtschaft und Verbraucherschutz	ML
Ministry of Science and Culture of Lower Saxony	Niedersächsisches Ministerium für Wissenschaft und Kultur	MWK
National board certified veterinary specialist	Fachtierarzt	FTA
Non-budgeted position	Drittmittelstelle	
Obligatory elective subjects	Wahlpflichtveranstaltungen	
Ordinance concerning the Certification of Veterinary Surgeons	Tierärztliche Approbationsverordnung	TAppV
Practical Year	Praktisches Jahr	
Professional association	Berufsverband	
Progress Test Veterinary Medicine	Progress Test Tiermedizin	PTT
Regulation for admission	Zulassungsordnung	
Regulations for practical training	Praktikumsordnung	
Representative for disabled employees	Schwerbehindertenvertretung	
Rules for obtaining a doctorate	Promotionsordnung	
Second preclinical examination	Physikum	
Second section of the clinical examination	Zweiter Teil des Staatsexamens	
Special electives	Spezielle Wahlpflicht	
State examination	Staatsexamen	
Student committee	Allgemeiner Studierendenausschuss,	AStA
Teaching Capacity Regulation of Lower Saxony	Niedersächsische Kapazitätsverordnung	KapVO
Teaching Obligation Regulation of Lower Saxony	Niedersächsische Lehrverpflichtungsverordnung	LVVO
Trial clause	Erprobungsklausel	
University Developmental Commission	Hochschulentwicklungskommission	HEK
University of Veterinary Medicine Hannover	Tierärztliche Hochschule Hannover	TiHo
Veterinary Clinical Examination	Tierärztliche Prüfung	
Veterinary Faculty Association	Fakultätentag Tiermedizin	
Veterinary Medicine Association's professional code of conduct of Lower Saxony	Berufsordnung der Tierärztekammer Niedersachsen	
Veterinary Regulatory Agency	Veterinäraufsichtsamt	
Workgroup e-learning	Arbeitsgruppe E-Learning	
Working community of senior veterinarian officials of the Federal States	Arbeitsgemeinschaft der leitenden Veterinärbeamten der Länder	AfAB

13.3. Abbreviations

Abbreviation	Explanation
§	Section (in laws and regulations)
AfAB	Working community of senior veterinarian officials of the Federal States
ASTA	Student committee
ATF	Academy for Veterinary Medical Continuous Training
BpT	Federal Association of Practicing Veterinarians
BTÄK	Federal German Chamber of Veterinaries
CPE	Continuous Professional Education
DFG	German Research Foundation
DVG	German Veterinary Society
EAEVE	European Association of Establishments for Veterinary Education
EBVS	European Board of Veterinary Specialisation
ECTS	European Credit Transfer System
EPT	External Practical Training
ESEVT	European System of Evaluation of Veterinary Training
ESG	Standards and guidelines for quality assurance in the European Higher Education Area
FTE	Full-time equivalent
HACCP	Hazard Analysis and Critical Control Points
HEK	University Developmental Commission
LAVES	Lower Saxony State Office for Consumer Protection and Food Safety
MC	Multiple Choice
MHH	Medical School Hannover
MWK	Ministry of Science and Culture
NHG	Lower Saxony University Law
OSCE	Objective Structured Clinical Examination
OSPE	Objective Structured Practical Examination
PO	Examination regulation
QA	Quality assurance
SER	Self-Evaluation Report
SfH	Foundation for University Admissions
SOE	Structured Oral Exam
SOP	Standard Operating Procedure
SQM	Budget for study quality
TÄK	Chamber of Veterinaries of Lower Saxony
TAppV	Ordinance concerning the Certification of Veterinary Surgeons
TiHo	University of Veterinary Medicine Hannover
ZSN	Centre for Systems Neuroscience
ZSK	Commission for Curricular Affairs

14. Downloads: Regulations, catalogues, etc.

Following documents are listed in:

<http://www.tiho-hannover.de/visit2018>

- Ordinance concerning the Certification of Veterinary Surgeons (translation of TAppV)
- Curriculum
- Examination Regulations
- Catalogue of learning goals 2016/17
- Catalogue of electives 2016/17
- Checklists and evaluation forms for external practical training (EPT)
- Time schedules
- Research projects
 - Funded research projects of TiHo in 2016
 - Research projects 2016
- Publications of TiHo:
 - Publications 2016