



Veterinaarmeditsiini ja loomakasvatuse instituut  
Institute of Veterinary Medicine and Animal Sciences

Eesti Maaülikool  
Estonian University of Life Sciences

# Self-Evaluation Report Stage One



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## Abbreviations

ASTRA	Institutional development programme for research and development and higher education institutions
BOVA	Baltic Forestry, Veterinary and Agricultural University Network
DAA	Department of Academic Affairs of the University
EBVS	European Board of Veterinary Specialisation
ECTS	European Credit Transfer System
EKKA	Estonian Higher Education Quality Agency
EMÜ	Estonian University of Life Sciences
ENIC/NARIC	Centre Estonian Agency of Academic Recognition
ERDP	Estonian Rural Development Plan
EVA	Estonian Veterinary Association
GHP	Good Handling Practice
GMP	Good Manufacturing Practice
HACCP	Hazard Analysis and Critical Control Point
ISE	Index Scriptorum Estoniae
MER	Ministry of Education and Research
MoRA	Ministry of Rural Affairs, Ministry of Agriculture (till September 1 2015)
NJF	Nordic Association of Agricultural Scientists
NOVA	Nordic Forestry, Veterinary and Agricultural University Network
NSC	Non-state commissioned students
SC	State commissioned students
VFB	Veterinary and Food Board
VFL	National Veterinary and Food Laboratory
VO	Veterinary official
ÕIS	Study Information System

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# INTRODUCTION

## Legal framework

Higher education in Estonia is regulated by the following legal acts: [the Republic of Estonia Education Act](#), [the Universities Act](#), [the Private Schools Act](#), [the Institutions of Professional Higher Education Act](#), [the Vocational Education Institutions Act](#), and [the Standard of Higher Education](#).

The Standard of Higher Education specifies the requirements for higher educational programmes and their quality assurance. It is a fundamental legal act concerning licencing and accreditation of study programmes at higher education institutions. It is based on other acts related to higher education and is valid for all cycles and forms of higher education, irrespective of the ownership or the legal status of the higher education institution. Different strategies help the application of the Standard of Higher Education in practice, e.g. [the Higher Education Strategy 2006-2015](#), the [Lifelong Learning Strategy 2014-2020](#), etc.

## The Estonian University of Life Sciences

Eesti Maaülikool, the Estonian University of Life Sciences (EMÜ) is registered as a public legal entity and acts according to the Constitution of the Republic of Estonia, the Universities Act, the Statutes and other legislative acts. The main field of activity is research concerning the sustainable use of natural resources and studies based on the research.

The EMÜ focuses mainly on six areas (food and health; agriculture, including veterinary science; forestry; environment; technology and rural economy), which in turn are divided into [24 responsibility areas](#). According to QS World University Rankings by Subject published in April 2015, the EMÜ is one of the top 100 universities in the world in the field of agriculture and forestry, ranked 51 to 100. The *Thomson Reuters Essential Science Indicators* database places the EMÜ into the top 1% most cited research facilities in the world in the field of plant and animal science, including veterinary medicine, as well as environment and ecology. In education the priority areas are agriculture, including veterinary medicine; engineering manufacturing and construction; science; education; social sciences, business and law; and services.

In 2005 the Estonian Agricultural University (Estonian University of Life Sciences today) underwent a restructuring programme and new structural units instead of faculties – institutes – were established. An institute is an academic structural unit that provides education and research in the respective fields.

EMÜ promotes an environmentally friendly way of thinking as well as the smart and balanced management of rural life through research-based education. Further information on the mission, vision and values can be found in EMÜ [Development Plan till 2015](#).

The objectives and tasks of EMÜ, the structure, management procedures, the basic principles of the organisation of studies, the basic rights and obligations of the staff and students, procedure for the use of property, the basics of financing and the systems to guarantee reporting and inspection are provided in the [Statutes of EMÜ](#).

The academic structure of EMÜ comprises five institutes, three of them – the Institute of Agricultural and Environmental Studies, the Institute of Veterinary Medicine and Animal Sciences, the Institute of Forestry and Rural Engineering – have the status of a research and development institution, and two – the Institute of Technology, the Institute of Economics and Social Sciences – are academic educational institutions.

The EMÜ basic operation is assisted by the support structure, i.e. the administrative and financial services, the library, the units that organise studies, research and development. See Figure 2.1. in Chapter 2 for the management structure of EMÜ.

EMÜ is a **member of Estonian Rectors' Conference**. In cooperation with other universities the Agreement on Good Practice of the Estonian Universities was worked out and approved. Once a year the Rectors of the Estonian universities discuss their work, evaluate positive steps and confirm the plans for future activities.

## Quality assessment of study programme groups

The quality of study programme groups, instead of the former assessment of single study programmes, is assessed by an independent agency — *Eesti Kõrghariduse Kvaliteediagentuur* ([Estonian Higher Education Quality Agency](#)) (EKKA). Veterinary medicine forms a separate study programme group.

Quality assessment takes place once every seven years, unless the Agency has established a term of up to three years based on the results of the quality assessment. The result of quality assessment is a decision made by the Assessment Council of the Agency. From 2013 the EKKA has recognised the results of the EAEVE assessment and national accreditation of the veterinary study programme group is not foreseen.

## Institutional accreditation

Institutional accreditation focuses on the internal quality assurance system of the educational institution and the functionality thereof, including the fulfilment of the tasks, duties and functions of the educational institution, the compliance of the management system with the goals and development plan of the higher education institution. In 2009 we were the only public university in Estonia to analyse the institutional capabilities of our organisation through the modified EFQM model, in the framework ESF Primus project “Quality Management in Higher Education Institutions”. The EMÜ passed [Institutional accreditation](#) in 2012.

Due to the demographic situation, the number of students studying at the Estonian Universities has decreased. At the EMÜ the number of students has fallen, from close to 5,000 to under 4,000 from 2009 to 2014. Figure 1 shows that the number of veterinary students has remained comparatively stable over the past five years, fluctuating between 349 and 358.

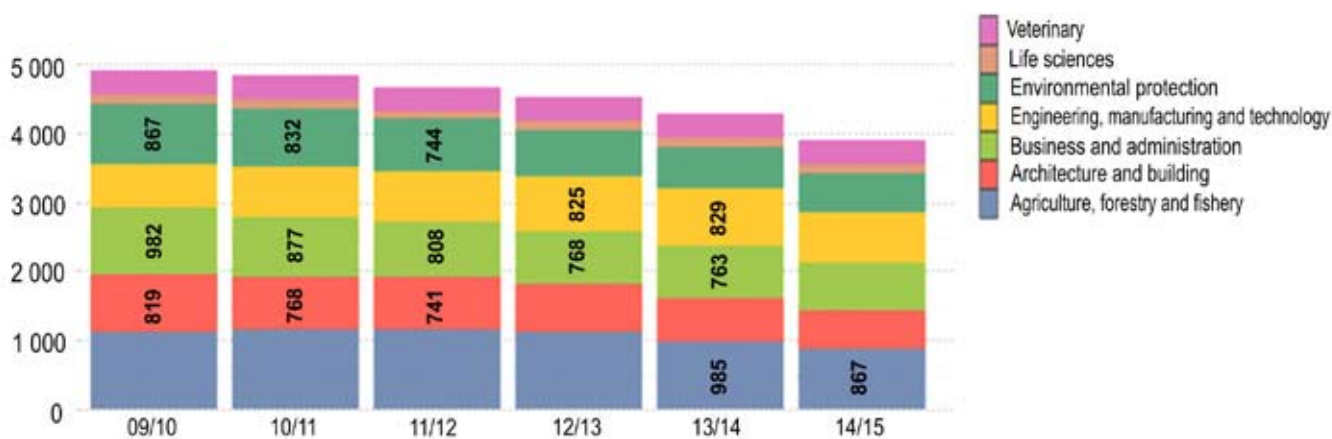


Figure 1. Number of students at EMÜ (Source: *HaridusSilm*, 2015)

## The Institute of Veterinary Medicine and Animal Sciences

In Estonia veterinary surgeons have been trained continuously since 1848. A short [history](#) of veterinary education can be found on our homepage ([www.emu.ee](http://www.emu.ee)).

The Institute of Veterinary Medicine and Animal Sciences (hereinafter the Institute) of EMÜ is solely responsible for veterinary education in Estonia. The Institute provides high-quality undergraduate education in veterinary medicine, offers further professional, scientific post-graduate and continuing education. One of the biggest objectives of the Institute is to develop the practice of veterinary medicine and related services to ensure the health and well-being of both animals and humans. We follow the “One health” concept. High-quality research conducted at the Institute forms the foundation for teaching. The Institute concentrates not only on the treatment of diseases, but also on preventive veterinary medicine, public health and food safety. The mission of the Institute of Veterinary Medicine and Animal Sciences is to ensure continuous and high-quality academic education and lifelong continuous education, considering contemporary development tendencies and needs of society; and high-level research and development activities in the fields of veterinary medicine, animal science and food science.

The present development plan of the University and the Institute are valid till the end of the year 2015. The new long term development plan is at present being elaborated on and will be prepared by the end of 2015. On the basis of the development plan action plans will be drawn up. The activities of the Institute are elaborated and reviewed every year.

Our curriculum has changed substantially since 2005. The volume of clinical subjects has been increased and studies are streamed according to the species, the volume of food hygiene related subjects has been increased, whereas that of subjects not directly related to veterinary medicine has diminished. The yearly intake of international students has increased from one student in 1991 to 25–30 from 2005. From 2013 the study programme in English was introduced for international students.

The Institute has increased cooperation with other Estonian higher educational institutions, e.g. the University of Tartu and Tartu Health Care College. The institutions are working together on opening a Master’s programme in environmental health.

## Previous EAEVE visits

The Institute was first evaluated in 2004 when a number of category I deficiencies were found. Re-visit to the Institute was made in July 2007. Two of the category I deficiencies (food hygiene and clinical case load) were entirely rectified, but the



number of necropsies remained sub-critical. The insufficient staff numbers in the clinic were also partially rectified. By 2009 the number of necropsies was increased and met the EAEVE requirements. The problem with staff number in the clinics was also solved and the Institute was awarded the ‘approved’ status. Table 1 below gives an overview about the actions taken.

Table 1.1. Overview of the previous visitations

Comment	Action
Insufficient number of hours of teaching in food hygiene and lack of a teaching lab for food-borne microbiology	<ul style="list-style-type: none"> <li>• Curriculum development has increased the number of ECTS in food hygiene and safety (See 4.2)</li> <li>• Teaching labs located in Food Hygiene Department were renovated and equipped in 2006 (see 6.1.1). Also food microbiology laboratory of the Department of Food Science and Technology is used, if necessary.</li> </ul>
Insufficient anatomo-pathological support	<ul style="list-style-type: none"> <li>• We have two pathologists, one cytologists, one laboratory assistant and two other technical staff employed at the patho-anatomy unit.</li> <li>• University pathologists became members of the ESVP.</li> <li>• One of the pathologists has taken the residency programme in Switzerland.</li> <li>• The number of histo-pathological investigations has increased. Our laboratory provides services to other veterinary clinics in Tartu.</li> <li>• Our clinic makes use of histopathological services of commercial laboratories in Europe.</li> </ul>
Insufficient necropsy numbers	<ul style="list-style-type: none"> <li>• The number of necropsies has increased. The number of necropsies performed for teaching purposes was 165 in 2006, current figures are 446 in average per year (See Table 7.1.2).</li> <li>• In cooperation with the State Veterinary and Food Laboratory VFL the 6<sup>th</sup>-year students have an opportunity to gain additional practical experience at the pathology department of VFL (See Appendix 3).</li> <li>• The Institute has agreements with animal shelters for receiving euthanized animals.</li> <li>• During farm visits with mobile clinic veterinarians with students do on-site autopsies of farm animals. These necropsies (approximately 100-150 a year) are not included in the figures in Table 7.1.2.</li> </ul>
Insufficient clinical case load	<ul style="list-style-type: none"> <li>• The patient load was increased both in small and large animal clinic and meets the requirements. (See 7.3)</li> </ul>
Insufficient number of academic staff, particularly in the clinics.	<ul style="list-style-type: none"> <li>• The number of specialised academic staff (PhD and residency programmes) in the clinics has increased remarkably (from 0 to 10). See Appendix 1</li> <li>• Internship positions (junior veterinarian positions) were created (See 12.1.1).</li> <li>• Young staff have been sent abroad for specialist training.</li> <li>• The number of academic staff in general has also increased.</li> </ul>

## Number of students

The number of students studying veterinary medicine at EMÜ has been stable over the past ten years, which is hitting the targets set and supported by state funding. Veterinary studies are a popular choice of study for able students. The size of our clinics and other facilities sets a limit to the number of students we can admit.

During the past 23 years the Ministry of Education and Research (MER) has financed the tuition of 25 veterinarians to cover the needs of qualified veterinarians for Estonia. Thus we have admitted 30–35 state commissioned students (SC) every year. However, the Institute has capacity to teach more students and therefore 25–30 non-state commissioned (NSC) students have also been admitted. Figure 2 presents the proportions of SC and NSC students in veterinary studies.

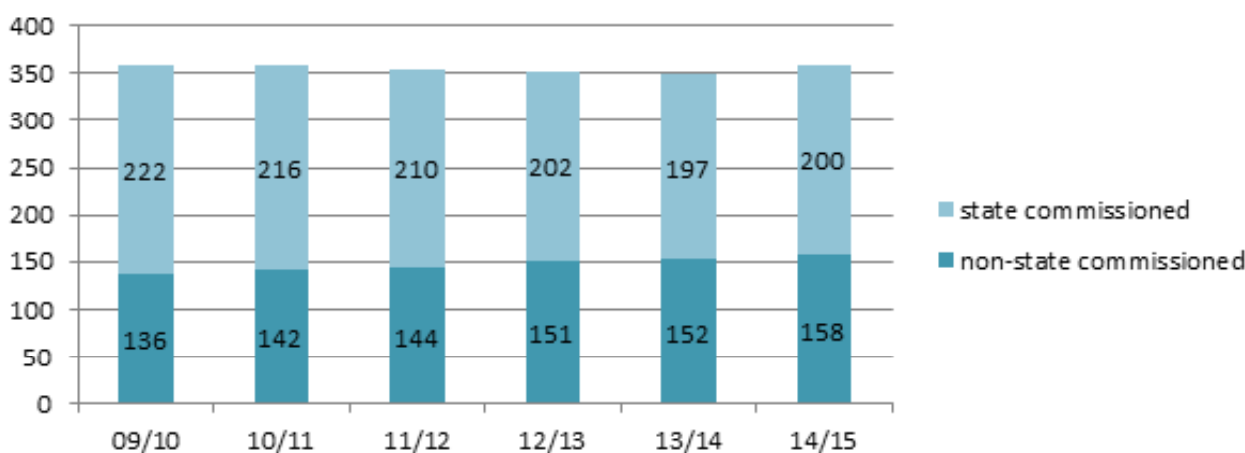


Figure 2. Number of students in state commissioned and non-state commissioned study places in veterinary studies (Source: *HaridusSilm*, 2015)

The number of international full-time veterinary students has increased from 126 to 152 over the past five years.

Figures 4 and 5 illustrate the situation in student mobility. The students of the Institute are active in student mobility in the framework of the Erasmus, Erasmus+, Nordplus, Dora, etc. programmes. Students of veterinary studies comprise about 40% of the total number of students performing their studies and practical training abroad. It can also be seen that about 41% of the incoming students are veterinary students. This number could be even bigger but due to the size of the clinics we have had to turn down a number of students from overseas wishing to perform their practical training here.

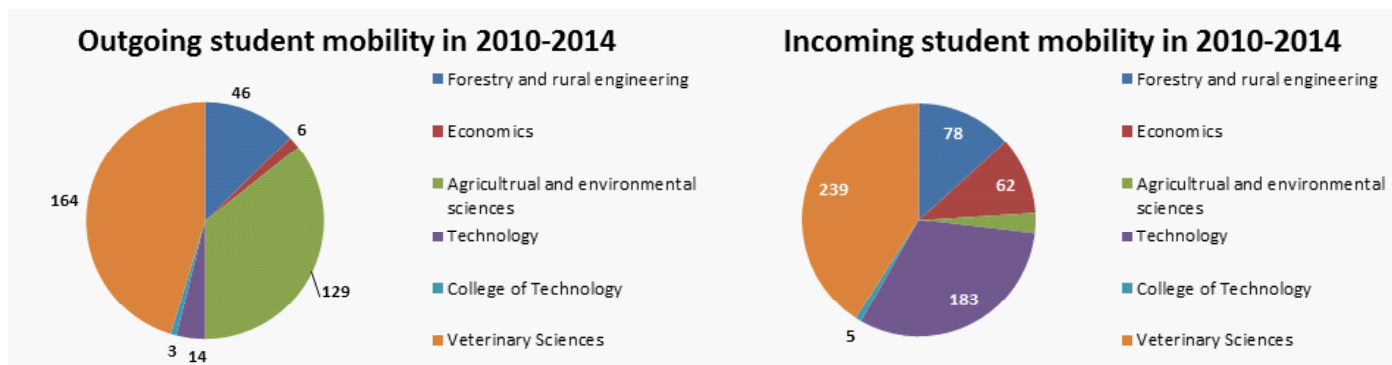


Figure 3. Number of outgoing students

Figure 4. Number of incoming students

The Institute accepts exchange students from the European Union, as well as from other countries, e.g. Russia, Kazakhstan, Georgia, Moldova, etc. Most of the incoming students come here to do their practical training at our Institute. With the introduction of studies in English we hope to increase the number of students taking the theoretical courses as well.

## New buildings and technical equipment

Most of the buildings we are working in have been either constructed or renovated in the past ten years. In 2008 the new University experimental dairy farm close to Tartu was opened, which is mainly intended for practical work for veterinary and animal science students as well, as a base for several research projects. In 2010–2011 chemistry laboratories were relocated from their tight and outdated building in Veski Street to spacious and contemporarily furnished rooms in Wing B of the Zoomedicum in Kreutzwaldi Street. In 2013 the University moved some of its departments from other parts of the town to the campus in Tähtvere, and the reconstruction of the veterinary building was continued. In 2014, accessibility to the facilities in the Zoomedicum was improved for people with moving disabilities under the project *Upgrading the Infrastructure for Research of National Importance* funded within the *Research Equipment Modernization Programme*. In 2015 preclinical facilities, e.g. histology lab, physiology lab, etc., as well as the rooms of the student societies and the administration of the Institute are being renovated. Special rooms with simulators for teaching clinical skills will be opened in 2015.

During the period 2007–2014 the apparatus were purchased mainly under structural fund actions “[Modernising research apparatus and equipment of R & D institutions](#)” (399,633.- €) and “Modernising and small-scale infrastructure of research” (127,888.- €). In 2011 a magnetic resonance tomograph (MRT) was bought from the University funds. It is also possible for the universities to purchase some equipment under the new EU Structural Fund measure in 2014–2020. This can be applied for through the institutional development programme ASTRA, under the aegis of the Ministry of Research and Education.

At present the Institute is collecting data from the departments as to the equipment needs and will apply for the development of animal clinics as this is necessary to guarantee the conformity to the requirements and needs. The modernisation of the food science department, including the micro dairy and meat and dairy labs are also in the planning phase.

## Conferences and other activities

The staff of the Institute have helped to organise a number of conferences, seminars and workshops. In 2007 the World Congress on Animal Hygiene “**Animal Hygiene 2007**” took place here, in 2017 the European Federation of Animal Science is holding their meeting in Estonia. Several seminars organised by the Nordic Association of Agricultural Scientists (NJF) have been held in Tartu.

The Institute has organised a series of annual conferences “**Healthy Animals, Healthy Food**” for the past seven years. The conference is a popular event that brings together researchers and practitioners, shows how to put research into practice and helps to establish closer contacts and find partners both nationally and internationally.

The annual conference “**Veterinary Medicine**” has been organised in collaboration with the Estonian Veterinary Association since 1994. Key speakers have been invited from both Estonia and abroad.

The Institute participates in the work of networks, including NOVA and BOVA networks, COST networks, etc. In the framework of the NOVA and BOVA networks a number of joint MSC and PhD level courses have been organised.

Members of the academic staff of the Institute lead the **Estonian Academic Agricultural Society (EAAS)**, which was first established in 1920 and shut down in 1940. The EAAS was re-established in 1989. The main objective of the EAAS is to prepare students for their future profession. The Journal of Agricultural Science has been published since 1990, with five numbers per year. Since 1996 the Society has organised annual scientific conferences, and the Transactions of the Society have been published. At present the EAAS has more than 250 members.

In August 2015 the Ministry of Agriculture and Estonian University of Life Sciences signed an agreement to create a **Risk Assessment Unit**, under the Institute of Veterinary Medicine and Animal Sciences, with the aim to offer independent scientific risk assessments and expert opinions in the areas of food and feed safety, animal health and welfare and in farm animal breeding.

## Major decisions concerning veterinary education by the Estonian Government and the EMÜ

Although the state contributed significantly (€ 8,500,000) to the modernization of veterinary training in 2003–2006 through the “State investment programmes of the Government of Estonia for 2003–2006 (Decree no. 630 / k of 25 September 2002) – for renovation and co-financing”, finding additional funding for clinical studies has remained unsolved. Therefore, EMÜ put forth a proposal to analyse the *status quo* of veterinary training together with the Ministry of Education and the Ministry of Agriculture and the representatives of the Veterinarians’ Association, which in 2012 resulted in the report “The State of Veterinary Training in Estonia and Proposals for Ensuring its Sustainability”.

As a result of this analysis and years of lobbying, the University and the ministries effected an amendment in the [Veterinary Activities Organisation Act](#) from January 1 2015, which foresees financial support, which figures are yet to be confirmed, for clinical training from the state budget, was adopted by the parliament:

*(3<sup>3</sup>) Additional financing required for covering the operating expenses relating to the organisation of the clinical studies of veterinary medicine in the Estonian University of Life Sciences is allocated from the state budget via the budget of the Ministry of Agriculture. Upon additional financing of the clinical studies of veterinary medicine, the Ministry of Agriculture takes into account the proposal of the university and the funds allocated to the clinical studies of veterinary medicine in the state budget. [RT I, 09.10.2014, 2 – entry into force 01.01.2015]*

*(3<sup>4</sup>) The Ministry of Agriculture will conclude a public contract with the Estonian University of Life Sciences for six years for the additional financing required for covering the operating expenses relating to the organisation of the clinical studies of veterinary medicine. [RT I, 09.10.2014, 2 – entry into force 01.01.2015]*

## Future developments

- Improve both the horizontal and vertical integration between subjects to avoid overlapping;
- Internationalisation is a challenge and opportunity for the Institute. Providing lectures and training for international students causes additional requirements both for the academic and support staff;
- Enlarge the clinics to meet the needs of an increasing patient load;
- Increase the number of supervising veterinarians and support staff in the clinics, increase the student patient responsibility in the studies;
- Ensure that there is cover for each subject area should current staff in position leave. All areas are not supported by high-level science projects and the selection of lecturers is limited, making the specific field really vulnerable when the lecturer wants to leave the University;
- Increase the volume of practical experience in some species (e.g. small ruminants, poultry);
- Develop the clinical skills lab.
- As the salaries in the private sector are higher, and there are well-paid jobs available abroad, it is difficult to keep staff in the clinics.

## Chapter 1. OBJECTIVES

The responsibility of the Institute of Veterinary Medicine and Animal Sciences is to provide science-based teaching in veterinary medicine, animal sciences, and meat and dairy technology. The mission of the Institute of Veterinary Medicine and Animal Sciences of the EMÜ is to ensure continuous and high-quality academic education and lifelong continuous education, taking into account contemporary development tendencies as well as the needs of the society and guarantee high-level research and development activities in the fields of veterinary medicine, animal science and food science.

The activities of the Institute are directed towards satisfying the needs of the society and offering internationally competitive education in these specialities.

The objectives of the Institute are set up in compliance with the mission, the development plans and statutes of both the EMÜ and the Institute. The Institute aims:

- to integrate the Institute, as a highly competitive and internationally recognized centre of academic education and research in veterinary medicine, animal sciences and food science, into the international network of higher educational institutions and research centres;
- to train graduates who can control and develop the whole food chain from farm to fork, bearing in mind the issues of veterinary public health and animal welfare, and be highly competitive both in the domestic and international labour markets;
- to guarantee the preparation of a new academic generation *via* well-functioning leadership, study and research systems through offering high incentives and motivation packages, a favourable working environment and good possibilities for further cooperation between the academic and clinic personnel and researchers;
- to create a life-long retraining system for veterinary practitioners, which is based on up-to-date research;
- to promote the research achievements of the Institute on a wider scale and put relevant achievements into practice;
- to regulate, standardize and develop the professional veterinary terminology in the Estonian language in cooperation with state institutions and professional associations;
- to ensure consistent accreditation of the curricula.

The Universities Act stipulates that the universities in Estonia are comparatively independent, which ensures them the freedom to make their own decisions, both in teaching and research. Institutes have large autonomy within the University. The objectives of the Institute are adopted by the Council of the Institute in accordance with the development plan of the University. As the present development plan of the University is valid till the end of 2015, the University is working on the new development plan.

Each year the University adopts its Action Plan for the coming year. At the end of each year all Institutes submit their reports for overall audit. In this way the objectives and the activities of the Institute are regularly evaluated. The results are reported to the University Council and the Advisory Board.

The general objectives of the Institute have not undergone any dramatic changes, as the role of the University is still to advance science and culture and to provide services to the society that are based on educational, research and other creative activities, and to help students become responsible citizens who are able to demonstrate initiative. EMÜ, being the only University in Estonia that provides veterinary education, faces a great responsibility in training incentivized professionals, who take great pride and interest in their profession and interest in improving and updating their knowledge and skills through in-service training and life-long learning. EMÜ as a whole offers a comprehensive approach to the ecological, environmental, energy, food supply, health and natural resource challenges facing the world today.

Main strengths and opportunities of the Institute. The Institute has hired qualified and internationally renowned academic staff. The number of applicants willing to study veterinary medicine has not decreased in the past few years in spite of the changes in the demographic situation. The Institute takes on international full-time and exchanges students, which adds to the quality of the teaching and learning environment. The Institute has a wide range of international connections both in the universities, research institutions and in industry. As most of the veterinarians in Estonia are alumni of this University, it means that there is a wide network of professional connections available. The students appreciate the friendly and caring atmosphere and the personal approach to students. Students point out close cooperation with farms and a great amount of practical training as great strengths. Small group size ensures effective learning. Students are also very pleased with the fact that we have a great interaction between students and our faculty staff.

Main threats and weaknesses of the Institute. The present state research and educational policy does not fully support the development of narrow field specialities, e.g. agriculture-related areas, animal husbandry, veterinary medicine. Additional research funding is mainly project-based, which makes long-term planning more complicated and may, especially in the case of short-term projects, cause job security problems for the staff. Being a University in a small country also means that business enterprises are small and the support from the industrial sector to the University is moderate. Research groups are small and relations with other national universities rather competitive, although the Institute collaborates with the University of Tartu

(UT), Tartu Health Care College and the Tallinn University of Technology (TTU). As to the teaching staff, their workload is high and in some areas there is not much choice between the lecturers. As the salaries are not competitive, it is complicated to recruit lecturers from the private sector in Estonia and from abroad. The level of formal specialisation in some clinical disciplines still calls for improvement. In some narrow specialities we lack specialists (poultry, rabbit).

## 1.1 Suggestions

- enhance collaboration with the agricultural and industrial sectors both in regard to research and academic activities;
- move all the animal science related departments of the Institute to the Zoomedicum to stimulate synergy between the departments, ensure better cross-use of facilities and lower maintenance costs;
- improve the working and studying environment, e.g. ventilation, create rest areas for students and staff;
- increase the capacity for research as well as competitiveness in project activities;
- work out programmes for professional post-graduate training for veterinarians;
- raise awareness of the importance of a well-trained veterinarian in the society.

## Chapter 2. ORGANISATION

### 2.1 Factual information

#### Details of the Institute

Name of the Faculty: Institute of Veterinary Medicine and Animal Sciences;

Address: Kreutzwaldi 62, Tartu 51014, Estonia;

Telephone/fax: +372 7313 706;

Website: <http://vl.emu.ee/en/>

E-Mail: [vl@emu.ee](mailto:vl@emu.ee)

Title and name of head of the Faculty: Director **Andres Aland**, DSc (veterinary medicine)

The Institute is part of the Estonian University of Life Sciences:

Name of the University: Eesti Maaülikool, Estonian University of Life Sciences (EMÜ)

Address: Kreutzwaldi 1, Tartu 51014, Estonia

Telephone: +372 7313 200

Fax: + 372 7 313068

Website: [www.emu.ee](http://www.emu.ee)

E-Mail: [rector@emu.ee](mailto:rector@emu.ee)

Title and name of head of the University: Rector **Mait Klaassen**, (veterinary medicine)

As shown on Figure 2.1 the EMÜ leadership includes the Rector, the Vice-Rector of Research, the Vice-Rector of Studies, the Management Director and the Chief Accountant – the Head of Department of Finances.

The **Council of the University**, which is chaired by the Rector, is the highest decision-making body at the University. It is composed of the Rector, Vice Rectors, Academic Secretary, persons appointed by the Rector, elected representatives of structural units, and the representatives of students elected by the Student Council. The authorised representative of the board of governors and persons invited by the Rector participate in the Council of the University meetings with the right to speak. The work of the Council is regulated by the Council's Rules of Procedure. The Council approves the Statutes of the University and its amendments, the academic structure of the University and the statutes of the institutes and adopts the development plans of the University and approves the development plans of the academic units. The Council also approves the curricula of the University and establishes the conditions and procedure for student admissions, the defence of academic degrees and exclusion. Regarding the staff, the Council establishes the qualification requirements for staff members and the conditions and procedure of evaluation. The Council also elects Full Professors.

The number of Council members and the quota of representation of academic units is determined by the Rector. Each academic unit may have up to four representatives on the Council. The student representation quota is 20 per cent of the number of Council members, while students from every tier must be represented. The Rector may appoint up to 10 per cent of the Council members by name.

Regular Council meetings take place at least six times in an academic year. The Council forms standing committees: the Committee of Academic Matters, the Committee of Study Matters, the Research and Development Committee, and the Budget Committee, as well as other *ad hoc* committees, as necessary.

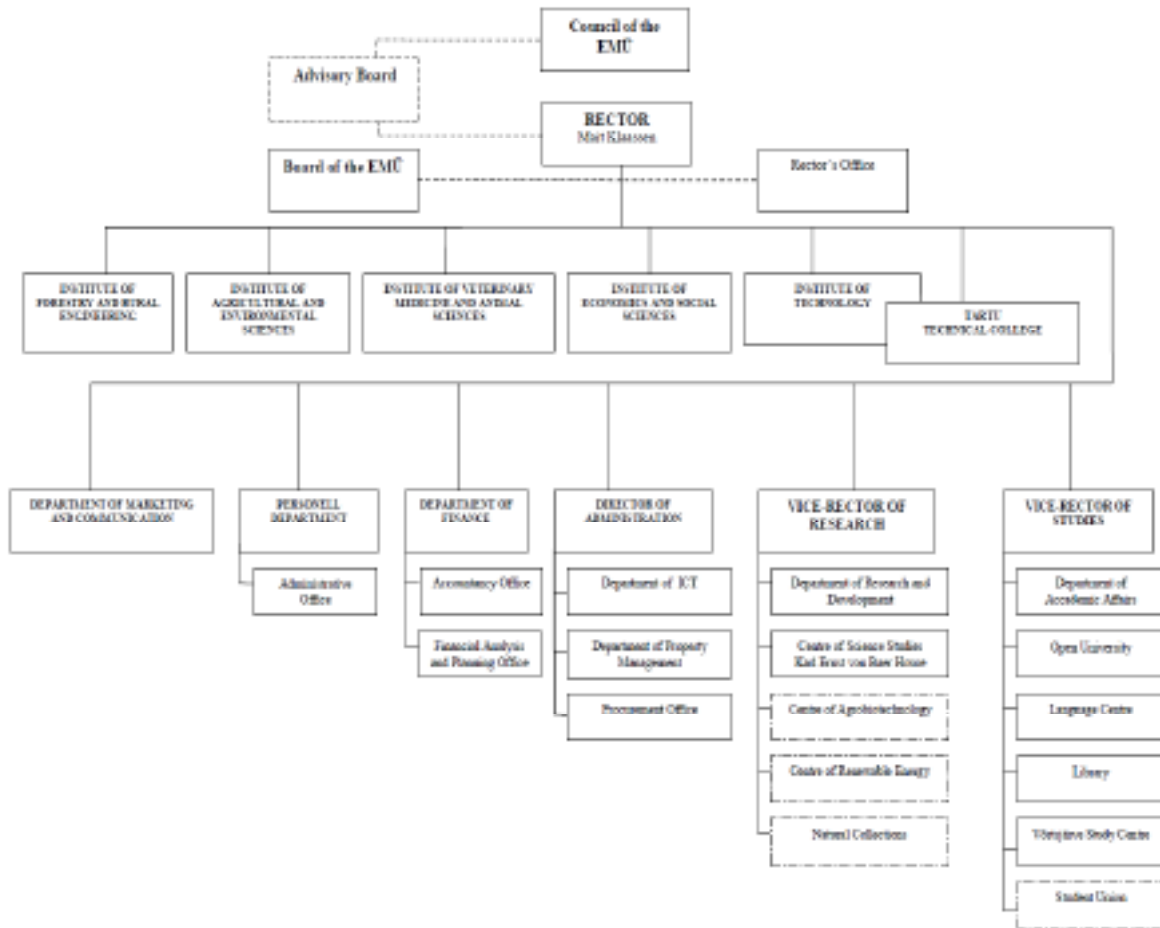


Figure 2.1 Structure of the Estonian University of Life Sciences

The **Advisory Board** appointed by the Government of Estonia, is the highest advisory body linking the university and the society at large, which makes suggestions to the Minister of Education and Research and the EMÜ Council, concerning issues of EMÜ development.

The **Board** of EMÜ is a body of operational management formed by the Rector. The Board takes decisions and establishes opinions for the passing of legislative acts and expresses their opinions on the issues in the agenda of the Council. The Board members are the Rector, Vice-Rectors, the Chief Accountant – the Head of Department of Finances, the Management Director, the Directors of Institutes, the Director of Tartu College of Technology and the Chairperson of the Student Union.

The duties and authority, mutual responsibilities and substituting regulations of the structural units and their staff have been determined in the procedure descriptions, the statutes and descriptions of the structural units and the contracts of employment (administrative and support structure). The responsibility of the directors of institutes is clearly defined and generally it is their principal job.

## Planning process at EMÜ

Planning is based on the mission, vision and values of EMÜ. During the compilation of the new development plan the mission, vision and values are analysed, discussed with different interest groups and revised, if necessary. Feedback and suggestions from stakeholders are taken into consideration when working on the next development plan, which forms the basis for the action plan. An action plan is drawn up for each academic year and it contains information on the budget for the fulfilment of the tasks. The operation of the university is supported by permanent and temporary processes and policies that have been agreed upon, as well as the procedures and directives regulating the activities. Implementation of the planned activities and achievement of expected results is reviewed according to the prescribed procedures. An overview of development tasks and the summary of results is made once a year.





Figure 2.2. Strategic planning process at EMÜ

## Plans of action and priority fields

The [development plans for the institutes](#) are established according to the [EMÜ Development Plan](#), as well as more detailed operational plans for shorter periods and more specific fields of activity. The Vice-Rector of Research coordinates the implementation of the Development Plan. The institutes report on the progress in implementing their development plans to the EMÜ Council at least once every three years.

[The Action Plan 2010-2015](#) has been compiled for fulfilling the EMÜ Development Plan objectives and tasks in two stages, identifying the short term directions and measures to assess the desired outcomes. The operational plans are based on the mission, vision and basic values of the university, considering the specific goals according to the priorities of the country and expectations of the society at large.

## Management principles at EMÜ

The EMÜ management values teamwork and collaboration internally and externally. The students, staff (personnel, *professors emeriti*, *docents emeriti*) and interest groups are included in the process of drawing up, establishing and carrying out, introducing, implementing, reviewing and updating the mission, vision, development plans, strategies and policies of specific fields and action plans of the EMÜ. It is the concern of the management that the students and staff of the EMÜ have an idea of the university as a unit and are able to evaluate the developments that have taken place.

**The EMÜ Professors' Council** is an independent academic association. The membership is voluntary for professors and *professors emeriti*, and the activities are organised by the Management Board which is elected at the general meeting. The Rector of EMÜ is a member of the Board. The fields of activity of the Professors' Council include the academic spirit in EMÜ, attitudes and internal culture; study and research development issues, it helps with developing the EMÜ infrastructure, counselling and development, participation in working out rural and agricultural policies, communication with counties and agricultural producers, cooperation with other Estonian universities and other educational establishments, etc.

## Management principles at the Institute of Veterinary Medicine and Animal Sciences

Figure 2.3 describes the structure of the Institute. The highest decision-making body of the Institute is the Institute Council. The Council is composed of the Director, Director of Studies, Director of Research, persons appointed by the Director (20%), elected representatives of structural units, and the representatives of students elected by the Student Council (20%).

The **Institute Council** approves the Statutes, the Development and the Action Plan of the Institute and their amendments, as well as the budget and the annual report of the Institute. It makes decisions on general issues pertaining to the academic and research activities at the Institute, selects members of the teaching and research staff, except for the professors through open competition and can express no confidence in the Director. The Institute Council adopts regulations and decisions within the limits of its competence.

The position of the **Director of the Institute** is filled by way of open competition. The Rector convenes an expert committee of at least five members that evaluates the candidates on the basis of submitted documents. The expert committee must inclu-

de at least two members from the Institute. If necessary the expert committee may interview the candidates. The Chairman of the expert committee makes a summary to the Council of the Institute. The Director is chosen by the Institute Council in a secret ballot, for a period of five years. The same person can be elected Director of the Institute for a maximum of two periods. The Director represents and acts on behalf of the Institute, manages the Institute budget and is responsible for the day-to-day running of the Institute. The Director reports to the Council of the Institute and is responsible to the Rector, Vice-Rectors and the University Council. The Director appoints the heads of departments, the Director of Studies and the Director of Research.

The **Director of Studies** is responsible for the day-to-day organisation and running of studies. This includes the communication and information exchange between the students, the staff of the Institute and the Department of Academic Affairs; drawing up the time schedule for lectures, practical trainings and examinations; updating and keeping records in the study information system ÓIS; etc. The Director of Studies and his team advise students in study-related matters, e.g. (including RPL/APL and the transfer of learning outcomes) as well as in matters concerning admission and graduation.

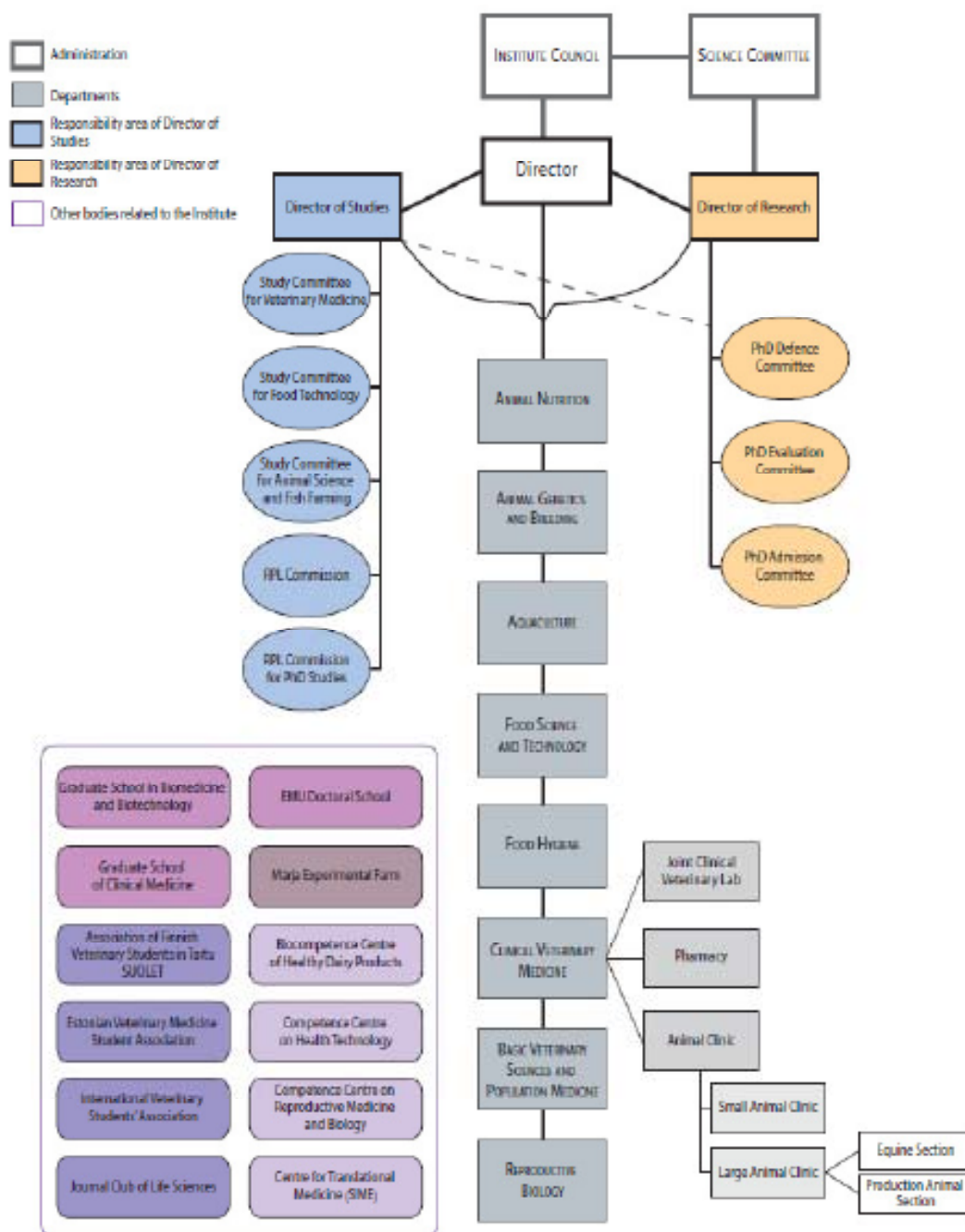


Figure 2.3. Structure of the Institute

**The Study Committee** is responsible for the evaluation of the teaching process and improvement of the curricula on the basis of feedback from the students, lecturers, employers and other stakeholders. The Committee reacts to all teaching related problems, including dealing with complaints from the students. The Committee also has a say in the projects related to the promotion and teaching of the curriculum. The Study Committee is led by the programme leader. The Committee comprises 8–10 members and three of these are students.



The tasks of the **Scientific Council** include the evaluation of the quality of scientific research and cooperation with other universities and research institutions both at home and abroad. The council assesses the supervisor candidates and the study plans of the PhD students. It expresses opinions on research based questions, assesses scientific research reports of PhD students and is involved in the strategic planning and development of PhD studies.

The Institute has good collaboration with different professional bodies (national veterinary societies), the Veterinary and Food Laboratory (VFL), as well as state veterinary services and the Ministry of Rural Affairs (MoRA). Professionals are involved in teaching, in the organisation of practical training, reviewing final theses, etc. Staff members are involved in different national associations, committees and working groups. They are frequently invited as speakers to meetings and conferences and are regular authors in science journals and popular newspapers.

General public is informed about the activities of the Institute through different channels, e.g. press releases, conference or seminar information, etc. The Institute participates in popular Museum Nights and Researchers' Nights. Open Days are organised for school-leavers and pet owners. These events have received quite a lot of attention from the media and have attracted good attendance. In 2013 the Department of Marketing and Communication of the University was awarded a Special Prize in Science Communication for a series of articles on the birth of the first transgenic calf in Estonia. The prize was awarded by the Estonian Public Relations Association.

On January 1 2014 several changes were made to the structure of the Institute. The Department of Therapy was renamed the Department of Clinical Veterinary Medicine. By merging three departments, the Department of Animal Health and Environment, the Department of Morphology and the Department of Infectious Diseases a new department — the Department of Basic Veterinary Sciences and Population Medicine — was formed. Changes also took place in the Department of Nutrition and Animal Products Quality, which is now called the Department of Animal Nutrition. To provide better laboratory services for clinical staff and students, and optimize the use of facilities and resources, a joint veterinary clinical laboratory was established.

## Chapter 3. FINANCING

### 3.1 Financing at the University

The University prepares a balanced budget concerning all revenue and expenditure of the university. The budget of a university, specified in subsection 3 (1) of Universities Act, must comply with the financial plan, budget balance rules provided for in § 6, net debt rules provided for in § 10 and the restrictions established under § 11 of the [State Budget Act](#).

At the beginning of the subsequent year the University must prepare a report on the implementation of the budget of the University, submit it to the Council of the University for approval. Each year the university prepares a financial plan that serves as the basis for the establishment of the budget of the university. The financial plan is prepared and submitted according to the requirements provided for in § 12 of the State Budget Act. A draft budget for the University is drawn up on the basis of the financial plan and is submitted to the Council of the University for approval. The National Audit Office audits the activities of universities pursuant to the [National Audit Office Act](#), whereas the economic activities of a university are monitored by regular and special audits prescribed by the Council of the University.

The University, including the Institute, is financed from the following sources:

- 1) Operational support from the state budget, including performance based support for PhD studies, which is financed through the Ministry of Education and Research;
- 2) Revenues from the development of educational activities and research and development revenues, financed by the Estonian Research Agency, various ministries and their subsidiaries or other agencies;
- 3) tuition fees;
- 4) revenue from clinical and other services
- 5) annually decided targeted financing from the MER and MoRA.

The current financing model does not fully meet the mission of the Institute regarding veterinary education as it does not take into account the costliness of clinical training both internally and externally. Basic financing from the government is not sufficient. Self-earnings from services (tuition + clinical services) must be increased. Internal division of funds in the University needs to be revised and the proportional discount of overheads from incomes negotiated.

The budget of the Institute of Veterinary Medicine and Animal Sciences is part of the fiscal budget of the University. The Budget Commission prepares the university budget, which is approved by the Council of the University. The budget is based on the performance contract, the cost of the planned state budget for education and research, the Development Plan, the Territorial-Spatial Development Plan and the Action Plan of the University.

The state financing of study programmes on the basis of the number of students taking into account the nationally approved basic costs and the set coefficients (a factor of four for veterinary studies) was applied till admissions in 2013. From admissions in 2013, state financing has depended on the financing model agreed upon for the transitional period, i.e. 2013–2015. The proportion of financing received from the MER divided between the universities depends on the following factors:

1. The total number of students admitted (10%);
2. The number of admitted students who achieved higher than 75% in the three state examinations (5%);
3. The number of graduates in the fields of natural and exact sciences, engineering, production and construction (6%);
4. The number of graduates in professional higher education and undergraduate education (12.5%);
5. The number of graduates in postgraduate (master) and integrated studies (9%);
6. The number of full-time students (7.5%);
7. Achievement of obligations laid down in the performance contract (50%).

To date the University Budget Committee has continued to follow the coefficient of 4 as a basis for the calculation of the budget for veterinary studies. The financing model is expected to change in the near future.

Research funding is mainly project-based in Estonia and it is provided on a competitive basis, where the scientific level of the research groups and the scientific quality of the proposed research are decisive factors. In 2014, basic funding comprised only 12% of the research funding sourced from Estonia's tax revenues. The size of the research funding allocated by the MER depends on:

- 1) the number of high-level publications in internationally recognized journals, the number of high-level monographs and the number of registered patents and patent applications;
- 2) the volume of research and development contracts;
- 3) the number of doctoral theses.

The distribution of funds earmarked for studies per subjects is based on the volume of the course (ECTS), the number of students registered for the course, which is, in turn, multiplied by the basic cost per student and the per-student cost base and the weighting coefficient. Since clinical practical training is much more expensive than theoretical studies, clinical study is further supported from additional funds allocated from the state budget via the MER and MoRA. The MoRA mainly supports agricultural animal medicine-related clinical studies. In 2015 the MoRA financed veterinary education to the amount of 120,000 euros.

The purchase of equipment is mainly financed from various research projects and from the Institute's own income. During the period 2007–2014 apparatus was purchased mainly under EU Structural Fund actions "[Modernising research apparatus and equipment of R & D institutions](#)" and "Modernising and small-scale infrastructure of research." In the new EU Structural Fund for the period 2014–2020 the University is planning to apply for support through the institutional development programme ASTRA.

### 3.1.2 Capital expenditure

In order to make repairs or build new buildings funds are applied for from national support schemes or from the budget of the University. Strategic decisions are made according to the Spatial Plan of the University. The Board of EMÜ together with the Budget Committee set the annual priorities based on proposals from the Institutes. The priorities concerning the construction and reconstruction of facilities are set up by the Territorial-Spatial Development Committee, which includes representatives from all institutes. Based on the proposals from the Institutes the Budget Committee annually decides which objects will be financed. In addition, the University has the possibility to request funds for construction or re-construction from different national support schemes from various ministries and agencies. In the Institute the administration of the Institute decides on the allocation of funds taking into account proposals from the departments.

Equipment has been purchased from the respective measures of the EU structural funds, as well as from various research projects or financed from the self-generated funds of the Institute. Support may be obtained by target funding or from the [Institutional Research Funding](#). In order to purchase equipment, each department submits a proposal and by consensus the heads of the departments agree what equipment to buy.

The Department of Property Management of the University prepares an annual budget for real estate items, based on the expenditures of the previous year and predictions for the following year. Within the Institute, the running costs of the buildings are divided between the departments, on the basis of the buildings' areas, which are at the disposal of the respective structural unit.

The budget is drawn up in accordance with the property maintenance standards. The savings from the economic costs are used for repairs and the maintenance of specific real estate items.

### 3.1.3 Information on extra income

Rendering paid services at the University is regulated by the decree of the University Council “Conditions and Procedure for the Provision of Paid Services at the Estonian University of Life Sciences”. Pursuant from this decree the Rector establishes the overhead rates at the University.

The following overheads are collected by the central administration of the University:

clinical or diagnostic work:	13%
research grants:	0–20%, depending on the conditions stipulated by the donors
other:	35% (tuition fees).

#### 3.1.3.1 Tuition fees

Thirty students are admitted to state commissioned study places. These students do not have to pay any registration or tuition fees. Additionally up to thirty fee-paying students are admitted. From autumn 2013, fee-paying students study in English.

Tuition fees are based on the expected expenditures related to the curriculum. The Council of the University confirms the rate for tuition fees for each academic year and they are publicly available on the [University web page](#). The University has the right to increase the tuition fee for students studying on the programme by up to 10% of the fee per year. In 2015/2016 the tuition fee is 7800 EUR per year. Twenty-five percent of the tuition fee revenues are allocated for the overall expenses of the University and up to 10% for the provisions. The remaining portion of the tuition fees are used for academic activities at the Institute.

### 3.1.4 Income (revenue) and expenditure

Table 3.1 Income/revenue for the veterinary curriculum in the Institute from 2012 to 2014 (in EUR)

Year	State			Income generated by the Institute			Re-financing of the institute	Total
	To the university administered outside the Institute	Direct to the Institute	State allocations for the veterinary curriculum	Overhead and provisions from self-earnings	Income from services provided remaining at the Institute	Income from research projects remaining at the Institute		
2014	166,496	674,123	280,000	246,404	1,259,215	335,414	220,935	3,182,587
2013	150,262	394,186	268,959	274,071	1,016,580	462,804	271,772	2,838,634
2012	183,181	439,066	150,000	297,166	973,130	325,661	370,997	2,739,201

Direct costs are classified into two broad categories: personnel expenses, and other expenses. Real estate management expenses are handled as indirect costs and they are not included in Table 3.3 below.

Table 3.2. Expenditures of the veterinary curriculum in the Institute (in euros)

Year	Pay	Non Pay				Total
	Salaries	Teaching support	Research Support	Clinical Support	Other <sup>1</sup>	
2014	1,612,490	1,035,491	165,727	368,879		3,182,587
2013	1,460,266	969,370	55,860	353,138		2,838,634
2012	1,226,269	751,773	298,079	463,080		2,739,201

<sup>1</sup> expenditure on occupational health, training and education, business travel, office and business costs, transport costs, membership fees, statements and communications, representational expenses

As with the revenue, the costs have also increased. Analysis of the changes in the expenditure at the Institute has shown that it is the appreciation of veterinary studies that affects the increase in the veterinary training costs.

The R&D funding from the different projects and measures of the European Union are among the most important measures of research financing. The priorities of the new ESF period – problems related to food security, sustainable agriculture, and bio-economy – are both European and global in importance. Unfortunately, however, it is the only area that is related to veterinary medicine, which is very important as regards food safety issues, etc. The trends in EU R&D activities also affect national funding. Figure 3.1 shows the main sources of the Institute research funding in 2014.

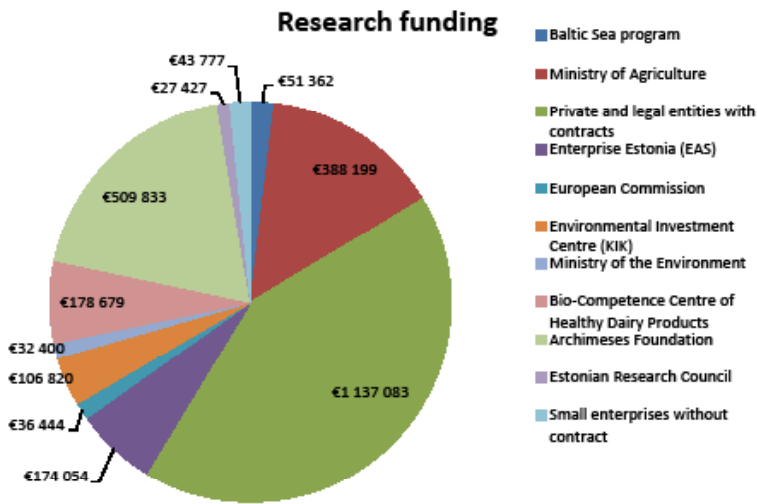


Figure 3.1 Research funding in 2014

### 3.2 Comments

- In case of increased funding the Institute would like to invest in people by paying a competitive salary. In order to raise the quality of education we would like to increase the number of veterinarians working at the clinics that would be able to supervise student research and provide the staff with more possibilities for self-improvement. The other possibility is to hire top-specialists from abroad (for anaesthesiology, critical care, diagnostic imaging, etc.). The Institute would also like to invest more in purchasing study related equipment (simulators, diagnostic imaging, etc.).
- The Institute is sufficiently autonomous in the distribution of study funds and self-generated revenue and actively searches for additional funding. The employees apply for funding to increase mobility (Erasmus+; Nordplus, EEA/Norway Grants Scholarship programme, etc.); to upgrade the research equipment (ASTRA), from different Estonian Rural Development Plan (ERDP) measures (MoRA), Enterprise Estonia measures, etc.
- At present the overhead on tuition fees is 35%. The Institute is negotiating to bring this down to 13%, which is the general rate for paid services at the University.
- According to Statistics Estonia, in 2014, the average monthly gross wages and salaries were 1,005 euros and the average hourly gross wages and salaries were 6.14 euros. The employees holding a PhD in Estonia get on average 1,600–1,700 EUR per month, whereas at EMÜ the sum is 1,400 EUR. From October 2015 new pay scales will be adopted at the EMÜ. The employees, who are active and participate in projects, may be paid extra for their project work. The salaries of support staff are also comparatively low.

### 3.3 Suggestions

- Find additional funding to pay the employees a competitive salary and hire more veterinarians to supervise and work with students in the clinic;
- Find funding for the enlargement of clinics and for purchasing contemporary equipment and teaching aids.
- Increase competitiveness to attract research financing in order to increase the number of research personnel and the importance of research in clinical research in particular. This would enable the involvement of more undergraduate students in clinical research.

# Chapter 4. CURRICULUM

## 4.1 Factual Information

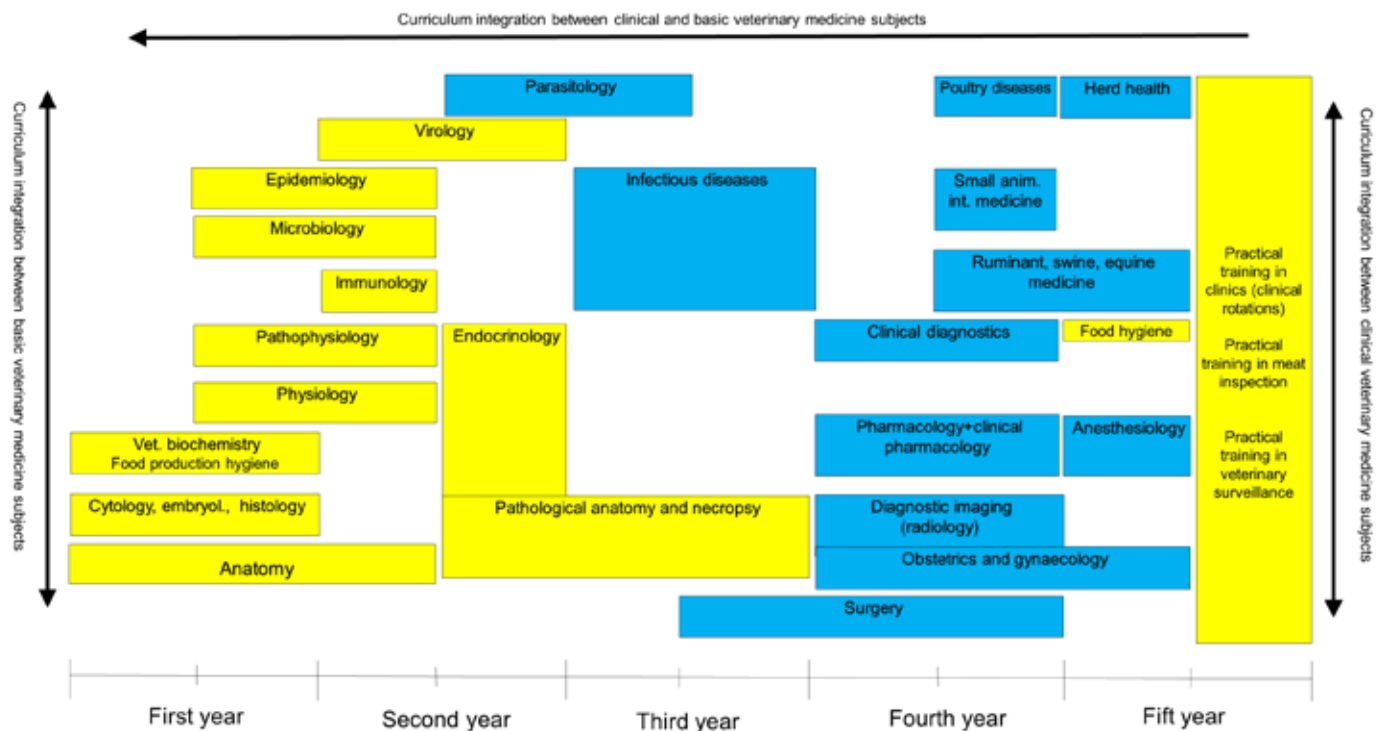


Figure 4.1. Curriculum in veterinary medicine

The development of the curriculum is a continuous process driven from within the Institute by staff, in response to changing needs of employers, students and new knowledge. The development and modernisation of the curriculum proceeds from Professional Qualifications Directive 2013/55/EU, amending old Directive 2005/36/EC, as well as the requirements and suggestions of the European Association of Establishments for Veterinary Education (EAEVE), the Federation of Veterinarians of Europe (FVE) and the World Organisation for Animal Health (OIE). In Estonia the Universities Act and the [Standard of Higher Education](#) are the fundamental legal acts concerning the licencing and accreditation of study programmes or higher education institutions. The Standard of Higher Education is based on other acts related to higher education and is valid for all cycles and forms of higher education, irrespective of the ownership or the legal status of the higher education institution. In addition, veterinary studies are regulated by the Estonian Government Regulation No 312, adopted on October 25 2004, which determines the total volume of studies, admission and graduation requirements, requirements for the curriculum, learning outcomes and competences to be acquired, as well as the requirements for the academic staff.

The nominal duration of the long-cycle programme (integrated BA and MSc studies) in veterinary medicine, effective from admissions 2002/2003, is six years (360 ECTS credits). One credit point corresponds to 26 hours of work on the part of the student. One academic year comprises 60 ECTS, which corresponds to 1,560 hours of student work. The qualification awarded upon completion of an integrated study programme is a Master's level degree and gives access to PhD programmes.

There is no specific national study programme and the study programme in veterinary medicine is developed in accordance with the [Statute of the Curricula](#) of the University taking into account the framework requirements established by the Government of Estonia. The Statute of the Curricula establishes the requirements for the structure, content and quality of the curricula at all levels in the University and the procedure for opening, managing and closing curricula. The curricula are first defined, modified and adopted by the Council of the Institute and then by the Council of the University. If the changes are related to the name of the curriculum or a change in the specialisation of the curriculum, the Ministry of Education and Research must confirm them.

All the changes made to the curriculum are first discussed and approved by the Study Committee at the Institute and then by Study Board of the University Council. The Study Board of the University Council either approves the changes to the curriculum or rejects them.

The University Council approves amendments to the name of the curriculum or specialization, the addition or closure of a specialization, amendments to the language of tuition or the name of a degree to be granted at the proposal of the Study Committees of the Institute. To make these afore-mentioned changes in the curriculum, the Director of the Institute submits to the Head of the Department of Academic Affairs the decision of the Curriculum Board of the Institute.

The Study Board of the University Council approves changes in the volume of single subjects, the replacement, closure and addition of single courses at the proposal of the Study Director of the Institute. In such cases the Study Director of the Institute submits to the Head of the Department of Academic Affairs of the University the proposal for making changes to the curriculum.

The Head of the Department of Academic Affairs presents the proposal for making changes to the curriculum to the Study Board of the University Council. In the case where the proposal does not conform with requirements, the Head of the Department of Academic Affairs sends the proposal back to the Institute for improvement and corrections. The Study Board evaluates the proposal and either approves, asks for further elaboration, or rejects the changes to the curriculum.

After receiving the information from the Department of Academic Affairs, the Institute responsible for the management of the curriculum enters the new version of the curriculum on the Study Information System (ÕIS), by March 1 at the latest, unless prescribed differently in the decision on the change in the curriculum. The new version of the curriculum is also entered onto the Estonian Education Information System (EHIS).

The development of the curriculum at the Institute level is under the jurisdiction of the Study Committee. The Study Committee is established at the proposal of the curriculum leader by the order of the Director of Studies. Based on the curricula taught at the Institute there are three study committees: the Study Committee in Veterinary Medicine; the Study Committee in Animal Production and Fish Farming and the Study Committee in Foodstuffs Technology. All the Study Committees include representatives of the staff and students from the respective study programmes. The Study Committee decides on the way the educational and learning activities are organized as well as on the practical elaboration of the learning outcomes and the content of the education, the day-to-day running of the curricula by coaching and guiding the learning processes. The Study Committee takes into account the feedback from the students and the academic staff in their work. The Institute hired a quality manager in May 2015 whose task is to support and lead quality improvement initiatives at the Institute.

Elaboration of the learning outcomes and the content of individual courses is the responsibility of the responsible teacher. The content of subjects that are linked to each other is discussed between the departments. Academic teaching staff also discuss the issues concerning teaching of their subjects by sharing information on teaching material and through formal and informal discussions. The Study Committee monitors and analyses the learning outcomes and content of the individual courses, paying attention to the integration between subjects and possible overlaps and teaching quality issues.

Changes to the study programme, e.g. allocation of hours between the various subjects, the balance between theoretical and practical teaching, and course content, are thoroughly discussed in the Study Committee, taking into consideration the changes in the veterinary profession, the guidelines from the University, the Estonian Government and European organizations as well as the opinions of the students expressed in the ÕIS and other feedback systems and during personal meetings. After reaching common ground the proposal is submitted to the Council of the Institute and later to the Head of the Department of Academic Affairs, who will pass it on the Study Board of the University Council, or directly to the University Council, for official approval. Therefore the Institute has a large degree of autonomy concerning changes in the curriculum as long as the final competencies and outcomes are achieved.

The curriculum is under continuous change. It is adapted to the changing needs of the profession and society. As a lot of subjects are inter-related, the academic staff have to harmonize their subjects to ensure an integrated curriculum.

The most important changes made in the curriculum since 2005 are:

- (1) the removal of subjects with a low veterinary relevance from the veterinary curriculum;
- (2) giving more veterinary orientation to several general subjects like “ecology and environmental protection” and “economics”. This has enabled to move most of the basic veterinary sciences to first two earlier study years and to start with the subjects of clinical relevance from third study year (infectious and parasitic diseases, clinical pharmacology, surgery, clinical diagnostics and diagnostic imaging);
- (3) teaching of clinical medicine by animal species;
- (4) increase of curriculum hours for practical clinical training and introduction of clinical rotation system;
- (4) increase of curriculum hours to subjects related to food hygiene and veterinary public health. Introduction of an introductory course in food hygiene and VPH for 3<sup>rd</sup> year students.
- (5) increase of curriculum hours to subjects on principles of research and acquisition of scientific information. The subjects like quantitative veterinary medicine (for second year students) and research methodology (for 5<sup>th</sup> year students) have been introduced in addition to the subjects already present like fundamentals of research and biometry (for the 1<sup>st</sup> year students).

The keywords for the future development of the curriculum are:

- better integration of basic and clinical subjects;
- analysis of outcomes of subjects and relevance of allocated curriculum hours and teaching methods to achieve the stated outcomes.



## 4.1.1 Power of subjects and types of training

### 4.1.1.1 Power of subjects

The curriculum constitutes of a base module; a narrow field module, including practical training; a speciality module, including practical training; elective subjects and an elective module. From 2013 the students in their 6<sup>th</sup> study year can choose between two tracks — Farm Animal and Equine Medicine (50 ECTS) or Small (Companion) Animal Medicine (50 ECTS). In order to graduate the student has to defend a graduation thesis or take a final examination (8 ECTS).

The **obligatory base module** (16 ECTS) enables the accumulation of knowledge in the basic sciences in order to enhance the scientific understanding of biological systems and processes and gain the knowledge and understanding necessary for further veterinary studies (Latin, informatics and biostatistics, basics of scientific research and use of scientific information).

Having passed the module the student:

- 1) has an overview of the systematics, general morphology and functions of animals important in veterinary medicine and animal husbandry, and knows the essentials of their population biology;
- 2) displays sufficient knowledge of Latin for the acquisition of veterinary medical terminology, formulation of diagnosis and writing drug prescriptions;
- 3) has an overview of the basic principles of scientific research, the structure of a research paper, and is able to find scientific information from the library and from web-based sources, write and correctly format scholarly work (literature reviews, research projects, etc.);
- 4) shows basic computer skills (text editing, spreadsheets, presentation software, internet), has basic knowledge in biostatistics and is able to perform simple statistical data analysis using spreadsheets;
- 5) has an overview of the basics of agricultural economics;
- 6) has sufficient knowledge in the production of animal feeds.

• **Core subjects taken by every student: Base module – general knowledge and basic sciences:**

KE.0028 Latin for specific purposes (2 ECTS) (*Speciality specific Latin*)

KE.0068 English for specific purposes (3 ECTS) (*Speciality specific English – for students in the Estonian language group*)

KE.0069 Estonian for foreigners (3 ECTS) (*For students in English language groups*)

VL.0117 Fundamentals of scientific research (1 ECTS)

VL.0413 Informatics and biometry (4 ECTS)

VL.0607 Animal biology (2 ECTS)

PK.1558 Fundamentals of agronomy for veterinarians (2 ECTS)

MS.0767 Agricultural economics for veterinarians (2 ECTS)

The **narrow field module (78 ECTS)** enables the students to acquire knowledge in subjects necessary for further clinical studies. Students are provided with sufficient knowledge about the structure and functions of healthy animals at organism, tissue and cell levels. They study the biology of microbes and viruses causing diseases in animals, and learn about the functions of the immune system of animals. The students learn the basic principles of quantitative epidemiology, general pharmacology, toxicology, breeding and genetics, etc.

After finishing the module the student:

- 1) knows the normal morphology and functions of mammals and birds important in veterinary medicine and animal husbandry at organism, tissue and cellular levels, as well as basic biochemical mechanisms in living organisms;
- 2) knows the main groups of microorganisms relevant for veterinary medicine, their structure, function and genetics, mechanisms of parasitism and other biological characteristics;
- 3) knows the principles of population genetics and is able to relate them to the breeding of domestic animals; knows the modern concepts of causes and mechanisms of genetic diseases and malformations, as well as the genetic basis of breeding hygiene;
- 4) knows the basic concepts of quantitative epidemiology and their applications in veterinary medicine;
- 5) knows the characteristics of the main groups of medicines used in veterinary medicine, their pharmacokinetics, main effects and pharmaceutical forms;
- 6) knows the main properties of substances toxic for animals, their effects and metabolism as well as clinical signs and first aid of intoxications.

• **Narrow field module – Basic veterinary sciences, compulsory for all students**

VL.0051 Anatomy of domestic animals (14 ECTS)

VL.0567 Cell and molecular biology (3 ECTS)

VL.0424 Cytology, embryology and histology (8 ECTS)

VL.0770 Veterinary biochemistry (11 ECTS)

VL.0131 Physiology (8 ECTS)

VL.0412 Microbiology (8 ECTS)  
VL.0338 Virology (6 ECTS)  
VL.0647 Veterinary immunology (3 ECTS)  
VL.0508 Veterinary epidemiology (4 ECTS)  
VL.0786 Veterinary genetics and animal breeding (5 ECTS)  
VL.0577 Pharmacology (4 ECTS)  
VL.1203 Toxicology (2 ECTS)  
VL.1202 General and environmental toxicology (2 ECTS)  
VL.0335 General pathology (pathological physiology) (6 ECTS)

The **speciality module, including practical training (197 ECTS)** is designed for the acquisition of theoretical knowledge and practical skills about animal diseases and pathological changes accompanying the diseases, diagnostics, treatment and prophylaxis of diseases, food hygiene, veterinary public health and veterinary and food legislation.

When completing the course the student:

- 1) knows and is able to describe the structural and functional changes occurring in the body of a diseased animal;
- 2) has the necessary knowledge and skills to detect disease both in an individual animal and in the herd;
- 3) has knowledge of, and is able to describe the connections between animal diseases and human health (veterinary public health);
- 4) knows the most important diseases of different animal species (including birds, fish and exotic animals) and has mastered the principles of their diagnosis, treatment and prophylaxis;
- 5) can independently perform simple diagnostic and treatment procedures in agricultural animals, horses and pets;
- 6) knows the principles of animal behaviour, animal management and feeding, has knowledge of contemporary viewpoints on animal welfare and animal protection requirements, and has an overview of farm animal welfare evaluation systems;
- 7) knows what the national veterinary and food surveillance system is comprised of and how it works and what its tasks are, is knowledgeable about veterinary and food legislation and has the practical skills necessary for veterinary surveillance;
- 8) has basic knowledge of veterinary forensics;
- 9) is able to clearly and comprehensibly express science-based points of view on animal health and welfare and food hygiene.

- **Speciality module** – *Clinical sciences, Animal production, Food Hygiene and professional knowledge*, compulsory for all students

VL.0340 Pathological anatomy and necropsy (10 ECTS)  
VL.0641 Endocrinology (3 ECTS)  
VL.0042 Ethology (2 ECTS)  
VL.0651 Animal welfare and protection (2 ECTS)  
VL.0818 Special course in different species of farm livestock (6 ECTS) (*Production animal husbandry*)  
VL.0193 Animal nutrition (5 ECTS)  
VL.0401 Artificial insemination and reproduction (6 ECTS)  
VL.0796 Professional ethics (1 ECTS)  
VL.0835 Animal infectious diseases (6 ECTS)  
VL.0121 Parasitology and parasitic diseases (5 ECTS)  
VL.0073 Poultry diseases (2 ECTS)  
VL.0411 Clinical pharmacology (4 ECTS)  
VL.1164 Anaesthesiology and first aid (4 ECTS)  
VL.0259 Clinical and laboratory diagnostics (6 ECTS)  
VL.0905 Veterinary radiology (5 ECTS)  
VL.0277 Surgery (10 ECTS)  
VL.1132 Dermatology and allergology (2 ECTS)  
VL.0836 Ophthalmology (2 ECTS)  
VL.0829 Small animal internal medicine (8 ECTS)  
VL.0586 Neurology (2 ECTS)  
VL.0827 Aquacultivation technologies, fish and crayfish diseases and hygiene (3 ECTS)  
VL.0831 Equine clinical medicine (4 ECTS)  
VL.1165 Swine clinical medicine (3 ECTS)  
VL.1163 Ruminant clinical medicine (7 ECTS)  
VL.0135 Animal hygiene (5 ECTS)  
VL.0114 Obstetrics and gynaecology (8 ECTS)



VL.1168 Food production hygiene (6 ECTS)  
VL.1162 Technology, safety and quality of meat products (4 ECTS)  
VL.1025 Quality and safety of milk and dairy products (5 ECTS)  
VL.0434 Meat inspection (5 ECTS)  
VL.1166 Basics of veterinary public health and food hygiene (4 ECTS)  
VL.0177 Organization of veterinary services and veterinary legislation (2 ECTS)  
VL.0571 Forensic veterinary medicine (2 ECTS)  
VL.0825 Veterinary practice and management (3 ECTS)  
VL.1161 Herd health and environment (2 ECTS)  
VL.0664 Research methodology and study design (2 ECTS)

**Practical training (from 1st to 5th year), compulsory for all students**

VL.0823 Large animal care (1 ECTS)  
VL.0324 Practical training in clinics (clinical rotations) (24 ECTS)  
VL.0822 Practical training on a livestock farm (3 ECTS) *Extra mural*  
VL.0821 Artificial insemination training and small animal care (3 ECTS) *Extra mural*  
VL.0833 Practical training of meat inspection (2 ECTS) *Extra mural*  
VL.0828 Practical training in veterinary surveillance (2 ECTS) *Extra mural*

**Elective subjects** (11 ECTS) facilitate students' acquisition, development and accumulation of knowledge. The students hone their practical skills related to production animal and equine medicine in more depth.

#### **Elective subjects**

VL.0734 Dog husbandry (4 ECTS)  
VL.0319 Sports physiology and doping (2 ECTS)  
VL.0144 Pet fish in aquaria (2 ECTS)  
VL.1207 Terrarium animals and their healthcare (2 ECTS)  
VL.0265 Pain (1 ECTS)  
VL.0237 Medicine of laboratory animals (2 ECTS)  
VL.0125 Diseases of bees (2 ECTS)  
VL.0669 Fur animal diseases (3 ECTS)  
VL.0180 Medicine of exotic animals (2 ECTS)\*  
VL.0665 Biotechnology of reproduction (2 ECTS)  
VL.0745 Wild animal diseases (2 ECTS)

\*In 2014/2015 this was included in the speciality module

**Elective module** (50 ECTS) is meant for the sixth-year students and it consists of two tracks. Having chosen the track the subjects in the track are compulsory. Elective modules elaborate further on the students' knowledge and practical skills either in production animals and equine medicine or small (companion) animal medicine.

#### **6<sup>th</sup> study-year. Track 1: Farm Animal and Equine Medicine (50 ECTS)**

The aim of this module is to better prepare students to enter the labour market and facilitate students' acquisition, development and practical skills related to production animals and equine medicine in more depth.

After taking this track the student:

- 1) has more specialist knowledge and skills in equine and production animal disease diagnosis, treatment and prophylaxis;
- 2) can evaluate and analyse herd health status and conduct herd health improvement programmes;
- 3) can write referenced scientific text in the required form.

#### • **Elective modules**

##### **Track 1. Elective subject modules for farm animals and equine medicine**

VL.1090 Cattle health management (9 ECTS)  
VL.0266 Health management of small ruminants (3 ECTS)  
VL.0826 Pig health management (4 ECTS)  
VL.0429 Advanced course in management of equines (1 ECTS)  
VL.0576 Diseases of foals (1 ECTS)  
VL.0639 Equine orthopaedics (2 ECTS)  
VL.0735 Equine internal medicine (2 ECTS)  
VL.0824 Large animal clinical training (24 ECTS)  
VL.0022 Course paper in veterinary medicine (4 ECTS)

### **6<sup>th</sup> study-year. Track 2: Small (Companion) Animal Medicine (50 ECTS)**

This module offers more in-depth development and acquisition of profound knowledge and practical skills related to pet animal medicine.

After completing this track the student:

- 1) demonstrates profound specialist knowledge and skills in the diagnostics, treatment and prophylaxis of pet animal diseases;
- 2) can explain the causes, diagnosis and treatment options of pet animal diseases and advise owners about companion animal management, nutrition and disease prevention options;
- 3) can write referenced scientific text in the required form.

#### **Track 2. Elective subject module for companion animal medicine**

VL.0318 Small animal dermatology (2 ECTS)

VL.0403 Species-specific behaviour of pet animals (2 ECTS)

VL.0430 Special course of small animal medicine (13 ECTS)

VL.0585 Small animal hereditary diseases (2 ECTS)

VL.0830 Small animal clinical training (27 ECTS)

VL.0022 Course paper in veterinary medicine (4 ECTS)

Until 2013 there was also a third track that the students could choose from — **Food Hygiene and Veterinary Public Health module (FHVPH)** but this was not included in the new (English) Veterinary Medicine Curricula (admission from 2013) for the following reasons:

1. Students' interest in the 6<sup>th</sup> year elective speciality module of FHVPH was very small: in 2013/2014 six students and in 2014/2015 only three students selected the FHVPH module;
2. In the new Veterinary Medicine curriculum the amount of credits given to all veterinary medicine students in food hygiene/technology-related subjects increased. Students interested in this field can continue their studies at postgraduate level.

In order to graduate from the University the students have to write and present a graduation thesis or take a graduation examination (**8 ECTS**). The **graduation thesis** allows the students to apply the acquired knowledge in formulating scientific problems, planning and executing relevant research studies. It shows that the student is able to find and analyse scientific information, carry out a research study, synthesize new specific knowledge on the basis of their own study and collected scientific data and present the results. The graduation thesis allows the student to prepare for the continuation of their studies at postgraduate level. The **final examinations** allow the students to demonstrate their theoretical knowledge in the area of clinical veterinary medicine, food hygiene and veterinary legislation, and demonstrate their ability to analyse and solve problems in the area of veterinary medicine.

The institute aims to produce well-trained graduates with a broad knowledge base and that is why besides professional training a lot of attention is also paid to developing such generic skills in all modules as:

- critical, conceptual and reflective thinking skills in both intellectual and practical activities;
- technical competence in their fields of specialisation;
- effective communication skills;
- research and information retrieval and application;
- problem-solving skills and the capacity for teamwork;
- high ethical standards in personal and professional life.

## 4.1.2 Undergraduate curriculum followed by all students

### 4.1.2.1 Curriculum hours

Table 4.1a: General table of curriculum hours taken by all students choosing the small animal medicine track for their final (6th) year

Study Year	Hours of training							Total
	Theoretical training		Self-directed learning (C)	Supervised practical training			Other (G)	
	Lectures (A)	Seminars (B)		Laboratory and desk-based work (D)	Non-clinical animal work (E)	Clinical work (F)		
First	281	150	767	236	126	0	1,560	
Second	282	132	790	252	156	0	1,612	
Third	333	180	701	99	44	112	1,469	
Fourth	315	134	663	52	52	253	1,469	
Fifth	234	84	421	154	73	490	1,456	
Sixth	6	135	501	218	0	648	1,508	
Total	1,451	815	3,843	1,011	451	1,503	9,074	

During the first five years the students follow a common curriculum. Differences occur in the sixth year.

Single elective and optional subjects are not included in Tables 4.1a and 4.1b. During the study period (11 ECTS) should be selected from elective courses, whereas subjects to a volume of at least 7 ECTS should be chosen from the list of 'optional speciality electives' (Table 4.3) from the Institute and 4 ECTS may be optional subjects. The table includes the elected modules but not elected subjects.

Table 4.1b: General table of curriculum hours taken by all students choosing the production animal and equine medicine track in their final (6th) year

Study Year	Hours of training							Total
	Theoretical training		Self-directed learning (C)	Supervised practical training			Other (G)	
	Lectures (A)	Seminars (B)		Laboratory and desk based work (D)	Non-clinical animal work (E)	Clinical work (F)		
First	281	150	767	236	126	0	1,560	
Second	282	132	790	252	156	0	1,612	
Third	333	180	701	99	44	112	1,469	
Fourth	315	134	663	52	52	253	1,469	
Fifth	234	84	421	154	73	490	1,456	
Sixth	85	98	539	146	0	640	1,508	
Total	1,530	778	3,881	939	451	1,495	9,074	

Sixth-year subjects are not included in Table 4.2 and they are presented separately in Tables 4.4b and 4.4c.

Table 4.2: Curriculum hours in EU-listed subjects taken by each student during the common study period 1<sup>st</sup>-5<sup>th</sup> year.

Study Year	Hours of training							Total
	Theoretical training		Self-directed learning (C)	Supervised practical training			Other (G)	
	Lectures (A)	Seminars (B)		Laboratory and deskbased work (D)	Non-clinical animal work (E)	Clinical work (F)		
A	B	C	D	E	F	G	Total	
<b>1. Basic Subjects</b>								
a) Physics <sup>1</sup>								
b) Chemistry <sup>2</sup>								
c) Animal biology	22	4	26					52
d) Plant biology <sup>3</sup>								
e) Bio-mathematics	26	26	52					104
<i>1 – Total number of hours</i>	<b>48</b>	<b>30</b>	<b>78</b>					<b>156</b>
<b>2. Basic Sciences</b>								
a) Anatomy (incl. histology and embryology)	76		284	72	140			572
b) Physiology	28	12	104	58	6			208
c) Biochemistry, cellular and molecular biology	83	6	183	92				364
d) Genetics (including molecular genetics)	32	32	66					130
e) Pharmacology and pharmacy	38	66	104					208
f) Toxicology (including environmental pollution)	26	26	52					104
g) Microbiology (including virology, bacteriology and mycology)	42	8	182	132				364
h) Immunology	10	6	39	23				78
i) Epidemiology (including scientific and technical information and documentation methods)	2	13	88	27				130
j) Professional ethics	13		13					26
<i>2 – Total number of hours</i>	<b>350</b>	<b>169</b>	<b>1,115</b>	<b>404</b>	<b>146</b>			<b>2,184</b>
<b>Clinical Sciences</b>								
a) obstetrics <sup>4</sup>	48		104		10	46		208
b) pathology (including pathological anatomy)	84	42	196	58	6	30		416
c) parasitology	25		65	40				130

	A	B	C	D	E	F	G	Total
d) clinical medicine and surgery (incl. anaesthetics) <sup>5</sup>	379	165	713	63	32	104		1456
e) clinical lectures on various domestic animals, incl. poultry and other animal species								
f) Field veterinary medicine (ambulatory clinics) <sup>6</sup>				70		554		624
g) Preventive medicine <sup>7</sup>	9	9	26			8		52
h) Diagnostic imaging (including radiology)	35	6	65			24		130
i) Reproduction and reproductive disorders	20		78	18	40			156
j) Veterinary state medicine and public health	39	13	52					104
k) Veterinary legislation and forensic medicine	12		70	16		6		104
l) Therapeutics <sup>8</sup>								
m) Propaedeutics (including laboratory diagnostic methods)	12	43	78	4		19		156
<i>3 – Total number of hours</i>	<b>663</b>	<b>278</b>	<b>1,447</b>	<b>269</b>	<b>88</b>	<b>791</b>		<b>3,536</b>
<b>Animal Production</b>								
a) Animal production <sup>9</sup>					78			78
b) Animal nutrition	32		65	33				130
c) Agronomy	14		26	12				52
d) Rural economics	26		26					52
e) Animal husbandry	39	31	78		8			156
f) Veterinary hygiene	32	6	65	9	18			130
g) Animal ethology and protection	52		52					104
<i>4 – Total number of hours</i>	<b>195</b>	<b>37</b>	<b>312</b>	<b>54</b>	<b>104</b>			<b>702</b>
<b>5. Food Hygiene/ Public Health</b>								
a) Inspection, and control of animal foodstuffs or foodstuffs of animal origin and the respective feedstuff production unit	97	14	130	10	9			260
b) Food hygiene and technology	48	12	78	12	6			156

	A	B	C	D	E	F	G	Total
c) Food science incl. legislation	39	13	52					104
d) Practical work (incl. practical work in places where slaughtering and processing of foodstuffs takes place)				46	58			104
<i>5 – Total number of hours</i>	<b>184</b>	<b>39</b>	<b>260</b>	<b>68</b>	<b>73</b>			<b>624</b>
<b>6. Professional Knowledge</b>								
a) Practice management	29	10	39					78
b) Veterinary certification and report writing <sup>10</sup>								
c) Career planning and opportunities <sup>11</sup>								
<i>6 – Total number of hours</i>								<b>78</b>
								<b>7,280</b>

<sup>1</sup> – physics is included in physiology and radiology course;

<sup>2</sup> – chemistry is included in biochemistry;

<sup>3</sup> – plant biology is included in agronomy;

<sup>4</sup> – reproductive disorders are included in obstetrics and gynaecology;

<sup>5</sup> – clinical medicine is taught in the following subjects: internal medicine and surgery of cattle, swine, horses, small ruminant and companion animals, ophthalmology, neurology, endocrinology, dermatology and allergology, diseases of birds, aquaculture, infectious diseases;

<sup>6</sup> – clinical rotations in small animal and large animal clinic;

<sup>7</sup> – course in herd health management; preventive medicine is taught in the course of herd health management

<sup>8</sup> – there is no such separate discipline, all therapeutics issues are taught during the clinical medicine courses and during the clinical rotations;

<sup>9</sup> – *extramural* obligatory practical training in the farms;

<sup>10</sup> – veterinary certification and report writing are taught in the courses “Veterinary state medicine and public health” and “Veterinary legislation and “Forensic veterinary medicine” as well as during the “Practical training in veterinary surveillance”;

<sup>11</sup> – career planning and opportunities are taught in the course “Veterinary practise and management”.

Students participate in the activities of the mobile clinic and the hours spent in the mobile (ambulatory) clinic are included in those in Table 4.2.

Table 4.3.a: Curriculum hours in EU-listed subjects offered and to be taken as electives

Subject	Hours of training							Hours to be taken by each student per subject group
	Theoretical training		Self-directed learning (C)	Supervised practical training			Other (G)	
	Lectures (A)	Seminars (B)		Laboratory and desk based work (D)	Non-clinical animal work (E)	Clinical work (F)		
<b>Basic subject</b>								
Estonian for foreigners		30	100					130
<b>Basic science</b>								
Pain	13		13					26
Sports physiology and doping	26		26					52
Reproduction biotechnology	6	4	26	12	4			52
<b>Animal production</b>								
Dog husbandry	40	12	52					104
<b>Clinical science</b>								
Laboratory animal science	14	10	26		2			52
Medicine of wild animals	10	8	26		8			52
Medicine of exotic animals	22	4	26					52
Terrarium animals and their healthcare	26		26					52
Medicine of fur animals	39		39					78
Diseases of bees	20		26	6				52
Diseases of aquarium fish	16	4	26			6		52
<b>Total</b>	<b>232</b>	<b>72</b>	<b>412</b>	<b>18</b>	<b>14</b>	<b>6</b>		<b>754</b>

Table 4.3.b: Curriculum hours in subjects to be taken by each student in the large animal and equine medicine track (6<sup>th</sup>-course)

Subject	Hours of training							
	Theoretical training		Self-directed learning (C)	Supervised practical training			Other (G)	Total
	Lectures (A)	Seminars (B)		Laboratory and desk based work (D)	Non-clinical animal work (E)	Clinical work (F)		
Cattle health management		48	116	20		50		234
Health management of small ruminants	8	15	39			16		78
Swine health management	32	5	52			14		104
Equine reproduction	8	5	13					26
Diseases of foals		13	13					26
Equine orthopaedics		10	26			16		52
Equine internal medicine	14	12	26					52
Large animal clinical training				80		544		624
Course paper in veterinary medicine		6	52	46				104
<b>Total</b>	<b>62</b>	<b>115</b>	<b>337</b>	<b>146</b>		<b>640</b>		<b>1,300</b>

Table 4.3.c: Curriculum hours in subjects to be taken by each student in the small animal medicine track (6<sup>th</sup>-course)

Subject	Hours of training							
	Theoretical training		Self-directed learning (C)	Supervised practical training			Other (G)	Total
	Lectures (A)	Seminars (B)		Laboratory and desk based work (D)	Non-clinical animal work (E)	Clinical work (F)		
Small animal dermatology		26	26					52
Species specific behaviour of small animals	6	20	26					52
Small animal hereditary diseases		16	26			10		52
Special course of small animal medicine		61	169	92		16		338
Small animal clinical training						702		702
Course paper in veterinary medicine		6	52	46				104
<b>Total</b>	<b>6</b>	<b>129</b>	<b>299</b>	<b>138</b>		<b>728</b>		<b>1,300</b>



Table 4.4a: Curriculum hours in subjects not listed in Table 4.2 to be taken by each student, including Diploma work (final graduation thesis, or final graduation work)

Subject	Hours of training							Total
	Theoretical training		Selfdirected learning (C)	Supervised practical training			Other (G)	
	Lectures (A)	Seminars (B)		Laboratory and desk based work (D)	Non-clinical animal work (E)	Clinical work (F)		
Latin for specific purposes			26	26				52
English or Estonian language			40	38				78
Research methodology and study design		26	26					52
Large animal care					26			26
Artificial insemination training and small animal care					78			78
Final thesis or final exam		6	202					208
<b>Total</b>		<b>32</b>	<b>294</b>	<b>64</b>	<b>104</b>			<b>494</b>

### 4.1.3 Further information on the curriculum

The strength of the curriculum is the strong base it provides for a variety of careers immediately after graduation. In the sixth year students can select the track according to their preferences. Electives and the graduation paper also make it possible to acquire additional knowledge in the selected field. Working practice is closely connected with studies. For instance, in summer time the students may work as AI technicians, veterinary assistants, etc.

The University organises an Orientation programme for international students before the beginning of their studies. Participation in the Orientation programme offered to national students is optional. The University also offers tutoring to both national and international students. Tutors are fellow-students who help the first-year students to settle in. The annual intake of students is comparatively small and this has resulted in a coherent course system, where students support each other.

Students are recommended to attend the theoretical lectures, whereas attendance at practical work, seminars and clinical demonstrations is mandatory. In large groups, academic staff members register attendance through attendance lists. In case of missing practical training or seminar sessions due to acceptable reasons (e.g. illness, etc.) or if agreed with a member of the academic staff, the student is allowed to do the training with another group. In the case of absenteeism for non-acceptable reasons students are not allowed to sit the respective examination. Students' attendance and progress during the *extramural* clinical practice is supervised and evaluated by an appointed supervisor at the placement organisation. The supervisors get information and detailed instructions about the requirements for practical training from the Institute.

#### Practical training

### 4.1.4 Obligatory training

#### 4.1.4.1 Clinical training as a part of teaching of clinical subjects

During their clinical rotations, students participate in all the work of the clinic under the supervision of veterinarians and other teaching staff. The students do their training in the Small and Large Animal Clinics as well as in the Ambulatory (Mobile) Clinic. The aim of the training is to teach the students to apply their theoretical knowledge in practical work. They learn to handle animals, communicate with clients and assess the clinical condition of the patients.

The curriculum is constructed on the system of pre-requisite subjects. Students cannot enrol for clinical subjects if they have not passed the assigned pre-requisite subjects.

Practical training starts already in the first year, where the students do their practical training in the large-animal clinic under the supervision of animal keepers. In the summer after the second and the third years *extramural* practical training (see Table 4.5) takes place. The students, who opt for the practical training in artificial insemination (AI), will get an AI technician license after successful completion of the training.

Clinical subjects are taught from the third year on. The teaching methods used are lectures, seminars, e-learning and practical training. For practical trainings, students are split up into groups of up to 15 students. The main aims of the practical training performed during the 3<sup>rd</sup>- and 4<sup>th</sup>-year courses are to teach the students basic clinical skills before the start of their practical training in the clinics.

#### **Practical training in clinics (clinical rotations) for the students of the 4<sup>th</sup> and 5<sup>th</sup> year courses (24 ECTS) clinical duties**

Practical training (clinical rotation) for the students of the 4<sup>th</sup> and 5<sup>th</sup> years is a part of the clinical teaching at the Institute. The fourth-year students are involved in the *duty on-call service* (night duty) at the small animal clinic from September 1<sup>st</sup> to June 15<sup>th</sup>. The students do their shifts in groups of 1–2 at a time, according to a drawn-up schedule. In the 5<sup>th</sup> year, students do their practical training (clinical rotations) during seven weeks at the University Large Animal Clinic and seven weeks at the Small Animal Clinic. The training is based on the principles of the *Day One Skills*.

Students are not allowed to start the 5<sup>th</sup>-year clinical rotations before they have passed all pre-requisite subjects for the clinical training. Fifth-year students do their clinical rotations in the spring term from February 1<sup>st</sup> to August 31<sup>st</sup>, by rotating for seven weeks in the small animal and seven weeks in the large animal clinic, in accordance with the guidelines for practical training and the approved schedule. In the large animal clinic the students also have the obligation to do night shifts. On average, there are 10–12 students at the small animal clinic and 8–10 students at the large animal clinic at a time. At the small animal clinic the students rotate between the departments and they work in shifts (from 8:00 to 14:00 in the morning or from 14:00 to 20:00 in the afternoon). In general one qualified veterinarian supervises 1–2 students. Students participate in the shifts in the morning and in the afternoon.

In the large animal clinic the students are divided between the equine clinic and the production animal clinic. Out of the seven weeks, students must spend three weeks in the equine clinic and four weeks dealing with ruminants and pigs. On average there are 3–4 students in the equine clinic and 4–6 students in the production animal clinic at a time. Students are divided between the veterinarians who supervise them within the department.

Students practise in the clinics and perform procedures under the supervision of qualified veterinarians or veterinary assistants. Students take part in the examination process of animals. They are involved in making clinical decisions as well as in following the care and treatment of the animals. During the night duties, students gain experience in the veterinary treatment of patients in need of emergency assistance.

#### **4.1.4.2 Assessment of practical training in clinics**

Student must keep records of their work and take signatures from supervising veterinarians every day. The students are also supplied with a register sheet listing the hands-on manipulations to be performed during the clinical rotation. The students register all manipulations they perform during their practice. The register sheet is included in the “Diary of the practical training”. At the end of the training period, the student must submit the “*Diary of the practical training in the Animal Clinic*” with the training supervisor’s signature. During the clinical rotations the students should make at least one oral clinical case presentation (using Power Point, Prezi, etc.) for discussion for both small and large animals.

To assess the quality of practical training in the clinics students fill in a feedback form, which is discussed with supervising veterinarians.

#### **Practical training for the students of the 6<sup>th</sup>-year course in the elective subject module (track)**

After five years of study students can choose between one of the two elective subject modules:

- farm animals and equine medicine
- small animal medicine.

The objective of the modules is to provide the student with in-depth knowledge and practical skills related to the selected area in veterinary medicine. After graduation, students are therefore specialized and they are better prepared for a job in a narrower field. Each module includes practical training: in farm animals and equine medicine track. The practical training lasts 16 weeks, in small animal track 18 weeks.

The 6<sup>th</sup>-year practical training can be performed at the university animal clinic or at other clinics approved by the Institute. Before the start of the practical training the student must inform the Institute about the place of training and submit a practice plan for approval. In order to pass the training the students have to submit a practice report and make an oral report about their practical training.

#### **4.1.5 Obligatory extramural work**

Extramural practical training is mainly related to animal production, reproduction, food hygiene and veterinary public health.

A systematic arrangement of extramural training has been prepared. Students get a folder with instructions for practical training at the beginning of their studies. The guidelines are also available on the OIS under the subject VL.0324 [https://ois.emu.ee/pls/ois/tere.tulemast?pn\\_id\\_materjal=134711&pn\\_id\\_sessioon=69344640508177929602](https://ois.emu.ee/pls/ois/tere.tulemast?pn_id_materjal=134711&pn_id_sessioon=69344640508177929602). The document includes guidelines for activities in the clinics, writing reports, keeping a diary, safety precautions, and the list of manipulations and procedures to be performed.

An assessment system for evaluating extramural training of students has been developed. A feedback questionnaire for the supervisors and the students is used to evaluate the quality of *extramural* work.

The MoRA offers support for the supervisors of the students in the field of agriculture and aquaculture. The support for practical training is designed to partly cover the farmer or the processor of agricultural products for the costs related to the organisation and supervision of the practical training. Farmers can apply for finances for the production animal-related *extramural* work (2<sup>nd</sup> and 3<sup>rd</sup> year extramural training). In order to qualify for the support the supervisor should possess required qualifications and must have worked in the production or processing of agricultural products for at least three years. A trilateral agreement is signed between the University, the host institution and the student.

Students start their *extramural* practical training in their first year of study. The main objective of the extramural training is to put the theoretical knowledge they have obtained during the study year into practice. The time-schedule of *extramural* work is described in Table 4.5.

Table 4.5. The organisation of extramural practical training at the institute

Nature of work	Period	Year in which work is carried out
Communication, taking care, and feeding the large animals at the University Large Animal Clinic (under the supervision of animal caretakers)	1 week	Autumn and spring of year 1
<i>Extramural</i> work on farms supervised by a farmer	4 weeks	Summer period of year 2
<i>Extramural</i> work in artificial insemination (AI) (under the supervision of an experienced AI technician) or <i>extramural</i> practical training in the small animal clinic	4 weeks	Summer period of year 3
Practical training in slaughterhouse/meat industry	2 weeks	Spring semester of year 5
Work at the District Veterinary Offices' of the Estonian Republic	2 weeks	Spring semester of year 5

The objective of the practical training for the first-year students is to introduce them to large animals, their behaviour, and to teach the students the main handling procedures for cattle and horses.

The objective of the *extramural* work after the second year is to get an overview of current agricultural production and acquire the general skills necessary for working with cattle and swine, by creating associations between production, the environment and the animal, following the conception of “from a stable to a table” as well as to gain their first experience in veterinary practical work, taking into account aspects of animal health care.

After the third year students have to choose between either a four-week period of artificial insemination training under the supervision of professional insemination technicians or training in the small animal clinic during the summer months. In the first case the students acquire practical insemination techniques in farm animals. In the small animal clinic the main task the students face is to gain knowledge about the behaviour of healthy and sick small animals, their feeding and clinical examination.

The fifth-year students' practical training consists of a two-week practical training period in meat hygiene in a meat-processing enterprise, and a two-week practice of veterinary control in district veterinary offices. The objectives concerning meat hygiene include learning to identify and prevent potential meat-borne biological, chemical and physical hazards to public health, an introduction to labour organization and the daily work of the quality division of the enterprise, as well as to the self-control plan and related documents. As to veterinary control, the students get an overview of labour organisation in the state veterinary service system. They get acquainted with the main tasks of the divisions of the veterinary centre in arranging control over animal health, protection and feed, participate in the control activities and their planning. The students also observe how the regulations for veterinary certification work – they learn to apply the knowledge acquired in subjects concerning the management and legislation of veterinary control as well as food hygiene in practice.

## 4.1.6 Specific information on the practical training in food hygiene/public health

### 4.1.6.1 Practical training in meat inspection

Practical training in meat inspection (subject VL.0833) is a compulsory two-week training period for every fifth-year veterinary medicine student, and is mainly carried out in three contracted slaughterhouses, which are also separately approved as meat industries (meat cutting and producing of meat products). These three slaughterhouses/food business operators are the biggest in Estonia, and the Rakvere Meat Industry (HKSCAN Estonia) is the largest in the Baltic countries. In agreement with the responsible teacher at the University, foreign students may carry out their meat inspection practical training in their home country, but the prerequisites are that the slaughterhouse has to be approved by the state Veterinary and Food Authority, the supervisor (Veterinary Official, VO) should be well experienced in meat inspection and all the topics mentioned in the subject description should be covered within the practical training. The students must fill in their practical training diary and it should be signed/ stamped by the practice supervisor (VO) at the placement institution. In the past years most of the foreign students have preferred to perform their practical training in Estonian slaughterhouses/meat industries.

Both students and practice supervisors (VO-s) are provided with practice instructions.

During the practice the following tasks are to be covered:

- observing and securing the welfare of the slaughter animals;
- getting acquainted with the principles and organization of work in *ante-mortem* inspection;
- performing practical *ante-mortem* inspection;
- getting to know the *ante-mortem* documentation, and learning to register the results of *ante-mortem* inspection;
- getting to know the principles of *post-mortem* inspection (risk-based meat inspection included);
- performing practical *post-mortem* inspection;
- getting to understand *post-mortem* documentation and learning to register the results of *post-mortem* inspection;
- exercising *Trichinella* control/sampling when appropriate (only for pigs from high risk enterprises);
- meat sampling and traceability;
- getting acquainted with the enterprise self-control system incl. HACCP and its practical applications;
- getting acquainted with the work organization in meat cutting and meat production plants.

At the end of the practical training the practical training diary should be signed/stamped by the practice main supervisor (VO) and feedback should be provided by the student and the VO.

Contracted slaughterhouses (incl. meat industry) for practical training in meat inspection are:

- HKSCAN Estonia (Rakvere Meat Processing Plant);
- Atria Estonia Ltd, Valga Meat Processing Plant;
- Saaremaa Meat Processing Plant.

Contracted slaughterhouses/meat industries are located in the west (Saaremaa, 300 km from the Institute), in the north-east (Rakvere, 130 km from the Institute) and in the south (Valga, 90 km from the Institute) of Estonia. All these enterprises are approved by the Estonian Veterinary and Food Board as slaughterhouses, meat cutting plants and meat product producers. The main species covered are cattle and swine.

All the slaughterhouses have appointed a responsible supervisor that deals with the issues of practical training: Mr. Erti Susi, DVM in Rakvere; Ms. Irina Nikitina, DVM in Valga and Mr. Toivo Jürisson, DVM in Saaremaa. Additionally, many other VO-s are involved with student supervision in the slaughterhouses. During the practice in slaughterhouses, students have access to the meat cutting plant and meat processing units. In the units of the slaughterhouses the students are introduced to the self-control system and HACCP documentation and the quality assurance systems of the enterprise are introduced. Students will take part in the auditing and monitoring activities regarding the self-control system verification and validation.

The Institute has its own micro-dairy where different kinds of milk products are produced both for teaching and research purposes.

Each autumn semester excursions are organized to food industries for the fifth year veterinary medicine students, e.g. a study day in Rakvere Meat Industry and in the animal waste processing establishment AS Vireen (Vireen Ltd) that are both in Lääne-Virumaa County. The main idea of the study excursion is to introduce the slaughterhouse and meat industry facilities to the veterinary students before the two-week practical training. Basically, within the study excursion, the students will get an overview about their prospective training in the slaughterhouse.

## 4.1.7 Ratios

### 4.1.7.1 General indicators of the types of training

Because of the two different study tracks, the ratios per student vary according to the track. Due to this the ratios are given separately for each track. Ratios are calculated on the bases of Tables 4.1a and 4.1b. Electives (Table 4.3) have been excluded.

Table 4.6.a Ratios for the curriculum in small animal medicine track (six years, electives excluded)

R 6	Theoretical training (A+B+C)	=	6,109	=	1	Denominator 0.49	Minimum value: 0.602
	Supervised practical training (D+E+F)		2,965		0.49		
R 7	Clinical work (F)	=	1,503	=	1	Denominator 0.97	Maximum value: 1.809
	Laboratory and desk based work + non-clinical animal work (D + E)		1,462		0.97		
R 8	Self-directed learning (C)	=	3,843	=	1	Denominator 2.36	Recommended range: 2.59–46.60
	Teaching load (A+B+C+D+E+F+G)		9,074		2.36		

Self-directed learning – independent work+ learning for the examination

Table 4.6.b Ratios for the curriculum in production animal and equine medicine track (six years, electives excluded)

R 6	Theoretical training (A+B+C)	=	6,189	=	1	Denominator 0.47	Minimum value: 0.602
	Supervised practical training (D+E+F)		2,885		0.47		
R 7	Clinical work (F)	=	1,495	=	1	Denominator 0.93	Maximum value: 1.809
	Laboratory and desk based work + non-clinical animal work (D + E)		1,390		0.93		
R 8	Self-directed learning (C)	=	3,881	=	1	Denominator 2.34	Recommended range: 2.59–46.60
	Teaching load (A+B+C+D+E+F+G)		9,074		2.34		

### 4.1.7.2 Special indicators of training in food hygiene/ public health

R 9	Total No. curriculum hours Food Hygiene / Public Health <sup>2</sup>	=	728	=	1	Denominator 12.46	Recommended range: 8.86–31.77
	Total no. hours vet. Curriculum <sup>1</sup>		9,074		12.46		
R 10	Total no. curriculum hours Food Hygiene / Public Health <sup>2</sup>	=	728	=	1	Denominator 0.14	Recommended range: 0.074–0.556
	Hours obligatory <i>extramural</i> work in Veterinary inspection <sup>3</sup>		104		0.14		

## 4.2 Comments

The curriculum generally corresponds well to the needs and requirements of Estonian Society. There are, though, some problems with species-specific knowledge transfer, such as rabbit and poultry farming. Poultry farming is concentrated in a very few production units and rabbits are reared on a small number of farms. There is only one broiler-chicken company in Estonia and there is only one slaughterhouse for chickens (Tallegg). Due to very strict security reasons students are not allowed onto the broiler chicken unit. Some of the veterinary students have performed their meat inspection practical training and slaughterhouse training in Finland in agreement with the University supervisor.

**Changes in the new Curricula** related to food hygiene and safety subjects:

Formerly, Food Toxicology was taught only for 6<sup>th</sup> year FHVPH students. In the new curriculum **General and Environmental Toxicology**, which includes food toxicology (4 ECTS), is delivered to all second year veterinary medicine students;

The subject Food Hygiene and Veterinary Public Health (3 ECTS) is substituted by **Basics of Veterinary Public Health and Food Hygiene (4 ECTS)** for 3-rd year veterinary medicine students in the new curriculum;

Subject Milk Hygiene (4 ECTS) is delivered under the name **Quality and Safety of Milk and Dairy Products (5 ECTS)** to the 5<sup>th</sup> year veterinary medicine students in the new curriculum;

Meat Technology and Production Hygiene was changed to **Technology, Safety and Quality of Meat Products (4 ECTS)** and taught to the 5<sup>th</sup> year veterinary students in addition to the subject **Meat Inspection (5 ECTS)**;

General Food Hygiene was changed to **Food Production Hygiene (6 ECTS)** in the new curriculum. **Practical Training in Meat Inspection** (two-week slaughterhouse training) remained unchanged.

### 4.3 Suggestions

Based on the strict Study Regulations of the University, the share of self-directed learning in theoretical teaching is high (50%). The system of allocating ECTS should be more flexible. This would permit:

- Increasing the share of problem-based and interactive methods of learning;
- Increasing the share of case analyses;
- Continuing to work in small groups.

## Chapter 5. TEACHING AND LEARNING: QUALITY AND EVALUATION

### 5.1 Factual information

#### 5.1.1 Teaching programme

The requirements and procedure of preparing, opening, managing and changing of study curricula at the University is regulated by the [Statute of curriculum of Estonian University of Life Sciences](#) adopted by the Council of the University. In addition the studies are regulated by the [Regulation of studies](#) enacted by the University council regulation (last version adopted on June 19<sup>th</sup> 2014).

Studies at the University are conducted according to the academic calendar by the order of the Vice-Rector of Studies. The study year consists of two terms, the spring term and the autumn term. Each term is divided into two eight-week cycles. The examination period lasts for four weeks. Lectures are suspended for two weeks around Christmas and New Year, and all students must be granted a summer holiday of eight weeks. Clinical practical training continues during these recesses.

##### 5.1.1.1 Co-ordination of teaching between different departments, sections, institutes and services

Co-ordination of teaching between different departments, and institutes is the responsibility of the Study Committee, established by the order of the Director of the Institute. The Veterinary Study Committee is headed by the 'programme leader' (*õppekava juht*), appointed by the Vice-Rector of Studies of the University. The Committee is formed by the programme leader and established by the Director's order.

The committee consists of academic staff representing different subject groups (basic sciences, pre-clinical sciences, clinical subjects, food hygiene and veterinary public health, animal husbandry), as well as representatives of the students.

The Veterinary Study Committee has the responsibility to analyse the curriculum and make proposals for changes. The Study Committee is responsible for the supervision and regulation of the quality, quantity and structure of the study programme (e.g. the order and the integration of the courses). Discussions at meetings and consultations with individual lecturers help to achieve these aims. The Committee also conducts negotiations with the academic staff of other institutes teaching veterinary students regarding the contents and the volume of the subjects. Changes in the veterinary curriculum are approved by the Academic Board of the University.

The programme leader is a member of the University Academic Board and represents veterinary studies at the University level and explains the needs of the veterinary curriculum to other institutes.

The Study Committee also has the responsibility to analyse the quality of teaching and discuss complaints from students. A continuous feedback system (evaluations by the students of the individual courses and the entire study programme) ensures that the goals set by the Study Committee are reached. The Study Committee has the right to discuss the teaching quality and course management issues with the teachers in cases where deficiencies are discovered and make proposals to the Director of Studies to officially enforce teachers to take relevant corrective actions.

### 5.1.1.2 Pedagogical approach and the use of newer approaches

Veterinary studies at the Institute comprise a mixture of lectures, seminars and practicals starting from the beginning of the studies. All subjects from the first year of studies already include a substantial part of hands-on practical sessions, e.g. anatomy – dissections; histology – microscopy classes; biochemistry, physiology, microbiology – laboratory practice; biometry and informatics, veterinary epidemiology – computer classes, etc.

Teachers are encouraged to substitute classroom lectures with more interactive study methods. At present about 17% of the whole curriculum is presented in the form of classroom lectures (see Table 5.1).

Table 5.1. Proportional distribution of different teaching methods in veterinary curriculum

Lectures, theoretical	17%
Seminars, theoretical	9%
Self-directed learning, theoretical	33%
e-learning (reading/ desk based practical exercises/ discussions/ written reports)	4%
Laboratory work, practical	5%
Desk-based work, practical	6%
Non-clinical practical training	3%
Clinical work, practical	23%
	100%

During the last seven years the University has been actively facilitating the development of e-learning courses and learning methods. The University was a partner in the Best programme “E-learning programme for higher education” during 2008–2013. A free e-learning environment Moodle is used as the main platform for the development of e-learning courses and study modules. Moodle is password-protected and enables the lecturer to upload various educational materials. Students may participate in discussion forums, upload their homework, take revision tests, and take graded examinations. The Best programme provided training and funding to improving the lecturers’ computer skills. Numerous e-learning courses and teaching modules were developed with the support of the Best programme, and the work has been continuing since.

#### The courses and modules for veterinary students in Moodle:

- Informatics and biometry (VL.0413)
- Meat inspection (VL.0434).
- Technology of meat products and production hygiene (VL.0780)
- Animal health (practicals) (VL.0135)
- Honey bee management (VL.0573 elective subject)
- Introduction into Food Hygiene and Veterinary Public Health (VL.0325)
- Cytology, embryology and histology (VL.0424)
- Veterinary epidemiology (VL.0508)
- Organisation of state veterinary services and veterinary legislation
- Small animal medicine (VL.0430)
- Quality and safety of milk and dairy products (VL.1025)

In addition, the web-based Study Information System (ŌIS) of the University has a platform for study materials, which is used to make web-based learning objects available for students. At least 30 lecturers of the Institute use technological tools in their teaching. In the past five years 80 learning features that allow the students to learn the material on their own have been created. A total of 33 e-learning courses have been compiled to support classroom teaching and they are available in Moodle. Three courses compiled by the lecturers from this Institute have also received nationwide recognition — they have been granted the Best E-Course Award.

The application of case analyses and scenarios has increased in the teaching of clinical subjects both in seminars and practical training. The clinics of the Institute serve as the main base for the clinical training of students. In the fourth year the students have clinical practical training sessions in clinical subjects in groups of 10–15 students. In the 5<sup>th</sup> and 6<sup>th</sup> year the students attend clinical rotations.

During the clinical studies, students work together with the veterinarians in the clinic in small groups, where the supervisor elicits information from the students and facilitates active involvement in the examination and treatment of patients. Before working with real patients, cadavers and/or body parts of dead animals (surgery) or simulators (gynaecology and obstetrics, surgery) are used for the development of clinical skills. Experience with problem-solving in small groups and familiarity with hands-on practical work are considered important prerequisites for clinical learning.

### **5.1.1.3 Textbooks and course note materials**

In recent years the Institute has significantly increased the variety and numbers of copies of basic veterinary textbooks at the University library and the students are encouraged to use them. However, the lecturers do not rely on textbooks alone, and lecture notes and various study materials (course and seminar slides, PowerPoint, Prezi, etc. presentations, lists of literature, references to textbooks, articles and electronic databases, examination sample questions) are extensively used to supplement textbooks. These materials are made available for students through OIS or the e-learning platform Moodle. Students can access a range of relevant databases through our university library. Sometimes the lecturers deliver their material on paper.

### **5.1.1.4 Contractual arrangements between the Faculty and outside bodies**

The Institute has formal and informal co-operation agreements with a number of farms. For the list of these farms see Table 6.1.3.1. All the main production animal species (dairy and beef cattle, pigs, sheep and chickens) as well as horses are covered with these agreements, allowing us to make farm visits for various learning activities.

The Institute also has agreements with clinics abroad (Erasmus, Nordplus scheme). The following university clinics are popular among the students for carrying out their practical training: University of Helsinki, Swedish University of Agricultural Sciences, Ghent University, Freie Universität Berlin, University of Veterinary Medicine, Vienna, Szent István University in Budapest, Copenhagen University, Zagreb University, etc.

The Institute has a contract with the Veterinary and Food Board (VFB) on the practical training of students in subjects related to state veterinary medicine, veterinary public health, food hygiene and meat inspection. The VFB provides supervisors for students who shadow the veterinary inspectors at their work at district veterinary offices (a two-week practice), join them on inspections and help the inspectors where possible (e.g. taking samples, filling in documentation, etc.).

Meat inspection practice (a two-week practice) at slaughterhouses is also performed under the supervision of VFB official veterinarians. Every year 30-50 students do these practices. The number is dependent on the number of students carrying out this practice in their home country, where practice places are approved by the responsible teacher. The Institute pays a small remuneration to practice supervisors. In cases where the students do their training abroad, the partners first confirm if the learning outcomes can be achieved in the specified enterprise.

The livestock farming practice in the summer following the 2<sup>nd</sup> study year (20 working days) takes place on medium or large scale production farms. The Institute keeps an updated contact list of farms which are willing to have students for practice and the students may choose their practice place from this list. However, students may choose another farm after getting approval from the Institute. The farmers who are willing to benefit from the governments' support scheme for farms offering practice places for students have to sign a contract with the University and the student and the funding body (State Centre for Agricultural Information and Registers).

The sixth-year students are allowed to go for clinical practice to other veterinary clinics, which are approved by the Institute. The students select the clinics themselves and in case of approval the Institute may make a contract with the supervisors at these clinics to pay remuneration for their work as supervisors.

The Institute has a contract with the National Veterinary and Food Laboratory (VFL) on student practice in their facilities. The students interested in veterinary public health and food hygiene have had the opportunity to do their practice at the national VFL.

### **5.1.1.5 General learning objectives underlying the veterinary curriculum and how this is ensured**

The general objective of the veterinary medicine study programme is to provide adequate knowledge and sufficient clinical skills and practical experience enabling graduates to work successfully in different areas of activity requiring veterinary education - in large and small animal veterinary practice, in government service (MoRA, Food and Veterinary Department; VFB; State Agency of Medicines), in veterinary institutions of the European Union or in international veterinary organizations (OIE, FAO), in animal disease diagnostic and food laboratories (VFL), in companies manufacturing and marketing veterinary medicines and in veterinary research and educational institutions in Estonia or in other countries. Graduates can continue their education at PhD level, embarking on a PhD programme and acquiring a PhD degree, or on a residency training programme acquiring a specialist diploma in a specific field of veterinary medicine (Diplomate of the European College). The study programme also provides preparedness for life-long learning in the field of veterinary medicine, supporting the continuous development of the professional skills of a veterinarian.

Achieving the learning objectives is ensured by a structured and comprehensive curriculum with balanced theoretical and practical training under the supervision of qualified teaching staff in adequate training facilities, applying up-to-date information sources, appropriate study materials and teaching methods and a sufficient patient load for students.



### **5.1.1.6 Assessment of Day-one skills**

To ensure, that students have acquired sufficient level of knowledge and skills, they have to demonstrate their theoretical knowledge at examinations or by writing reports on specific assignments, case reports and small project reports. Their progress is monitored through pass/fail examinations and graded examinations, reports, final exams and final theses.

To ensure the acquisition of clinical skills the students have to perform during their studies, by themselves, specified clinical manipulations, and get approval from their teacher or supervisor that their skills are at a sufficient level. For this purpose the student compiles a diary of clinical skills achieved during their studies, where the necessary manipulations are listed and their performance is registered and signed by their teacher or supervisor. At the end of the training the students should also make an oral clinical case presentation (using Power Point) for discussion.

The students graduate with final examinations or by defending a final thesis. Students can choose between these two options. Those who choose the final examination must demonstrate their Day-one skills in a two-part examination. The first part, “general examination”, consists mainly of multiple choice questions regarding the whole range of clinical, food safety and veterinary public health related disciplines for all species. The second part is a problem-solving examination specific to the students’ track of studies, where the student is given a clinical problem or scenario and he/she must find the solution to it. The Institute would like to see more students graduating by defending the final thesis so that they would get a better understanding of research (of the creation of knowledge) and acquire generic skills.

The Institute also collects feedback from the students, alumni and employers to find out their opinions regarding the necessary skills and knowledge obtained by students.

## **5.1.2 The teaching environment**

### **5.1.2.1 Staff development facilities, particularly in relation to teaching skills**

The University has provided many training opportunities for teaching staff to develop their knowledge and skills in teaching methods. The EU funded programme Primus was implemented for that purpose. During the past five years, 40 teachers in the veterinary curriculum have attended at least one of the courses offered by this programme. Several lecturers, especially the younger teaching staff, have taken several courses. As a result, the use of active methods of teaching has been increasing, many e-learning courses have been introduced and e-learning objects created.

Our teaching staff have opportunities to attend conferences, symposia and workshops at home and abroad. Teaching staff involved in research have the possibility to attend at least one conference per year. Every second year each lecturer has the possibility to attend a training event abroad. The self-development of the clinical staff is also encouraged, and every veterinarian on the staff is given the possibility to attend at least one international conference abroad a year.

### **5.1.2.2 Systems for reward of teaching excellence**

In general, at present teaching excellence is not sufficiently appreciated in Estonian higher education system, but it is becoming more important. At present promotion is mainly still based on research achievements. Nevertheless, the volume and the quality of teaching is one of the issues taken into account on the appointment and evaluation of the academic staff, and the feedback provided from the students is also taken into account. In cases where equally qualified and experienced candidates are under consideration, teaching excellence may be of importance in the decision to appoint or promote.

To reward teaching excellence, the Student Union has launched several awards that are presented at the whole University level. Such awards include the Students’ prize for the best lecturer, the friendliest lecturer of the year, etc. Prize for the most innovative lecturer of the University is also among the University Prizes. The Department of Academic Affairs has also introduced a prize for the Best Lecturer of the Year, based on the feedback in the ÕIS.

### **5.1.2.3 Other measures taken to improve the quality of teaching and of learning opportunities**

The issues concerning teaching are discussed with the members of the academic staff at their professional reviews carried out annually by their immediate supervisors or the head of the department.

Investments have been made into technical solutions supporting the teaching e.g. the University has bought clickers (audience response systems) that can turn the lectures into a secure interactive environment, encouraging all students to participate. The lecturer can get instant feedback, which makes it easier to effectively assess the students and reward their achievements. There is a large auditorium at the University, which allows live transmission (Technology building), which will be used more often in the future. This also allows us to make use of the best lecturers and practitioners from other universities at home and abroad.

### 5.1.3 The examination system

The Regulation of Studies describes the general rules of the examination system of the University.

The periods during which periodical evaluations can be organized are specified every year by the order of the Vice-Rector of studies, and these are entered into the academic calendar. Students usually have to take up to six oral or written examinations at the end of each term during the four-week examination sessions in January and May. During the examination sessions no teaching activities (except clinical rotations) take place.

Every examiner is free to use any kind of examination method, as long as it is in line with the University regulations and its principles are available to the students in the ÖIS system when the students register for the course.

Each lecturer is entirely and solely responsible for the evaluation.

#### 5.1.3.1 Forms of examination

There are different forms of examination in use at EMÜ. Students may be asked to submit written papers; do some course projects; give an oral, practical or clinical examination; take a test consisting of a mixture of multiple-choice and open-end questions, etc. The students may be assessed through continuous assessment. They may have to submit reports, solve case-studies, do summaries of scientific literature, etc. The importance of continuous assessment increases considerably during the clinical training.

#### 5.1.3.2 Examinations and retakes

The student is allowed to resit an examination twice. If the student does not succeed in passing the examination at the second opportunity he/she has to take the whole course again. After this the student is again allowed to sit the examination twice. If the student fails again, he/she must leave the university.

There are no restrictions on time to take the examinations, but the students are expected to have taken all their exams and pass/fail examinations by August 31<sup>st</sup> each year. The students are transferred on to the next course on September 1<sup>st</sup>. The students who have not collected 75% of the required credit points are expelled from the University.

As for clinical subjects, the students should have passed the examinations in all preclinical subjects in order to register for clinical subjects. For preclinical subjects a student cannot take an examination if the prerequisite subject has not been passed. If continuous assessment is applied, the student may not be allowed to take the next course until the pre-requisite course has been passed.

#### 5.1.3.3 External examiners

External examiners are not used in regular examinations, but they are occasionally used at the defence of the final theses as the opponents of thesis.

### 5.1.4 Evaluation of teaching and learning

The quality of teaching and learning at EMÜ is assessed through the recruitment, development and evaluation of teaching staff. The evaluation of teaching is organized both by the Institute and the Department of Academic Affairs of the University. This is performed using several formal assessment procedures that take place at fixed intervals. Both internal (students, academic staff) and external (alumni, international visitations) evaluation surveys are organized.

The University Council Regulation No.8 «The System of Feedback at the Estonian University of Life Sciences» adopted on October 5th 2011 regulates the collection of feedback from the target groups, which includes the employees of the University, students, alumni, employers, partners of the University, members of the society and other external target groups.

- The employee feedback survey is conducted during the spring term every two years. Such surveys are conducted to learn about the problems that need solving.
- Student feedback is collected from all students at the end of each term, after the final assessment of the subject. In addition there are separate surveys for the first-year students at the beginning of the second term on the study process and for final-year students at the end of the final term on the curriculum and studies, including supervision. The overall aim is to improve lecturers' teaching quality and to enhance the contents and the form of subjects. Feedback from the final-year students helps to improve the quality of the curricula, supervision and academic activities.

Those students who want to interrupt their studies are asked for their reasons. The aim here is to identify the reasons for them interrupting their studies and to consider measures to minimize the number of withdrawals.

During the professional review interviews the head of the department discusses the results of student feedback and in the case of problems, solutions are sought. Student evaluations are also taken into account at the re-election (till November 2014) or evaluations of teachers every five years.

As the overall feedback is rather general, the academic staff members often also collect more specific feedback about their course in addition to the overall feedback so that they can adapt and improve their teaching material to better meet the students' expectations. The questions, in this case, are more detailed and the students are also more outspoken in their answers.

The Student Union collects feedback on teaching as well. Feedback from different courses is collected and it is discussed with the Study Committee of the Institute.

The Alumni feedback survey on curricula and the alumni involvement in the labour market is conducted once every three years. This feedback is especially valuable as the alumni can put their studies into perspective and they can see their study experiences from a different angle. Alumni can point out shortcomings and comment on the sequence of courses, as well as the balance between different teaching and assessment methods. The feedback shows if the study programme has adequately prepared the students for the profession.

The Employers' feedback survey on curricula and the suitability of University graduates to meet labour market demands is conducted once every three years.

Employer and alumni feedback are used for the development of the curricula and for the elaboration of marketing activities. They are discussed at the Study Committee of the Institute, at the Department of Academic Affairs and also in the Academic Board of the University. The whole Institute is informed about the outcomes. If necessary, situations are discussed with the lecturers individually.

As for participants in continuing education courses, the feedback survey on the relevance and conformity of the lecturer and the topic of the course to expectations is conducted at the end of each training course.

Society members' feedback survey for students and teachers of general education and vocational schools on the renown and reputation of the University is conducted once every three years. Overall feedback on the reputation of the University is received continuously by following media coverage, as well as on the basis of target group surveys conducted at fairs and other public events.

External evaluators are used while carrying out professional reviews of professors and lead research fellows by a three-member review committee, consisting of experts from both outside and within the University. The professional reviews of senior lecturers and senior research fellows are conducted by a three-member review committee consisting of experts from within the university, but at least one member of the committee must come from outside the employee's home institute.

The teachers are also evaluated as a part of the process of elections to academic positions.

## 5.1.5 Student welfare

### 5.1.5.1 Zoonoses (e.g. rabies) and physical hazards

The students studying at the University and the University staff are insured in accordance with the [Health Insurance Act](#). Foreign students coming from the EU must apply for a European Health Insurance Card in their home country. Foreign students coming from non-EU countries must apply for health insurance in Estonia.

The University has established a health and safety committee to ensure the safety of staff and students. The aim of the health and safety committee is to identify risks and maintain the safety of staff, students, the general community and the environment. In general, the heads of departments are responsible for the application of the health and safety regulations. Additionally, first-aid trained persons are available in every department. Each department has elected a Health and Safety Trustee from among the employees, who has the right and obligation to draw attention to the shortcomings in working environment safety issues.

At the beginning of the studies students get information on emergency fire routines, security measures in laboratories, procedures for injuries or accidents and other matters. Annual information days on fire routines and fire drills are organised at the University. Before their first session in laboratories or clinics students receive instructions on safety issues. Written safety instructions are also included in the clinical practical training guidelines. During the 4th and 5th years, the students only work under the close supervision of a staff member, ensuring that all quality and safety standards are met. Pregnant students need to take special precautions when handling certain agents or animals. Pregnant students are encouraged to inform their teachers about their condition in subjects that could pose a risk.

Protective clothing and disinfectants are provided by the Institute.

Since 2012 Estonia has been free of rabies, however in case of suspicious contact students are provided with free post-exposure treatment. If students need a rabies vaccination (e.g., when doing their training abroad in a country not free from rabies), the Institute pays for the prophylactic vaccination of students.

### 5.1.5.2 Facilities (not related to the teaching programme) provided for students.

It is possible for the EMÜ students to apply for accommodation in the EMÜ halls of residence. There are two **residential blocks** – Betton (7 Tuglase) and Torn (52 Kreutzwaldi) at the students' disposal.

There are two **cafeterias** on the campus of EMÜ. The places offer a large variety of food and everything is available for reasonable prices as the university makes an effort to keep the prices of the meals affordable. The cafeterias are open every working day from 9-16. If there are *extramural* students at school on a Saturday, the cafeterias are also open on Saturdays. In addition there are also vending machines where the students can get coffee or other drinks and sandwiches in all University buildings.

The **Language Centre** offers our students the opportunity to learn foreign languages and speciality terminology in the major European languages. The languages taught are Latin, French, English, German, Russian, Finnish, Swedish and Estonian both for local and foreign students. The University has a **Sports Centre** that offers facilities for both indoor and outdoor sports. There are training periods where both novices and experts can practise their skills. A special fitness room is well equipped for fitness training and weight lifting. Other popular sports events at our university are aerobics, bodybuilding, volleyball, basketball, athletics, skiing, boxing and rowing. Participation in sports activities organised by the EMÜ Sports Centre may also contribute towards credit points.

The doors of the **Study advisors** at the Institute and the staff of the **Department of Academic Affairs (DAA)** are always open to the students for advice and counselling. The DAA has hired international advisors who deal with incoming and outgoing students. A **tutoring network** has been successfully functioning at the EMÜ already for a number of years. Tutors are students who help newly arrived students, both international students and those from Estonia, to adapt to the academic environment. **Counselling** at the EMÜ is meant to support the student in dealing with problems with studying or in their personal lives. Counselling offers a secure and confidential environment in which the student, in cooperation with the counsellor, can find potential solutions for the problems. The counsellor supports the student in understanding their problem, formulating it and finding possible solutions. The **Students Career Service** of the EMÜ was founded in 2003 with the main objective of providing help to graduating students in making contacts with the employers and finding the best jobs according to their qualifications. The Students Career Service aims to act as a bridge between employers and the University. In addition to recruiting highly qualified personnel, employers have the possibility to get to know more about EMÜ, our study plans and various academic matters.

EMÜ works to provide **students with disabilities** a learning and community environment that affords them full participation, equal access, and reasonable accommodation of their disabilities. All the buildings of EMÜ are wheelchair accessible. The student hostel TORN offers rooms for students with wheelchairs. All the parking lots at the buildings and hostels on the University campus have spaces for accessible parking. All dining areas are on accessible routes.

The **Student Union** promotes students' interests and protects their rights within the University and in the society as a whole. Although everybody is expected to join the Student Union, the Student Union membership is not compulsory. Student Union offers the students opportunities for acquiring high-quality education and ensuring the study environment which supports it. The student Union conducts surveys, makes proposition for making the life at the University better and helps to spend free time. In addition, the Student Union provides several services, such as printing, making copies, making posters, binding academic theses. Students can get an Estonian Student's Card from the Student Union. The Student Union provides everybody with an ÖIS password and username and supplies students with useful information.

For years the students of the Institute have been active in the Student Union and belonged to the management of the Student Union. At present a student from our Institute is the Chairperson of the Student Union.

#### **Students' associations**

The university has a number of professional students' associations, e.g. the Estonian Forestry Students Association, Environmental Protection Students' Association, Real Estate Tycoons, Young Farmers' club, etc. The **Estonian Veterinary Medicine Students' Association** was founded in 2013 with the aim of developing veterinary student teaching and research, introducing and establishing links with associations and legal persons in the same field. The association has a comfortable room where students can relax, warm up their meals and drinks, and read professional literature. All veterinary students are welcome to join the association. **SUOLET** is the Association of Finnish Veterinary Students in Tartu that unites Veterinary Medicine students from Finland studying in Tartu. The **International Club** unites the international students and staff of the whole University, providing them with monthly cultural and social events inside and outside the university. The idea to found the International Club came from Nordic universities, where such clubs have been operating for many years. The **Journal**

**Club of Life Sciences** is an informal forum for students and scientists to meet and discuss science. Volunteers make a short presentation in a topic of interest related to life science and open the topic to discuss. The club works in English, there is no membership and everyone is welcome.

Besides professional activities students are also offered other activities. The **folk dance group «Tarbatu»** is the official dance group of EMÜ, created more than 60 years ago. It comprises men and women interested in folk dancing. The group is very popular in Estonia and performs at many festivals. Those who love singing may become a member of the university **Chamber Choir «Camerata Universitatis»** or the **male choir «Gaudeamus»**. The choirs include students, academic staff and graduates of the University, but also people from other professions. The repertoire is very broad, ranging from medieval to modern music. There are several other choirs that the students and staff can join in Tartu. **ESN Tartu** is the oldest of the five Erasmus Student Network sections in Estonia. It was founded in 2000 and is an officially registered NGO working to make the lives of international students studying in Tartu more interesting and making them feel more at home. ESN organizes events each week, ranging from trips, parties, movie evenings, game nights and theatre visits, working together with all the universities in Tartu.

## 5.2 Comments

The Institute considers that the quality and content of teaching is adequate, meets the needs of the profession and corresponds to the European standards. The feedback system applied at the University at present allows us to monitor and methodically improve the quality of teaching. The input from the students, by way of regular evaluations and through their presence in all councils (Study Committee, Institute Council, University Council, etc.) both at the Institute and University levels guarantees their involvement in all matters concerning the organization, quality and content of the study programme.

In the first study years teaching at the Institute is presently, to a great extent, based on traditional teaching methods, such as lectures and practical trainings. More and more emphasis is being placed on new teaching methods, such as e-learning, self-directed learning, microteaching and integration seminars, teaching on simulators, etc. In the later years of studies knowledge from different fields is integrated and used in problem-based case studies.

## 5.3 Suggestions

- Apply new teaching methods, e-learning and teaching on simulators in teaching;
- Pay more attention to the 'training the trainers' concept;
- Further improve the quality and the safety of the learning environment at the University and outside the University;
- Combine the existing work and learning safety rules and procedures into a manual that can be distributed to students;
- Include a question in the student feedback completed by students at the end of each module or clinical rotation asking whether they have received adequate safety training, and whether they felt that the necessary precautions to avoid injury and zoonosis were taken;
- Provide every student with health insurance and third party insurance.

At present our legislation does not require every student to have a health insurance. As we cannot avoid injuries and veterinary studies may have some health risks, the Institute is looking at the possibilities to insure the students. Negotiations with insurance companies are ongoing.

- Improve information communication and feedback to students;
- Increase student's patient responsibility in clinical training;
- Increase the number of animals specifically prepared for teaching in clinical studies;
- Establish a clinical skills laboratory with simulators;
- Improve the system for monitoring the development of students during their practical training.



# Chapter 6. FACILITIES AND EQUIPMENT

## 6.1 Factual information

### 6.1.1 Premises in general

The facilities used for veterinary studies, except for the experimental farm, are all located in the University campus in Tähtvere in Kreutzwaldi Street on the northern border of the city of Tartu. All buildings are within walking distance of each other. The main building of the Institute — the Zoomedicum including the pharmacy and the animal clinics — is located at 62 Kreutzwaldi Street. For a floor plan of the Institute see Figures 6.2 and 6.3. Figure 6.4 presents the food hygiene department, which is located at 56/3 Kreutzwaldi Street. The micro-dairy is located at 64 Kreutzwaldi Street. For general studies other facilities in the Tähtvere campus are used.



Figure 6.1. Map of EMÜ

Most of the buildings of the University have been renovated during the past 10 years. The majority of the reconstruction and renovation work at the Zoomedicum was completed in 2005 with the means of the State Investment Programme and two Phare projects, ES01.05.02. Competence Centre of Veterinary Public Health and CRIS No 2003/005026.07.04 Upgrade of Clinical Veterinary Medicine in Estonia, to facilitate upgrading of teaching and research equipment.



Figure 6.2. Floor plan of the Zoomedicum, 1st floor

In recent years the facilities of the Institute have been renovated from the University's own resources: new chemistry laboratories, as well as the insulation and ventilation of the B wing was completed in July 2013; renovation of offices, lecture rooms and ventilation systems of the A wing of the Zoomedicum will be finished in October 2015.

In general the facilities for veterinary studies are relatively new and in a very good or good condition and well equipped with contemporary equipment necessary for the achievement of the aims of the curriculum.

The renovation of the facilities for food related sciences at 56 Kreutzwaldi are in the investment plan of the University and the construction work should start in 2016. The long-term strategic plan is to build the third wing to the main building of the Institute and bring the Department of Animal Nutrition, the Department of Animal Genetics and Breeding as well as the Department of Aquaculture that are presently located at 46 and 48 Kreutzwaldi Street together into one location, allowing greater synergy between the departments in the use of teaching facilities for students of related curricula.



Figure 6.3. Floor plan of the Zoomedicum, 2nd floor

### 6.1.2 Premises used for clinics and hospitalisation

Table 6.1.2. Places available for hospitalisation and animals to be accommodated

Regular hospitalisation	Species	No. places
	cattle	11
	horses	11
	small ruminants	6
	dogs	26
	cats	12
	pigs	12 pens (150 x 240 cm)
Isolation facilities	farm animals and horses	5
	small animals	4



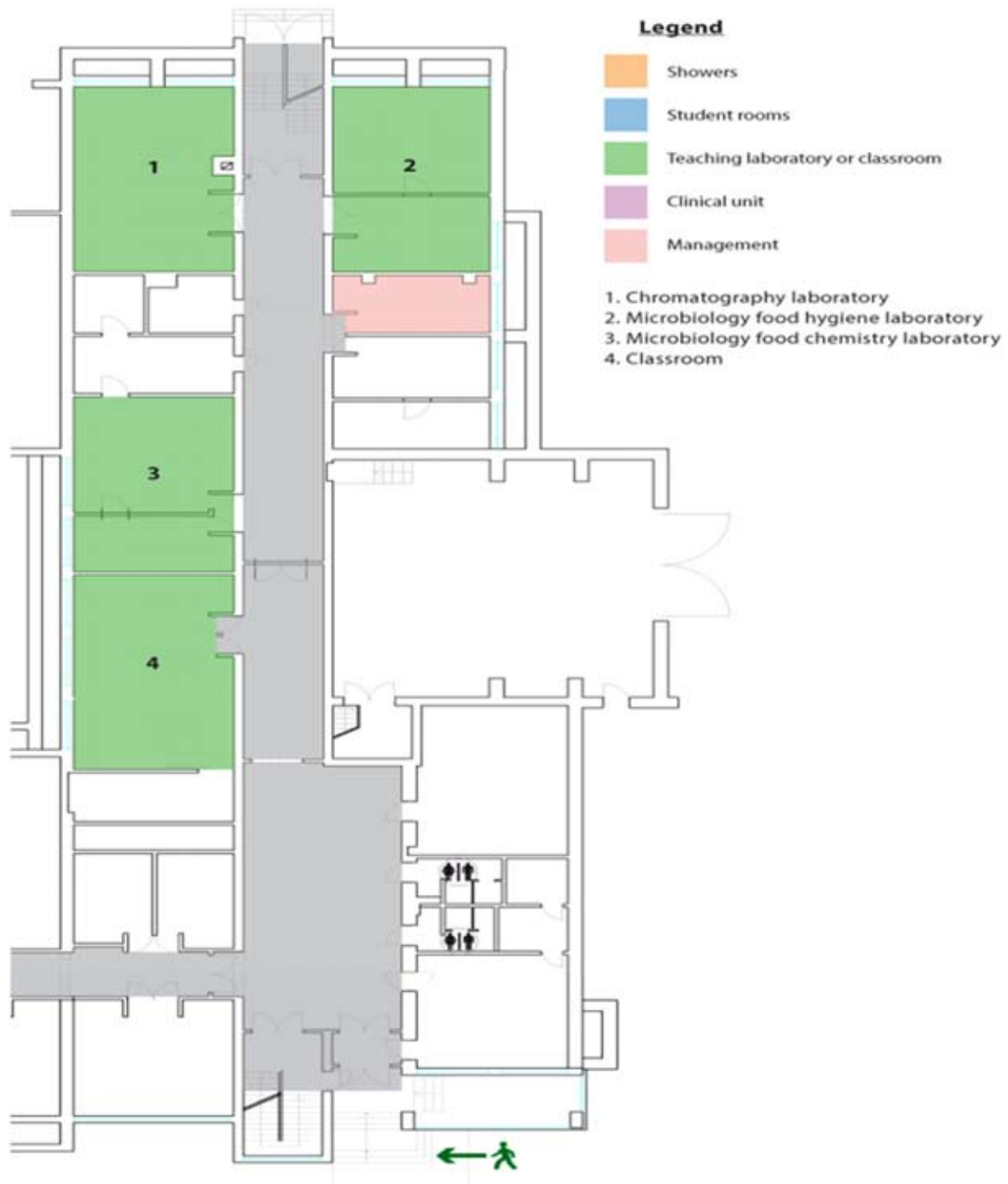


Figure 6.4. Floor plan of the Department of Food Hygiene (Kreutzwaldi 56/3)

### 6.1.3 Premises for animals

Since November 2008 the University has had its own experimental dairy cattle farm, 5 km from the University campus. There are separate on-farm nutrition and physiological trial facilities and additional laboratory facilities for nutrition and reproduction. There is also a teaching room. In total there are 131 cows and 95 young animals on the farm. While operating as a normal production farm, it also serves as a base for practical training and research experiments. Three different milking systems are used on this farm: an eight-place parallel parlour for 60 lactating cows, one robot (DeLaval) for 60 lactating cows and 20 tie-stall places for the experimental animals (mostly for feeding, embryo transplantation and behavioural experiments).

The University has no pig nor small ruminant or poultry farms of its own. The Institute has official arrangements with a range of different commercial farms for practical training both in preclinical and clinical disciplines.

Table 6.1.3.1 List of farms

Farm name	Animal species, number of animal	Distance from Tartu	Subjects taught on the farm
Tartu Agro AS Vorbuse farm	Dairy cattle, Free stall 500 dairy cattle	3 km	Animal hygiene, ruminant clinical medicine, herd health and environment.
Tartu Agro AS, Rahinge farm	Dairy cattle Free stall, 500 dairy cattle	8 km	Animal hygiene, reproduction, gynaecology and obstetrics
Sadala Agro OÜ	Dairy cattle, Free stall, 300 dairy cattle	40 km	Reproduction and artificial insemination
Põlva POÜ	Dairy cattle, Free stall + tie stall in post calving period, 1000 dairy cattle	50 km	Ruminant clinical medicine
Torma POÜ	Dairy cattle, Free stall, 600 dairy cattle	50 km	Animal hygiene
Kaido Ilves FIE	Sheep, 300 ewes	35 km	Animal hygiene
Kambja lambafarm	Sheep, 30 ewes	20 km	Ruminant clinical medicine
Matjamaa lambafarm	Sheep, 50 ewes	25 km	Ruminant clinical medicine
Rõõmu lambafarm	Sheep, 300 ewes	80 km	Herd health and environment
Luunja Equestrian Centre	Equine, 50 horses	50 km	Animal hygiene
Nuiamäe tallid	Equine, 30 horses	70 km	Gynaecology and obstetrics
Tamme Kuivatid OÜ*	Swine 3000	15 km	Animal hygiene
Jampo Seakasvatuse OÜ*	Swine 5000	20 km	Swine clinical medicine, herd health and environment
Tartu Agro Ilmatsalu sigala*	Swine 5000	5 km	Swine clinical medicine, reproduction and gynaecology
Peri POÜ	Poultry	40 km	Diseases of birds
Järveotsa quail farm	Quails	25 km	Animal hygiene

\*Due to African swine fever, practical training on the pig farms was suspended in 2014. Therefore, pigs are purchased annually by the Institute for practical exercises (surgical interventions); these animals are kept only for a limited period (on average for one week).

## 6.1.4 Premises used for theoretical, practical and supervised teaching

Table 6.1.4.1 Premises for clinical work and student training

Small animals	no. of consulting room	7
	no. of surgical suits	2
	no. of rooms for different procedures	7
	diagnostic imaging (X-ray, MRT)	2
Equine and production animals	no. of examination areas	3
	no. of surgical suites	1
	clinical skills lab	1
	diagnostic imaging (X-ray)	1
Wild animals	no. of examination areas	1

Table 6.1.4.2 Premises for lecturing

Hall	No.1	No. 2	No. 3	No. 4	No. 5
	Kr 62	Kr 62	Kr 62	Kr 62	Kr 62
	A-201	A-209	A-107	A-102	KÜ-09
Places	100	50	50	50	30

Hall	No. 6	No 7	No. 8	No. 9	No. 10
	Kr 62	Kr 56/5	Kr 56/5	Kr 56/3	Kr 46
	KÜ-03	123	210	83/84	320
Places	16	31	24	45	16

Total number of places in lecture halls: 412. In addition, all of the university lecture halls on the campus are available of use if required.

Table 6.1.4.3 Premises for group work (No of rooms that can be used for supervised group work)

Room	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7
	Kr 62	Kr 62	Kr 46	Kr 48	Kr 56/5	Kr 56/5	Kr 56/5
	A-122	B-213 computer class	218	8	209	211	144 computer class
Places	26	20	12	12	15	8	12

Total number of places in rooms for group work: 111. In addition, some of the laboratory rooms can also be used for group work. Students have five rooms at their disposal, which are used for individual or group work.

Table 6.1.4.4 Premises for practical work (Number of laboratories for practical work by students)

Room	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
	Kr 62	Kr 62	Kr 62	Kr 62	Kr 62	Kr 62
	A-101	A-110	A-117	N-02	B-105	B-109
	anatomy, dissection room	histology practical training (microscopes)	pathology practical training	microbiology teaching lab	chemistry teaching lab	biochemistry teaching lab
Places	16	20	35	16	20	20

Room	No. 7	No. 8	No. 9	No. 10	No. 11	No. 12
	Kr 62	Kr 62	Kr 62	Kr 62	Kr 56/5	Kr 56/3
	B-119	B-132	B-212		206	
	Teaching lab in insemination and reproduction	Laboratory for herd health studies	Teaching lab in parasitology	Room for practical training in the clinics	Food microbiology	Food Hygiene Lab
Places	20	24	27	15	18	10

Room	No. 13	No. 14	No. 15	No.16
	Kreuzwaldi 62	Kreuzwaldi 62	Kreuzwaldi 62	Kr 62
	A 217	Op-20	P-05	S1
	Microbiology teaching lab	Student lounge	Autopsy room	Large animal observation room
Places	16	10	16	15

Total number of places in laboratories: 295

## 6.1.5 Health and safety measures for undergraduate students

Students are instructed about specific job- or subject-related safety issues, including specific hazards, protective measures and first aid, at the beginning of their practical work. All defined safety measures must be respected at all times by employees as well as by students. Protective clothing is required and is provided (e.g. gloves, lab robes, shoe protection, etc.).

First aid kits are available on all sites. Named staff have been trained to give first aid in case of accidents.

## 6.1.6 Diagnostic laboratories and clinical support services

### Diagnostic laboratories

The Joint Clinical Veterinary Laboratory of the Institute was established to support the clinics with laboratory diagnostics. This laboratory includes labs for clinical biochemistry and haematology, microbiology and parasitology, serology (ELISA) and molecular diagnostics (PCR) under the same umbrella.

In addition, the histo-pathology laboratory and pathologists from the Department of the Basic Veterinary Science and Population Medicine provide routine diagnostic services for the animal clinics – necropsies, cytological and histopathological diagnostics.

At the animal clinics there is a small laboratory for *ad hoc* clinical biochemistry diagnostics, cytology, microscopic examination of smears and clinical mastitis diagnostics using selective media. The laboratories are routinely used by staff members and students during their daily clinical work, and during night and weekend shifts, to obtain quick essential clinical diagnoses.

The animal clinics also make use of the services of VFL located near the University campus and some commercial diagnostic laboratories, particularly during the summer holidays. Students are also involved in the interpretation of the test results provided by external laboratories.

### Central clinical support services

Clinical support services are not a separate unit. The diagnostic equipment (X-ray and ultrasound, MRT, electrocardiography, laparoscopes, arthroscopes and video-endoscopes, respiratory anaesthesia equipment, etc.) is available and used by the veterinarian responsible for the patient according to the specific needs. Technical support is provided by qualified assistants (X-ray, anaesthesia, etc.).

## 6.1.7 Slaughterhouse facilities

The institute mainly uses the three largest slaughterhouses in Estonia located in Saaremaa (distance from Tartu 375 km), Valga (80 km) and Rakvere (135 km) for the practical training of students. All enterprises are approved by Estonian Veterinary and Food Board as slaughterhouses, meat cutting plants and producers of meat products.

Rakvere Lihakombinaat ([Rakvere Meat Processing Plant](#)) is the biggest producer of meat products in the Baltic States. Rakvere's product line includes both fresh meat and food preparation products. Mainly pigs and cattle (rarely sheep) are slaughtered at the Rakvere slaughterhouse. Approximately 65% of Estonian pigs and 50% of bovine animals are slaughtered at Rakvere. In 2014 almost 272,000 pigs and 12,100 cattle were slaughtered in Rakvere.

The Valga Meat Processing Plant belongs to the [Atria Estonia Ltd group](#) and is the second biggest in Estonia. Atria processes nearly 10,000 pigs and over 500 bovines a month.

The Saaremaa Lihatoöstus ([Saaremaa Meat Processing Plant](#)) is the third largest one in Estonia, which processes nearly 400 bovines and 3000 pigs every month. About 500 tons of products get distributed monthly.

In these slaughterhouses the students do their main practice in meat inspection and production hygiene. The duration of this practice is two weeks. The Institute provides the students with accommodation and compensates the students' transportation costs to the practice site.

Guided visits to different slaughterhouses and processing plants allow the students to gain knowledge of ante mortem and post mortem meat inspection. Moreover, students are required to evaluate and discuss the applied GMP and GHP within the frame of the HACCP system. In addition to the above-mentioned slaughterhouses, the Institute organises study visits to smaller slaughterhouses as well.

To teach primary inspection skills of animal carcasses the autopsy room of the Institute is used, where carcasses are brought from a small slaughter house close to Tartu (Rahinge).

## 6.1.8 Foodstuff processing unit

The Institute has micro-dairy facilities, where the students are introduced to the production processes of dairy products.

Food processing plants are visited on a regular basis. For example, an annual study excursion is organized to the Rakvere meat processing plant, where both company representatives and Official Veterinarians (OV-s) are present and engaged with the students.

During the two-week practice at the District Veterinary Offices of the State Veterinary and Food Board the students visit, together with official veterinarians, various food production enterprises and other food business operators. Additionally, within

the two-week practical training in the slaughterhouse students are also introduced to the enterprise's self-control system and its work practices; work organization in meat cutting and meat production plant including sampling, laboratory analyses, labelling of the products, determination of product shelf-life, etc.

### 6.1.9 Waste management

The waste management of the Institute is organised according to EU and Estonian regulations, and is regularly audited by internal and external auditors.

All waste of animal origin (cadavers, carcasses, body parts and tissue fragments) are collected and stored in special storage containers and these are regularly transported by a responsible company to the central incineration plant in Väike-Maarja of the company [AS Vireen](#).

In laboratories, different types of waste materials are collected into clearly marked containers and disposed according to the type of waste. Sample material of biological origin is disinfected, by chemical disinfection or autoclaving depending on the type of material, and disposed of through the sewage system or sent for incineration.

Chemical waste material is stored in a special storage room of the University and is regularly sent for treatment in a specialised plant for the treatment of hazardous wastes. Unused medicines, needles and other consumables used for the treatment of patients are collected, stored in special containers and disposed of through specialised enterprises dealing with medical waste management. The Institute has a contract with [Epler & Lorenz](#) for the collection of hazardous waste.

In the Large Animal Clinic manure is stored in a container in a separate room. Pursuant to the [Waste Act](#), a contract has been concluded with the waste management firm [Ragn Sells](#) for this purpose. Containers are exchanged according to an arranged schedule.

There is a small scale incinerator in the autopsy facilities of the Institute, which can be used in exceptional circumstances (suspicion or diagnosis of exotic notifiable disease, etc.).

### 6.1.10 Future changes

There are two large projects at present that the Institute is working on. One of them is to build a third block for laboratories and the other is the so-called Food House. For the building and reconstruction of the "Food House" resources will be applied from the institutional development programme ASTRA measure No. 1 (projection, construction and reconstruction of the study and research buildings). In the "Food House" both research and study laboratories will be located for two of the institute's departments – the Department of Food Science and Technology and the Department of Food Hygiene. This will create a laboratory area complex, where joint research in food science will be carried out on product development and in food quality and safety. It will create better conditions for veterinary medicine students for food technology studies, especially for practical training in food technology. Also, a food microbiology and foodborne pathogens study laboratory will be constructed within the ASTRA activity. The "Food House" will give better opportunities for the development of food science in Estonia, and for the application and performance of basic and applied science projects together with other European research and development institutions.

## 6.2 Comments

- In general, the buildings for teaching are adequate. The institute would like to invest in providing more showers and dressing rooms for the students going to their practical training. The blueprints for these are being prepared. The showers for the students will be located in the basement of wing A. Some of the classrooms and rooms of the students and administration in wing A are being refreshed. This is expected to be complete by September 2015. The clinics need enlargement due to increasing patient load.
- In general, the equipment is adequate. The main problem is that if something happens to the equipment there is no backup. The institute's policy is to use the apparatus resources as rationally and efficiently as possible: if a new appliance is purchased for research and clinical studies, the old one is used in the teaching and practice training of students.
- There are enough resources to maintain the buildings and equipment.

## 6.3 Suggestions

- Improve the working and study environment for students, e.g. make some rooms available to the students for self-study, and furnish a room for the staff to socialise, exchange information and relax;
- Enlarge the small animal clinic to cope with the increasing patient load;
- Finalise the renovation of the A wing of the Zoomedicum;
- Aggregate separate safety regulations into one manual.

# Chapter 7. ANIMALS AND TEACHING MATERIAL OF ANIMAL ORIGIN

## 7.1 Factual information

### 7.1.1 Anatomy

Table 7.1: Material used in practical anatomical training

	dog		cattle		equine	
	2014*	2013	2014*	2013	2014*	2013
live animals <sup>1)</sup>	2	0	0	0	2	0
cadavers <sup>1)</sup>	21	16	0	0	2	1
specimen <sup>1)</sup>	30	30	4	4	8	6
conserved specimens	30	30	30	30	20	20
skeletons	4	4	5	5	2	2
bones	30	30	40	40	40	40
e.g. ultrasound	0	0	0	0	0	0
x-ray images	8	5	6	3	8	6
computer assisted teaching	0	0	0	0	0	0

1) give figures, 2) indicate, \*year prior to visitation (2014)

Table 7.1a: Material used in practical anatomical training (other species)

	cat		pig		sheep, goat		rabbit		birds	
	2014*	2013	2014*	2013	2014*	2013	2014*	2013	2014*	2013
live animals <sup>1)</sup>	0	0	0	0	0	0	0	0	0	
cadavers <sup>1)</sup>	30	24	3	3	6	4	4	4	20	16
specimen <sup>1)</sup>	6	6	4	4	4	4	2	2	0	0
conserved specimens		20	20	20	20	10	10	6	6	4
skeletons		3	3	2	2	2	2	1	1	2
bones		20	20	20	20	10	10	2	2	10
e.g. ultrasound		0	0	0	0	0	0	0	0	0
x-ray images		4	0	0	0	0	0	0	0	0
computer assisted teaching		0	0	0	0	0	0	0	0	0

1) give figures, 2) indicate, \*year prior to visitation (2014)

#### 7.1.1.1 Origin of the materials

Cadavers and specimens of a range of different animal species are collected from animal shelters, university animal clinics, commercial farms and commercial slaughterhouses.

Cadavers by animal species:

- cats and dogs: from animal shelters and the university clinic;
- horses, pigs, calves, goats, rabbits, chicken from farms.

We also use the dry and wet collections of specimens of the Institute for teaching anatomy.

Different specimens include bones, joints, muscles, internal organs from the collection of the anatomy museum, and fresh bovine and equine limbs, reproductive and other internal organs from slaughterhouses.

#### 7.1.1.2 Storage of the materials

The vast majority of the cadaver specimens are dissected, either directly after arrival from the slaughterhouse (large animal specimens) or euthanasia (dogs, cats, pigs, rabbits, chickens). In addition, cadavers of dogs, cats, pigs and chickens are stored refrigerated and also used for dissection exercises. Internal organs and limbs of different animal species are stored in a freezer and thawed before study.

Dry collections are permanently stored in the Anatomy Museum and wet collections of specimens are permanently stored in a special storage room in the dissection hall in preservation solutions.

## 7.1.2 Pathology

Table 7.1.2 Number of necropsies over the past three years

Species		Number of necropsies			Average
		2014*	2013	2012	
Food-producing animals	cattle	28	35	32	150
	small ruminants	21	26	22	
	pigs	85	92	82	
	other farm animals	8	11	8	
	Equine	22	20	23	2
	Poultry	93	107	111	149
	Rabbits	29	45	63	
Companion animals/ exotic	dogs	66	65	64	126
	cats	55	49	39	
	other (birds, rats, mice)	11	15	14	

\*year prior to visitation (2014)

The animals used in pathological anatomy practical training on which autopsies are carried out are:

- hospitalized animals which have died or been euthanized in the University Clinic;
- animals brought in by third parties: diagnostic necropsies referred by practitioners;
- animals which have died on farms (pig or poultry farms) and submitted according to special agreements;
- material is also obtained from slaughterhouses.

The material for necropsy is obtained on the day of the training session. The dissection room technician has been trained in animal handling and transport. If necessary the material is refrigerated at 0 °C...+ 4 °C or frozen at –18 °C. Permanent preparations are also used.

During the 4<sup>th</sup>-year production animal clinical medicine course every student has the possibility to perform surgical manipulations (sutures techniques on udders and uteri) or trim hooves collected from the slaughterhouses.

## 7.1.3 Animal production

The university experimental farm in Märja is used for research and teaching cattle production to veterinary students. There are 131 dairy cows and 95 young stock on the farm.

In addition, the Institute has cooperation agreements with five cattle farms (200–1,000 cows in the herd), three pig farms, four sheep farms and a chicken farm. Regular farm visits both in preclinical (animal husbandry, animal welfare and ethics; animal hygiene) and clinical subjects (ruminant clinical medicine, herd health, swine clinical medicine, reproduction, obstetrics and gynaecology) are arranged.

The Institute has a 16-seat bus, which is used for the planned farm visits.

## 7.1.4 Food hygiene/public health

Swine carcasses and internal organs are delivered from AS Tartu Agro Rahinge Meat Plant in Tartu county 5 km from the city of Tartu. Also, cattle internal organs and other material for meat inspection are made available.

Meat inspection practical training is performed in the pathological anatomy autopsy room where all the necessary conditions for practical meat inspection for students are secured.

Practical training is performed within the subject Meat Inspection (VL.0434) given by the Department of Food Hygiene in the autumn semester. Students are divided into four groups, and all training is organized within one week.

Procured material is free of charge, but the transport is organized by the responsible lecturers. Mostly material with pathology is procured for practical training. Also, material with no pathologies is procured for learning the normal conditions of carcasses, essential lymphnodes and internal organs of farm animals as mentioned previously.

## 7.1.5 Consultations and patient flow services

### 7.1.5.1 Consultation

The [Animal Clinic](#) of EMÜ is divided into two parts: a small animal clinic and a large animal clinic. The Large Animal Clinic has two sections: an equine section and a production animal section.

The Small Animal Clinic is open around the clock, 365 days a year. Consultations are held from 09:00 to 20:00 every day, including the weekends. The Large Animal Clinic is open for consultations on weekdays from 8:00 to 16:00. Outside working hours it is possible to call an emergency hotline.

The fourth-year students participate in the *on-call service* (including night duty) at the small animal clinic from September 1<sup>st</sup> to June 15<sup>th</sup>. Usually 1–2 students do their shift at a time.

The 5<sup>th</sup> year students have their practical training from February 1<sup>st</sup> to August 31<sup>st</sup> rotating in both animal clinics for seven weeks in accordance with the guidelines for practical training and the approved timetable. In the Large Animal Clinic the students are also engaged in the *on-call* duty.

On average there are 10–12 students in the Small Animal Clinic and 8–10 students available at the Large Animal Clinic all the time. In the Small Animal Clinic the students rotate between the sections and they work in shifts. The morning shift lasts from 8:00 to 14:00 and the evening shift from 14:00 to 20:00. Students participate in handing over the shifts in the morning and in the afternoon. In the Large Animal Clinic the students are divided between the equine section and productive animal section by weeks. Out of the seven weeks they must do three weeks in the equine section and four weeks in the productive animal section.

The 6<sup>th</sup>-year students do their practice in the animal clinic depending on their chosen elective speciality module (small animal medicine, farm animal and equine medicine). In the Large Animal Clinic the students have an obligation to be on call.

### 7.1.5.2 Patient flow

Table 7.3: Number of cases: a) received for consultation, and b) hospitalised in the Faculty clinics, in the past three years

Species		Number of cases						Average
		2014		2013		2012		
		a	b	a	b	a	b	
Food-producing animals	cattle	0	3	0	5	0	7	14
	small ruminants		12		8		5	
	pigs	0	0	0	0	0	0	
	other farm animals	0	0	0	0	0	0	
	Equine	119	38	147	25	220	30	
	Poultry	0	30	0	60	0	58	1
	Rabbits		0	0	0	0	0	
Companion animals/ exotic	dogs	5,223	546	4,086	475	3,812	386	6,648
	cats	1,858	202	1,529	190	1,173	170	
	Exotic animals	203	10	31	3	43	5	
	Wild animals and birds (incl.eagles)	0	66	0	39	0	59	

### 7.1.6 Vehicles for animal transport

In most cases the customers of the Large Animal Clinic transport their horses to the Clinic for treatment with their own transport. The Large Animal Clinic has an animal trailer for the transport of horses and cows.

### 7.1.7 On-call emergency service

In the Small Animal Clinic the emergency service is available 24 hrs a day and 7 days a week all year round. The night shift team on duty consists of a surgeon, a technical assistant and two fourth-year students. The Small Animal Clinic provides backup duty personnel in surgery during the night duty.

The Large Animal Clinic provides emergency hotline services (one equine and one production animal surgeon are on stand-by) after consultation hours every weekday from 16.00–9.00 and at weekends round the clock. The veterinarian on duty may be located outside the clinic, but he/she can be present at the clinic or be ready to do farm visits within 10–30 minutes.



## 7.1.8 On-farm teaching and outside patient care

### 7.1.8.1 Ambulatory (mobile) clinic

The Ambulatory (Mobile) Clinic is defined as a unit which provides on-call outside services to farms and other institutions and is generally operated on a commercial basis.

Four full-time and two part-time veterinarians work in the production animal clinic. Full-time veterinarians are involved with daily veterinary services and herd health visits. Two part-time veterinarians are involved in herd health visits both in routine and problem cases.

The mobile clinic works on working days from 08.00–16.00. There are at any one time up to four 5<sup>th</sup>-year students or seven 6<sup>th</sup>-year students doing their training in the production animal section. The number depends on the period of practice. One student is on duty and the student on duty is called in the case of an emergency. The emergency service works 24/365 and there is always one student on call.

There are three vehicles available in the Large Animal Clinic (both equine and productive animal sections: a 8+1-seat van; a 5-seat Ford Transit and a 5-seat Toyota Auris. For herd health visits cars belonging to the personnel are also used and 1–2 students join the practitioner for each visit. Two cars are furnished with veterinary equipment.

The veterinarians of the mobile clinic make visits every day. On the average there are 460 farm visits a year. Veterinarians perform all veterinary procedures regarding production animals (hoof trimming, gynaecological examination, surgery, etc.). The visits (except for the emergency cases) start at 08.30–09.00 in the morning. Dependent on the nature of the job, there are usually 1–2 qualified veterinarians with 3–4 students, or each qualified veterinarian travels separately with 1–2 students.

In addition to individual patient treatment, the ambulatory clinic provides herd health services on a regular basis during the whole year (an average of 100 different visits per year) and visits to ‘problem herds’ for both dairy and beef cattle herds (an average of 80 visits per year) throughout Estonia. Regular veterinary services are provided to five dairy herds (200–800 cows per herd) and two beef herds in total. Different herd health areas (udder health, reproduction, lameness, young stock) are covered. One to three students participate in each visit. For example, during the 5<sup>th</sup>-year clinical training period (four weeks in the production animal clinic), each student participates in at least four herd health visits (once per week).

The veterinarians in the equine section make around 80 visits a year (on average one-to-two times a week). Two to three students are involved in each visit.

Table 7.4a: Number of cases seen by the Ambulatory (mobile clinics) in the past three years

Species		Number of cases			Average
		2014	2013	2012	
Food-producing animals	Cattle	3,843	4,722	3,288	3,957
	Small ruminants*	5	7	6	
	Pigs*	–	–	–	
	Poultry	0	0	0	0
	Rabbits	0	0	0	
	Equine	166	154	67	129

\*It is very difficult to give the exact number of small ruminants and pigs, for during their 5<sup>th</sup>-year practical training each student visited a pig farm once a week (5,000 sows), as well as sheep farms, where the procedures of the day were carried out on the herd under the qualified veterinarian’s supervision. From 2014 it has not been possible for the students to visit pig farms due to the epidemic of African swine fever in Estonia.

### 7.1.8.2 Other on farm services and outside teaching

In addition to working in the ambulatory clinic, farm visits are regularly conducted during the clinical medicine studies (3<sup>rd</sup>–4<sup>th</sup> course) according to the curriculum. The groups visiting farms during the regular study visits consist of 10–15 students. One farm visit usually takes about 3–4 hours. During the visit a number of therapeutic and prophylactic actions will be carried out. Teaching activities are carried out on five cattle farms (120–1,000 dairy cows), which are located within 50 km from Tartu. There are two equine stables, two sheep farms and one pig farm.

Table 7.4b. Outside teaching of the scheduled subject during the 3th; 4th; 5th year (before the clinical rotation period)

Clinical subject	Study year	Number of farm visits per student
Propedeutics -cattle	3th autumn semester	2
Obstetrics and gynaecology: -cattle - swine -horses	4th spring semester	4 1 2
Internal medicine and surgery (incl. orthopaedics) -cattle -swine -small ruminant	4th spring semester	4 1 1
Herd health and environment -cattle herd health -swine herd health -small ruminant herd health	5th autumn semester	1 1 1
<b>Total</b>		<b>18</b>

The students of the farm animals and equine medicine module (6<sup>th</sup> year), have to make four herd health visits to the cattle farm, two to the sheep farms, and one to a pig farm. Students collect herd health data and prepare a report.

### 7.1.9 Other information

#### Animal Clinic

Agriculture is well developed in the region in which the University is located. This has created favourable conditions for finding outside partnership farms.

The clinic offers its services throughout Estonia. The prices of the services are the same, or slightly above average, when compared to prices in the southern part of Estonia.

#### Small Animal Clinic

The Small Animal Clinic is the market leader among small animal practices in the southern part of Estonia. The Small Animal Clinic competes with the other animal clinics in Estonia on an equal basis, that is, the prices are more or less at the same level as those at private practices. In Estonia, there are two clinics providing round-the-clock services — one of them is in the capital of Estonia, Tallinn in the north of Estonia, and the other one is the University clinic in Tartu, in the southern part of Estonia.

The number of patients, as well as the number of veterinarians and support staff is highest in the University Clinics. The clinics have the largest facilities for veterinary procedures, diagnosis and hospitalization in Estonia. About 30 per cent of the patients are referral patients from other small animal clinics.

The University clinics have expertise in carrying out endoscopic and arthroscopic studies. The clinic has the only MRI for use in animals in Estonia.

According to their responsibilities, training and experience, veterinarians at the University clinics fall into three categories — junior veterinary clinician-teachers (veterinarian), veterinary clinician teachers and senior veterinary clinician-teachers. In the first year the junior veterinary clinician-teachers work as general veterinarians by working in the ambulatory reception and dealing with emergencies. If necessary, they refer the patient to the specialized veterinarians (veterinarian or senior veterinarians). The specialized veterinarians also participate in the work of the night shifts. Specialized veterinarians working full time at the clinic follow a regular time schedule. For the career path of the veterinary clinician teachers please see Annex 7.

#### Veterinary specialists

Veterinarians are divided by specialties. Specialist areas covered are soft tissue surgeons and orthopaedics, internal medicine, cardiology, neurology, ophthalmology, dermatology, dentistry, emergency care and the treatment of wild animals.

The Institute encourages veterinarians to join European Specialisation programmes. The number of clinical veterinarians doing their residency is five and that of those who have completed their residency is four.

Practitioners and lecturers from outside our University (both from Estonia and abroad) are involved in teaching on a regular basis. They are invited to give specific lectures or seminars as regards both the large animal and small animals (veterinary practice management). This applies to the 6<sup>th</sup>-year modules in particular.

## Large animal clinic

The Large Animal Clinic of the University works in two sections: equine clinic and production animal clinic.

### Equine clinic

There are in total around 6,000 horses in Estonia. Horse racing is not common in Estonia and there is only one racecourse, which is in Tallinn. Horses are mainly kept on tourist farms and in riding schools. There are no specialist equine clinics in Estonia, but there are veterinarians who work in horse stables. There are about ten veterinarians specializing in equine medicine in practices in Estonia.

The University Large Animal Clinic is the only clinic in Estonia which offers a round-the-clock equine surveillance service, and the only clinic where horses can be hospitalized. More than 50% of the equine patients arriving at the clinic are referral cases.

### Production animal clinic

Within the range of 50 km from the Animal Clinic there are about 8,000 dairy cows and 40,000 pigs, (the closest farms being at a distance of 3–4 km). This has created favourable conditions for finding outside partnership farms.

Due to the herd structure in Estonia (mostly large dairy farms) and for biosecurity reasons the farmers do not send their animals to the animal clinic for individual treatment. All necessary procedures, including operations, are carried out on the farms.

University herd health veterinarians are recognized specialists in Estonia. Herd health visits are provided all over Estonia. ‘Second opinion’ services are offered to private veterinary practitioners and farm veterinarians. Continuing education courses are in high demand, they are popular and are provided regularly.

Data concerning the patients and their owners are at first registered on patient cards and then entered onto a computer database using the clinic software programme VIS (a programme developed in Estonia). This database is protected in accordance with the [Estonian Data Protection Act](#).

From April 2015 the computer software for veterinary clinics Provet (Veterinary Practice Management Software) has been introduced in both animal clinics. The computer software (*Vissuke*) used on the farms was developed by the Estonian Animal Recording Centre and the veterinarians and students have access to this.

The veterinary surgeons of the Animal Clinic are members of national and international professional associations and specialist societies (the Estonian Veterinary Association, the Estonian Small Animal Veterinary Association), and their activities are in compliance with the relevant statutes, Good Veterinary Practice Guidelines and the code of ethics.

## 7.1.10 Ratios

Table 7.5: Animals available for clinical training (in the clinics of the Faculty or seen through the Ambulatory Clinic) as a ratio of the number of students in the last full year of clinical training

R11	No. of students graduating annually <sup>a)</sup>	=	44	=	1	Denominator 0.31	Minimum value: 0.758
	No. of food producing animals seen at the faculty <sup>1)</sup>		14		0.31		
R12	No. of students graduating annually <sup>1)</sup>	=	44	=	1	Denominator 89.9	Minimum value: 8.325
	No. of individual food-animal consultations outside the faculty <sup>2)3)</sup>		3957		89.9		
R13	No of students graduating annually <sup>a)</sup>	=	44	=	1	Denominator 4.13	Minimum value: 0.326
	Number of herd health visits <sup>visits3)4)</sup>		182		4.13		
R14	No. of students graduating annually <sup>1)</sup>	=	44	=	1	Denominator 13.18	Minimum value: 2.700
	No. of equine cases <sup>1)</sup>		580		13.18		
R15	No. of students graduating annually <sup>a)</sup>	=	44	=	1	Denominator 0.68	Minimum value: 0.407
	No. of poultry/rabbit cases <sup>1)*</sup>		30		30		
R16	No of students graduating annually <sup>a)</sup>	=	44	=	1	Denominator 151.09	Minimum value: 48.061
	No. of companion animals seen at Faculty <sup>1)</sup>		6648		151.09		
R17	No. of students graduating annually <sup>a)</sup>	=	44	=	1	Denominator 0.02	Minimum value: 0.035
	Poultry (flocks)/rabbit (production units) seen <sup>2)3)</sup>		1		0.02		

<sup>1)</sup>Table 7.3, average; <sup>2)</sup>Table 7.43, average; <sup>3)</sup>where applicable use or add information provided in chapter 7.1.8.2; <sup>4)</sup>see 7.1.8.1.

\* as rabbits are companion animals they are included under the exotic animals section

Table 7.6: Animals available for necropsy

R 18	No. of students graduating annually <sup>a</sup>	=	44	=	1	Denominator 3.89	Minimum value: 1.036
	No. necropsies food producing animals + equines		171		3.89		
R 19	No of students graduating annually <sup>1)</sup>	=	44	=	1	Denominator 3.37	Minimum value: 0.601
	No. of poultry/rabbits necropsies <sup>2)3)</sup>		149		3.37		
R 20	No. of students graduating annually <sup>a)</sup>	=	44	=	1	Denominator 2.86	Minimum value: 1.589
	Necropsies of companion animals		126		2.86		

### 7.1.11 Other species

It is obligatory for the veterinary students to take a course in the diseases of fish and Crustacea.

There are elective subjects in apiculture and diseases of honey bees.

There are elective courses in non-food producing species such as fur animal diseases and wildlife medicine, as well as the medicine of laboratory animals and exotic animals.

## 7.2 Comments

In 2014 African swine fever was reported in the wild boar population of Estonia. Therefore, farmers no longer allow the students to visit pig farms. The Institute has sought for solutions for this problem, and in 2014/2015 pigs have been bought and brought to the animal facilities of the Institute for the students to study.

As stated above, chicken farming is highly concentrated in Estonia (there is only one large-scale broiler chicken company, [Tallegg](#).) and students are not allowed onto this farm for strict biosecurity reasons. Study visits are made to Peri laying-hen farm.

Rabbit farming is marginal in Estonia and therefore the number of cases of issues regarding rabbits is very small.

### Ratio 11

Cattle are mainly kept on large dairy farms in Estonia and, due to the herd structure and for biosecurity reasons, the farmers do not send their animals to the animal clinic for individual treatment. All necessary procedures including surgery are carried out on the farms.

Food producing animals are not brought to the Institute, but are treated through the mobile clinic.

## 7.3 Suggestions

- Increase the number of poultry flocks seen by the student and add also poultry inspection to the practical training in meat inspection;
- Use more live animals and diagnostic imaging tools in the teaching of anatomy ;
- Increase teaching and practical training in sheep, beef cattle and exotic farm animal medicine.

## Chapter 8. LIBRARY AND LEARNING RESOURCES

### 8.1 Factual information

Students and researchers use the [library](#) for different reasons: searching for articles for their theses, finding handbooks and study programmes complementary to the courses, working at the workstations, checking the e-learning platform, printing hand-outs, scanning images, etc. All this can be done at the EMÜ Library, a public research facility and library, which was established in 1952.

#### 8.1.1 Opening hours

The Library is open from 9.00–19.00 from Monday to Friday, and from 10.00–14.00 on Saturday.

The library is closed in July (collective vacation) and during national holidays. In August the library is open on all weekdays 9.00–13.00.

## 8.1.2 Library departments

- The Department of Acquisition deals with the selection and purchase of learning materials and resources, indexing and cataloguing of the e-catalogue ESTER.
- The Department of Bibliography's main purpose is the substantive classification and indexing of articles in the database of Estonian articles ISE (*Index Scriptorum Estoniae*).
- The Department of Reader Service is responsible for the preservation and organization of library collections and making them available to the readers. Also, making copies, scanning and printing.
- The Department of Foreign Relations manages databases and other electronic sources, the digital repository DSpace and organizes lending books and article copies via Interlibrary Loan.

## 8.1.3 Library management

The library consists of a main library located in the main building of EMÜ at Kreutzwaldi 1. The structure of the library is traditional, with listed departments described above as functional units. The head of each department is responsible for the operation of their department and is appointed by the head of the library. The library is managed by the library council, which is a counselling and coordinating organ and consists of members representing the university institutes, the student body and the library. The head of the library is a member of the council due to his/her position. The library council meets as necessary, but not less than twice a year. The library council appoints the head of the library, evaluates the operation of the library, and makes suggestions concerning budgeting, automation, policymaking and operational issues. In addition to the library council, the collection development group, responsible for working out the bases for acquisition policy, is involved in library management. Likewise, the collection development group makes decisions concerning the distribution of acquisition funds according to subjects taught at the university, and the proportions of study and scientific literature.

## 8.1.4 The EMÜ library provides the following services:

- lending library materials for use at home and in the library;
- rendering a reference and information service;
- user training, counselling and consultations;
- lending library materials via interlibrary loans to Estonian and foreign libraries, lending library materials and ordering copies for users from Estonian and foreign libraries;
- granting access to electronic resources in accordance with agreements and licence agreements;
- librarian-assisted copying, scanning and printing;
- using computer workstations to conduct information searching, access electronic sources of information, and process documents, using the WiFi data communication network;
- make available individual study rooms and group study rooms.

Library materials can be borrowed free charge, other services may be fee based. Prices for fee based services are established by the EMÜ Rector's directive.

## 8.1.5 Relevant indicators in 2014

Collections	298,088 items
Books	264,458 volumes
Journals	9,964 sets
Newspapers	118 sets
Readers	7,264
Visits per year	45,029
Borrowings per year	37,730
Users workplaces	54
Computer places	16+1 (in the individual working room)
Group working room	1
Individual working rooms	2
Workers	19 (+3 on maternity leave)

In the University library there is a reading room with 16 computers + 1 computer in the individual working room. Access to the computers is available during the library opening hours. Additionally, there are 54 working places where students may connect their personal computers to the EMÜ internet network.

The library provides information for studies, research and development, as well as a contemporary information service of good quality. The best possible availability of information in the collections, access to electronic interlinking databases and e-publications is guaranteed. Publications and e-resources are acquired according to the wishes of academic units. The integrated library system Sierra, which offers proven library workflow technology and complete resource management with the power and scale of open systems architecture is used. Visitors also have the online catalogue ESTER and, the database of Estonian articles ISE at their disposal.

ESTER is the shared catalogue of 15 major Estonian libraries. The catalogue also contains records of items stored in university colleges and special libraries. ESTER contains records on books, periodicals, sheet music, sound recordings, online resources, etc., whereas articles published in the Estonian press and collections can be found in the database of Estonian articles ISE.

In 2009 the repository DSpace came into use with full scientific texts in PDF format. EMÜ staff and students are provided with interlinking databases of 19 research journals and 2 e-books, with a total of about 16 000 scientific journals (full text) or reports and more than 14 000 e-books. Using and managing the digital resources is made easier with the e-journal web-based tool EBSCO A-to-Z. Feedback from the institutes shows that they have access to the most relevant databases, such as PubMed and Thomson Reuters Web of Science, Scopus and ScienceDirect. Smaller collections or libraries in the EMÜ units are found in the e-catalogue.

The online library catalogue and electronic materials are very worthwhile and well-used by students working in different buildings and on different sites. The library is well organized and maintains an open-stack policy (e.g. free access for students to the main collections). Material has also been made available through the internet by making a sufficient number of computers available for students. The library has a speedy and stable internet connection via the computer networks of EMÜ and EENet. The library maintains its own personal computers, a server and computer Network. Additionally to the computer classes, the students may connect their own computers to the internet in the individual workrooms.

Library replenishment is focused on veterinary medicine; agriculture and rural life and economy; agriculture and forestry; sustainable use of the environment and natural resources; nature conservation; agricultural engineering and food sciences.

### 8.1.6 The library's annual operating budget over the past three years

The funds of the Main Library of the University are provided from the state budget, revenue from the services rendered to individuals and revenue from foundations and endowments.

Total budget and the costs for completion for the last three years:

Year	Budget	Costs for completion
2012	396,255 EUR	<b>153,053 EUR</b>
2013	326,534 EUR	<b>121,921 EUR</b>
2014	398,909 EUR	<b>154,129 EUR</b>

There are 19,010 veterinary medicine-related publications held in the library, in the Estonian, English German and Russian languages, mainly journals and books. Furthermore, the library has an excellent collection of food sciences, food hygiene and food safety publications.

In 2013 a total of 725 hard copies of books and 143 different journals (paper editions) were obtained. Of these, 323 books and 26 journals were related to veterinary medicine and food science including food hygiene and food safety.

In 2014 a total of 925 hard copies of books and 136 different journals were obtained. Of these, 536 books and 23 journals were related to veterinary medicine and food science including food hygiene and food safety.

The number of books in hard paper form has increased because of the greater demand for international professional literature (e.g. study books). As digital versions of the journals are preferred for procurement a decrease in the number of journals in paper form can be observed. The latter is justified not only because of the price but also archiving of paper journals takes too much physical space in the library collections. Nevertheless, there are also journals of which both digital version and paper copies are ordered. Paper journals will continue to be ordered on the basis of journal lending statistics, and the journal historical and scientific value to the EMÜ library collection replenishment and archiving.

It is important to note that all books which are ordered or purchased separately by the academic staff using departmental budgets are mandatorily registered in the University library, and this information is included in the e-catalogue ESTER. The library holds a list of individual books belonging to Institute departments and clinics.

## 8.1.7 Subsidiary libraries of the Faculty

There are no subsidiary libraries in different departments, however a number of the more relevant manuals and books are available for teaching (e.g. group work, seminars) and research purposes in the departments of the Institute. The library holds a list of individual books available within departments. These books are also available for students when necessary. The rules and procedure for borrowing these books are set by the department's council.

There is a computer room for teaching purposes and for self-use by students, with 16 PC-s, in the Zoomedicum. All computers are connected into the university network. All the buildings of the University are covered with WiFi. As most of the students have their own laptops, the importance of computer classes has decreased. At the same time, it is necessary to provide lecture halls with more sockets for the students to be able to plug in their computers.

## 8.2 Comments

The purpose of the library of EMÜ is to acquire, preserve and provide information necessary for tuition, research and development activities at the university. Estonia is known as an e-republic which means that there is easy access to a speedy and stable internet, which is free of charge. As scientific information is becoming more digitalized, the library's main focus is shifting from providing printed material to functioning as a help desk for the digital pathway. In order to improve the students' understanding of databases and improve the quality of final year theses, the library offers an elective course «Introduction to searching scientific information from electronic databases» with a value of 3 ECTS. The aim of this web-based course is to provide students with the opportunity to obtain basic knowledge and practical skills in using electronic catalogues and databases. The course covers issues of plagiarism, reference management, etc. The EMÜ library account guarantees both students and researchers access to these databases, full text journals and a tailored e-book collection, from their office or classroom as well as from home.

The purchase of hard copies will also continue. New books and journals are ordered by the library at the request of the institute's academic staff. Each year the heads of the institute's departments are asked to list their purchasing needs for the library. Most of these book subscriptions are procured within a few weeks. In 2013 and 2014 respectively, 27 and 50 new titles of monographs were acquired in the area of veterinary science and animal husbandry through the library budget. The respective figures for food technology were 9 and 20. Departments can buy new books independently from the library budget, but the obtained books remain listed in the library catalogues as mentioned previously. The library orders literature in accordance with the requests of academic divisions. Persons responsible for tuition and research in the institute approve the requests.

- Webmail

The students and members of staff who have an EMÜ account can access their mailbox from every computer connected to the internet *via* nearly all web browsers, after logging in with their username and password. Information for students is communicated through the EMÜ studies information system ÖIS through their official (EMÜ) mailing address or through different mailing lists.

- Moodle

The staff and students of the University who have an EMÜ account can access the digital learning environment Moodle.

- Studies Information System (ÖIS)

The ÖIS is an online database that supports the organisation of studies. It contains a summary of the subjects a student has chosen, study materials, grades, etc. It keeps and systematises data concerning studies at the University. Some of the study materials are only accessible only *via* ÖIS.

## 8.3 Suggestions

The library of EMÜ is an academic library, and therefore of fundamental importance for research as well as for academic education. Virtual library and electronic resources are gaining more importance compared to the paper-based manual library. It is a challenge for the electronic library to further develop towards the student friendly "heart of the university".

### 8.3.1 Steps for the future

The library has not used all available modern facilities and services in making their collections accessible. User training has so far not been very systematic and could be improved.

In 2014 the library updated its website, which made website navigation easier and the available information better accessible. An electronic booking system for reserving individual and group work rooms was introduced. This has considerably increased

the use of these rooms. At the request of students the library has extended its opening hours in the evenings and at weekends, and has improved ease of use of the library (a power network in the reading room was developed for the students to connect their personal computers to). The library is going to replace the old public computers in the reading room with newer and faster ones.

In addition to the elective course “Introduction to Databases searching scientific information from electronic” the library has also launched information sessions for academic staff, where members of the academic staff are introduced to the available databases and new possibilities for research.

## Chapter 9. STUDENT ADMISSION AND ENROLMENT

### 9.1 Integrated study programme

The veterinary study programme at the EMÜ is an integrated study programme, which nominal period of study is six years. On successful completion of the programme the students are awarded a diploma that is equivalent to the Master’s degree.

Table 9.1 describes the numbers of undergraduate students in veterinary training, i.e. the students enrolled for undergraduate training on state-commissioned (SC) places and those paying tuition fees (NSC).

Table 9.1 Undergraduate student composition a year prior to the visitation (as of 01.12.2014)

	Estonian students	Foreign students	Total
Number of undergraduate student	173	152	325
Number of male students	25	11	36
Number of female students	148	141	289
Foreign students from EU countries	0	152	152
Foreign students from non-EU countries	0	0	0

#### 9.1.1 Student admission

In Estonia the Standard of Higher Education sets out the broad groups of studies and fields of studies, as well as the nominal periods of specific higher education levels and curriculum groups, where a specified educational institution has the right to provide instruction and issue academic degrees and diplomas.

According to the Estonian legislation for admission to higher education institutions there are general and specific requirements giving access to higher education. The general requirements are approved by the Ministry of Education and Research and are binding on all higher education institutions and study programmes.

**General conditions** for access and admission to higher education are stipulated by the following legal instruments:

- [Universities Act](#);
- [Institutions of Professional Higher Education Act](#);
- [Standard of Higher Education](#).

For a short overview please see [here](#).

##### 9.1.1.1 General requirements

The requirement for access to higher education is secondary education, certificated by the

- Gümnaasiumi lõputunnistus (Certificate of General Secondary Education);
- Kutsekeskhariduse lõputunnistus (Certificate of Vocational Secondary Education), the corresponding qualifications of former systems,
- and foreign qualifications giving access to higher education.

For the list of access qualifications please see [here](#).

Until admission year 2013 the Minister of Education and Research specified the number of graduates in state-commissioned study places (SC) and the Council of the University approved the number of candidates to be accepted. In addition, the University had the right to admit fee-paying students. The number of such non-state-commissioned (NSC) students was also confirmed by the University Council. Each applicant had the right to apply for two SC and one NSC study places. A contract was drawn up between the University and the NSC student and this guaranteed the student an NSC student place.



The students are admitted on the basis of a ranking list. Until 2013 the ranking list was formed on the basis of the points gained from examination results. The applicants for studies in veterinary sciences had to submit their National Examination results in the Estonian language, their marks for biology and chemistry in the National Examination Certificate and also their average grade in the Certificate of General Secondary Education.

The Council set a quota for the number of international students that wanted to study veterinary medicine full time. A separate ranking list was made for the international students. They were also accepted on the basis of their secondary school leaving examinations and their average grade. In addition, their matriculation examination results in chemistry, biology and mathematics were taken into account. International students were also asked to send in a letter of motivation. Up to 2013 our international students, who came mostly from Finland, studied in the Estonian language. They were offered a crash course in Estonian and continued to study the Estonian language during the first study year.

From 2013 students can acquire higher education free of charge if they follow a curriculum which language of instruction is Estonian. A university has the right (but not the obligation) to demand partial reimbursement of study costs from students who study part-time, do not comply with the requirement for full-time study or follow a curriculum which language of instruction is other than Estonian.

The University Council approves the admission requirements for each study year.

### **9.1.1.2 Specific requirements**

The specific requirements are set by the higher education institution and depend on the chosen field of study. The conditions and procedures for admission are established by the Council of the University and approved by the Minister of Education and Research.

There is a selection procedure for most higher education institutions and programmes. In general, the results of state examinations (riigieksamid) passed in a general secondary school (gümnaasium) are accepted as the basis of admission, sometimes Universities require an interview or a professional aptitude test(s). Entrance examinations are most commonly set by faculties (institutes) and approved by the Council of the University.

#### **Specific requirements for the applicants of veterinary medicine studies at the EMÜ**

From the admission of 2013 veterinary medicine has been taught in two groups: in one group the language of tuition is English and in the other Estonian.

#### **Specific requirements for the applicants of veterinary medicine (Estonian Study Group)**

In addition to the average grade on the Certificate of General Secondary Education (10 points), results of state examinations in mathematics (10 points) and Estonian (10 points), EMÜ introduced an admission test (20 points) in the veterinary medicine curriculum, which includes a combination of tasks and exercises in biology and chemistry. The admission test contains 20 questions or tasks in biology and 20 in chemistry. It is possible to collect a total of 20 points as each correct answer gives 0.5 points. In total the student can collect 50 points. The candidates are ranked according to the points they have collected. The first 30 are offered a study place that they can accept or reject. In the case of a remaining vacancy the next candidate on the shortlist is offered a place.

#### **Supplementary competition points and admission on a non-competitive basis**

The University also has the right to admit candidates on a non-competitive basis. Secondary school leavers who participated in international special discipline competitions in natural sciences or best performers in the national special discipline competitions in mathematics, physics, chemistry, biology and geography and are admitted to the University may be admitted to veterinary studies without taking the admission test.

Secondary school leavers, who have been awarded a gold or a silver medal for their studies collect five additional competition points.

#### **Specific requirements for the applicants of veterinary medicine (English Study Group)**

The pre-requisite for entering the University is a completed secondary education or a qualification granting access to higher education in their home country. In total it is possible to collect 100 admission points, of which the Scholastic Aptitude Test (SAT) in Biology (M or E) can give up to 80 points and the letter of motivation up to 20 points. The result of the SAT test in Biology is multiplied by 0.1. The expected contents of the letter of motivation are made clear to the applicants.

The minimum number of points for the candidate to qualify is 65 admission points. In cases of equal scores, applicants whose motivation letter collected more points are given preference.

### 9.1.1.3 Recognition of foreign educational certification

The Admissions Commission takes the decisions concerning the recognition of foreign educational certification, usually in accord with the evaluations provided by the [Academic Recognition Information Centre](#) (Estonian ENIC/NARIC Centre).

Estonian higher education institutions do not have the right to implement the system of taking account previous study results and professional experience (VÕTA in Estonian) in the course of student admission, as the primary admission requirement is the existence of a certificate of acquisition of secondary education. However, APEL/RPL (Accreditation of Prior and Experimental Learning/Recognition of Prior Learning) can be used after admission.

### 9.1.1.4 Knowledge base of admitted candidates

On the whole, the students who have been admitted to study veterinary medicine are motivated and they make good progress at the University. Experience has shown that the level of chemistry of the admitted candidates varies a lot. On the basis of feedback from the students the Institute is offering an optional preparatory course “Introduction to chemistry” for 2 ECTS. The aim of the course is to gain basic knowledge for the better understanding of the main courses in natural and technical sciences and to cover the topics not included in the gymnasium study plans. The course has received positive feedback.

### 9.1.1.5 Admission of veterinary students

A survey on veterinary studies and means to guarantee sustainability was carried out in 2011. The survey showed that there are about 800 jobs in Estonia that require veterinary education including veterinary practices, pharmaceutical sales, the Veterinary and Food Board, the Ministry of Rural Affairs, the Food and Veterinary Laboratory, scientific and educational institutions, etc. Thus the estimated need for annual graduates is 23. As the majority of graduates are women, who may stay a certain period at home due to childbirth during their study period, the minimum number of graduates is 25, which in recent years has also been the number of state-funded student places.

In addition to the standard intake, the Institute accepts fee-paying students. Up to 2013 they studied in the Estonian language, while from the 2013 intake they have been studying in English. As the curriculum of veterinary medicine is comparatively rigid, it is difficult to take in students as transfers from other courses.

Table 9.1.2 Intake of veterinary students in the past five years

Year	Number of applicants	Number of admitted students			
		“standard” intake	Other entry mode (fee-paying students)		
			Number of applications	Admitted	Started the studies
2014–2015	190	30	75	32	31 <sup>1</sup>
2013–2014*	138	30	30	25	24 <sup>1</sup>
2012–2013	156	30	90	30	
2011–2012	138	30	75	29	
2010–2011	113	30	60	31	
<b>Average</b>	<b>147</b>	<b>30</b>	<b>65</b>	<b>29</b>	

\* Prior to evaluation; <sup>1</sup> one student left at the beginning of the semester and did not sign the contract;

In 2013, the number of international applicants somewhat declined because of the new eligibility criteria established for the applicants to Veterinary Medicine. Owing to the changes in the criteria, SAT results in Biology were required. The SAT can be taken six times a year. Those applicants who had overlooked this change in the admission requirements missed the examination date and were automatically ineligible. Twenty-seven applicants competed for admission to 25 places. In 2014 the number of applicants for veterinary studies had increased to 65. In 2013 a new foreign student admission platform [Dreamapply](#) was launched at EMÜ. International students studying full time pay a tuition fee that is set by the University Council.

## 9.2 Student flow

### 9.2.1 Number of students

The numbers of students studying veterinary medicine has been comparatively stable over the past few years. This can be explained by the fact that veterinary studies are popular in Estonia and EMÜ admits students who are dedicated. On the other hand, the number of students has not increased either. It is the size of our laboratories and other facilities that sets a limit to the number of students we can admit.

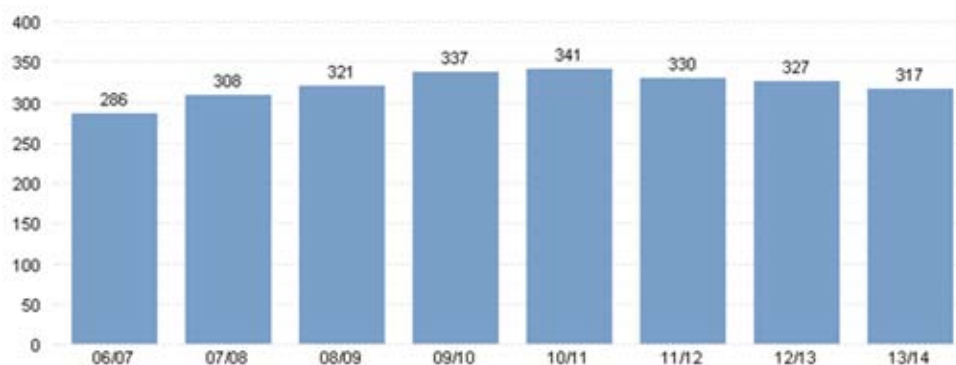


Figure 9.2.1 Number of students studying veterinary medicine (Source: *HaridusSilm*, 2015)

## 9.2.2 Progress of the students

The progress of students (except for PhD students) is assessed twice during the academic year: on the last date of the autumn semester and on the last date of the academic year. The students who do not comply with the requirements are expelled from the University.

The student is transferred to the next year of study, if he/she has complied with the requirements set out for the study load of full-time or part-time study, and if the student is not on academic leave. Based on the study results entered in the ÓIS, the transfer of the student to the next academic year takes place once a year as of the last day of the academic year, according to the Order of the Director of Studies of the Institute.

For the completion of the curriculum the University may recognise prior learning and work experience pursuant to the University Council Regulation “Terms and Procedure for Accreditation of Prior and Experiential Learning and Transfer of Study Results”. The curriculum is deemed completed if the subject courses prescribed by the curriculum have been completed in full.

Table 9.2.1 Student flow and total number of undergraduate veterinary students admitted in 2008–2009

Study year	Students present after the admitted year <sup>1</sup>		Additionally admitted students (fee-paying students)		Total number		Total percentage	
	no. of students studying	percentage of students studying <sup>2</sup>	no. of students studying	percentage of students studying <sup>2</sup>	no. of students studying	percentage of students studying <sup>2</sup>		
1st year; (2008/2009)	30		23		<b>53</b>			
2nd year; (2009/2010)	28	92.5%	21	91.3%	<b>48</b>		<b>92.4%</b>	
3rd year; (2010/2011)	27	96.4%	21	100%	<b>48</b>		<b>97.9%</b>	
4th year; (2011/2012)	26	96.2%	20	95.2%	<b>46</b>		<b>95.8%</b>	
5th year; (2012/2013)	25	96.2%	19	95.0%	<b>44</b>		<b>95.7%</b>	
6th year; (2013/2014)	25	100%	19	100%	<b>44</b>		<b>100%</b>	
>6th year (as on 01.12.2014)	8		4				<b>12</b>	

<sup>1</sup>mark year matching MNY; <sup>2</sup> the percentage has been calculated from the number of students studying in the previous year

Table 9.2.2 Distribution and total number of undergraduate veterinary students for the study year 2014–2015 (as on 01/12/2014)

Study year	Number of students present after admitted year <sup>1</sup>			
	Standard intake		Additionally admitted students	
	no. of students on the course	no. of students on the course pursuant to the year of admission	no. of students on the course	no. of students on the course pursuant to the year of admission
1st year	28	28	33	31
2nd year	31	28	26	24
3rd year	29	25	27	28
4th year	33	25	25	22
5th year	25	25	20	23
6th	24	25	24	21
>6th year	0	14	0	6
Total number of undergraduate veterinary students	170		155	

<sup>1</sup>mark year matching MNY

### 9.2.3 Taking examinations

During the semester the students are given two dates for the scheduled examination and at least one date to retake the examination. The scheduled examinations in the same subject course must take place on different days. The results for the examination are entered in the assessment record in ŌIS, which is the source document for the recording of study results.

If the student fails to attend the examination without proof of valid grounds for absence, the entry “Not Attended” is made in the assessment record. The student who has valid grounds for failure to attend has a right to take the examination and, if necessary, retake the examination at the time specified by the member of the teaching staff before the beginning of the following term.

If the student has failed to pass the examination with a positive result twice, the student has to take the course again. The student shall be deleted from the matriculation register if he/she fails to pass the examination with a positive result four times or he/she gets a negative result for an examination in front of an examination board.

The failure to pass an examination or failure to attend the examination in one subject does not prevent the student from taking part in the study process of other subjects, but the student who has not passed a prerequisite subject with a positive result is not allowed to take the examination. In veterinary studies the student is not allowed to take part in clinical subjects if the student has not passed all the prerequisite subjects determined in the syllabus with a positive result. The [list of clinical subjects](#) is ratified by Order of the Director of Studies of the institute. The system of prerequisite subjects has raised the students’ awareness of the study programme and increased their sense of responsibility. This may also be one of the reasons for the decline in dropout rates. Students’ satisfaction with the programme has also increased.

### 9.2.4 The number of graduates

The number of graduates has slightly decreased in the past few years. This can be explained by the fact that the number of admitted students has decreased compared to the earlier years. Tables 9.2.3 and 9.2.4 show that the number of students who graduated within the nominal time of studies has fluctuated between 64.60 and 81.25%, which can be considered a good number and the Institute is content with these figures.

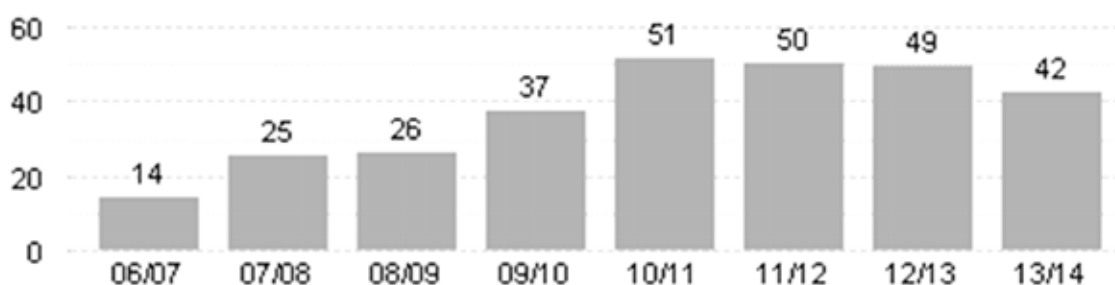


Figure 9.2.2 Number of students graduating annually over the past five years (Source: *HaridusSilm*, 2015)

The nominal time for veterinary studies is six years. In the past five years the number of students graduating within the nominal time of studies has increased. The Institute is content that the average time of studies is between 6.35 and 6.73.

Table 9.2.3 Average duration of studies in the past five years

Study year	Average duration of studies in years	Percentage of students graduating within the nominal time of studies	Percentage of students graduating in more than six years
2013–2014	6.50	77.5	22.5
2012–2013	6.35	81.3	18.7
2011–2012	6.73	64.6	35.4
2010–2011	6.58	68.0	32.0
2009–2010	6.37	74.3	25.7

Table 9.2.4 Distribution of graduates according to the average duration of studies (admission in 2008–2009, graduation in summer 2014\*)

Duration of attendance	Number of years studied
-year 0 <sup>1)</sup>	6 years -31
year 1	7 years-4
year 2	8 years-3
year 3	9 years-0
year4	10 years-1
year 5	11 years-0
year >5	12 years-1
	Total: 40

\*year prior to visitation

<sup>1)</sup>year matching MNY allocated to the veterinary curriculum

## 9.2.5 The number of foreign students

The number of international full-time students has also remained quite stable. The vast majority of international students studying veterinary medicine full time come from Finland, some from Sweden. One of the aims of the introduction of the veterinary study programme in English was the wish to diversify the national composition of foreign students. At present we have students studying veterinary medicine from Finland, Latvia, Cyprus, Italy and Sweden. The Institute also accepts exchange students from the EU countries as well as from Russia, Kazakhstan, etc.

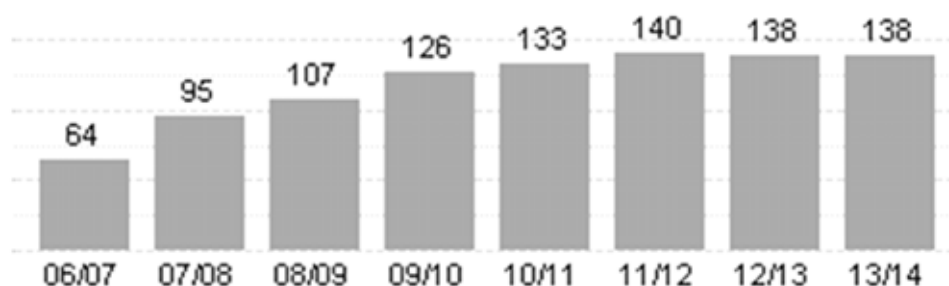


Figure 9.2.3 Number of full-time foreign students studying veterinary medicine (Source: *HaridusSilm*, 2015)

## 9.2.6 The number of withdrawals

Figure 9.2.4 shows that the dropout rate of veterinary students is steadily decreasing. This can be explained by the fact that the veterinary curriculum was improved and the University has paid more attention to promoting the studies. To get more motivated and veterinary oriented students the institute has invited group excursions from local secondary schools, welcomed prospective candidates on “Open Doors Days” and on “Researcher’s nights”. Members of the academic staff participate in the work of the Nature School that also promotes our specialities in secondary schools and gymnasiums and involves schoolchildren in scientific activities. The University has also launched a “Children’s University”, which aims to provide schoolchildren with additional knowledge from different fields of research in life sciences. Scientists work with children twice a month through a range of lectures, seminars, project supervision and practical workshops.

In addition, the institute holds raising the future generations in high esteem and has, therefore, signed cooperation agreements with several gymnasiums, e.g. Tartu Kristjan Jaak Peterson Gymnasium, where our lecturers provide a module “Introduction into Veterinary Medicine”. Another example of close cooperation with gymnasiums is an optional course “Practical training in the Zoomedicum” for the sciences classes at Hugo Treffner Gymnasium. Both of these courses comprise lectures, visits to the museum, small and large animal clinics, and laboratories. In addition students have to submit a report.

The introduction of a tutor or buddy system has also had a positive impact on the withdrawal rate.

The reasons for withdrawal are different. In some cases the students do not even start their studies, in others the studies turn out to be too difficult or the candidates do not have a clear understanding of what is expected from them. As the majority of students are female, motherhood may cause the students to leave. Sometimes the students find a different job, and sometimes they go out as exchange students and stay at the host institution.

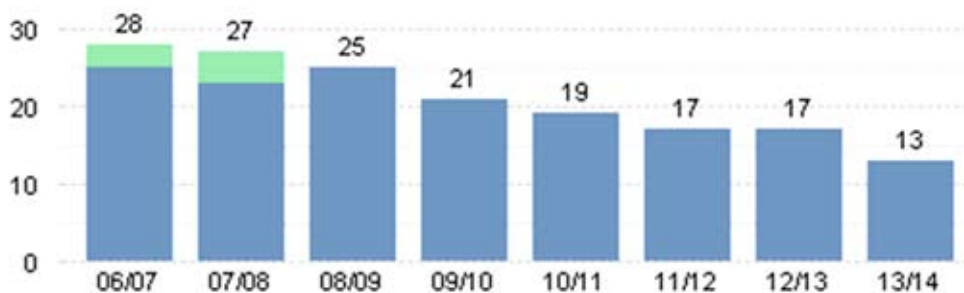


Figure 9.2.4 Number of withdrawals in veterinary medicine (Source: *HaridusSilm*, 2015)

## 9.2.7 Dismissing students

The [Regulation of Studies](#) describes the circumstances when students are deleted from the matriculation register on the basis of the proposal of the Director of Studies. Admitted students may be deleted from the list of students if they do not start their studies, i.e. if the first-year student is absent from studies without a good reason within two weeks as of matriculation. Students who have been absent from their studies without a good reason are also deleted from the matriculation register. In case the student has failed to fulfil the requirements set for the full-time study by the last day of the academic year, he/she is also deleted from the list of students. If a student has failed the examination in one subject four times or failed the examination taken before the examination board or the result for the retake of final examination or graduation thesis is negative the student is also expelled from the University.

Fee paying students, who have failed to pay the tuition fee by the due date without a sound reason, are deleted from the list of students. Improper conduct, such as academic fraud, falsification of a document or a serious breach of generally acknowledged norms of behaviour or academic traditions on the part of the student may result in being deleted from the matriculation register.

## 9.3 Comments

The physical capacity of the teaching facilities limits the number of students that can be admitted. The present number of admitted students (60–65 per year) is the maximum number that enables us to meet the desired quality requirements for clinical training.

The present number of graduates generally meets the labour market demands in Estonia and there is no indication of unemployment among young graduates. Our graduates also look for employment in such closely related fields as the pharmaceutical industry, research institutions or state administration. Many of our Estonian graduates also find work in Finland.

In earlier years the number of enrolled students exceeded the number set for admission because the state ordered the number of graduate students, but from 2013 the state has set the minimum number of admitted students.

The admission requirements of the University are negotiated with the Institute and the Institute is involved in compiling the admission test, assessing the letters of motivation and making the final decision as to admission.

## 9.4 Suggestions

No suggestions

## Chapter 10. ACADEMIC AND SUPPORT STAFF

### 10.1 Factual information

Professors, docents (associate professors), lecturers, assistants and teachers are the members of the teaching staff at the University. The positions of the research staff members of the University are: lead research fellow, senior research fellow, research fellow and junior research fellow. The heads of the structural units of the University are regarded as research staff if they are involved in a research topic or a research project.

Veterinarians in the veterinary clinic of the Institute of Veterinary Medicine and Animal Sciences participate in academic and research work pursuant to the terms and conditions of their employment contracts and they are deemed to be members of the University as a research and development institution as defined in the Research and Development Organisation Act. The requirements for the participation of veterinarians in academic and research work and for the evaluation of their performance are established by the Council of the Institute of Veterinary Medicine and Animal Sciences.

In February 2012 the Statute of Veterinary Clinician-Teacher was adopted. The Statute ordains that a veterinary clinician-teacher is an employee specialising in clinical veterinary surgery who holds a regular position at the animal clinic and who also performs the duties of a veterinarian, teaching and/or research staff. The positions of teaching veterinarian are junior veterinary clinician-teacher, veterinary clinician-teacher, and senior veterinary clinician-teacher. See Appendix 5.

Table 10.1. Personnel in the establishment provided for veterinary training

	Budgeted posts (FTE)		Non-budgeted posts (FTE)		Total (FTE)	
	VS	NVS	VS	NVS	VS	NVS
Teaching staff (total FTE)	55.5	9.2 <sup>1</sup>	0	0.2	55.5	9.4
Research staff (total FTE)	0.75	0.3	4.95	7.3	5.7	7.6
Total FTE	56.25	9	4.95	7.5	61.2	16.5
<b>Total FTE (VS+NVS)</b>	<b>65.75</b>		<b>12.45</b>		<b>78.2</b>	
FTE providing teaching last year	55.5	8.7	0	0.2	55.5	8.7
<b>2. Support staff</b>						
a) responsible for the care and treatment of animals	23.25					
b) responsible for the preparation of practical and clinical teaching.	14.4					
c) responsible for administration, general services, maintenance, etc.	10.7					
d) engaged in research work	0		3.5			
e) others ((provisors language editor, driver)	4					
Total support staff	52.35		0			
<b>3.Total staff</b>	<b>130.55</b>		<b>3.5</b>		<b>134.05</b>	

<sup>1</sup>Teachers from the Language Centre and academic staff from other institutes of the University constitute 0.4 FTE of the non-veterinarian teaching staff and 8.7 of the FTEs belong to the institute of veterinary medicine and animal sciences.

The research staff are involved in teaching, but they are not responsible for the organisation of teaching and non-budgeted posts are paid by the scientific grants of the individual departments.

Table 10.2. Allocation of academic (veterinary surgeon and non-veterinary surgeon) teaching staff - expressed as FTE - and support staff to various departments

Department name	Academic staff										Support staff ( see table 10.1)		
	Full professor		Associated professor		Lecturer		Assistant		Teaching veterinary surgeon	Technical	Animal carers	Administration	
	VS	NVS	VS	NVS	VS	NVS	VS	NVS					
Basic veterinary sciences and population medicine	1.4	0.5	3	1	5.5	0	1	0	VS	10.5		1	
Clinical veterinary medicine	1	0	5.5	0	4.5	0	1	0	29.9 <sup>2</sup>	3	23.25	2	
Food hygiene	1	1	1	2	0	0.8	0	0		1.0			
Animal nutrition	0	0.2	0	0.4	0	0.2	0	0					
Animal genetics and breeding	0.3	0	0	0.2	0	0.5	0	0					
Aquaculture	0	0	0	0	0.1	0	0	0					
Food science and technology <sup>1</sup>	0	1	0	0.1	0	0.1	0	0		0.9			
Reproductive biology	1	0	0	0	0	0	0	0					
Language centre	0	0	0	0	0	0.2	0	0					
Institute of Economics and Social Sciences	0	0	0	0	0	0.1	0	0					
Institute of Agricultural and Environmental Sciences	0	0	0	0	0	0.1	0	0					

<sup>1</sup> Veterinary students are taught chemistry and biochemistry at the Department of Food Science and Technology. <sup>2</sup> Senior veterinarians 6.9 FTE; veterinarians 17 FTE; junior veterinarians 6 FTE



Table 10.3 Ratios: From the above data please derive the following ratios

R1	no. total academic FTE in veterinary training <sup>1</sup>	=	78.2	=	1	Denominator 4.16	Maximum value: 8.381
	no. undergraduate veterinary students		325				
R 2	no. of total FTE at Faculty	=	<b>134.05</b>	=	1	Denominator 2.42	Maximum value: 9.377
	no. undergraduate students at Faculty		325				
R 3	no. total VS FTE in veterinary training	=	61.2	=	1	Denominator 5.31	Maximum value: 11.057
	no. undergraduate veterinary students		325				
R 4	no. total VS FTE in veterinary training	=	61.2	=	1	Denominator 0.72	Maximum value: 2.070
	no. students graduating annually		44				
R 5	no. total FTE academic staff in veterinary training	=	78.2	=	1	Denominator 0.67	Recommended range: 0.505 – 1.907
	no. total FTE support staff in veterinary training		52.4				

### 10.1.1 Outline of how the allocation of staff to the Faculty is determined

EMÜ receives the major part of its funding for educational purposes from the government. The majority of this funding is intended for the recruitment of staff. Different institutes can acquire extra funding by applying for research grants, by recruiting full-time fee-paying international students and by providing academic services. With this external funding, additional number of staff (non-budgeted posts, practitioners) can be recruited. The number of academic posts at the University is not determined centrally. The institutes have the right to decide, within their budget, how many and which positions the tasks to be performed require.

Positions for the academic and teaching staff are filled by a public recruitment procedure. Academic staff can be divided into regular academic staff and visiting academic staff.

Positions for regular teaching and research staff members are determined by the specialities in the University and they are filled by a public recruitment procedure, whereby all participants are granted equal conditions. The recruitment of teaching and research staff at our University is governed by the following documents:

- [«Procedure for the appointment of teaching and research staff»](#),
- [Rules of competitions for the employment of regular teaching staff and research staff](#)
- [Job descriptions](#)

The competition to fill a position of a regular teaching or research staff member is announced when the respective position becomes vacant or when the employment contract concluded with the person currently holding the position will expire in not less than six months. The elections for the teaching and research staff posts shall be announced by the Rector at the request of the director of the respective institute.

Competition is open to all individuals who comply with the law, the university statutes and other legal acts of the University Council as to the requirements laid down for the post in the job description. From January 1<sup>st</sup> 2015 contracts concluded with the winners of public competition will be permanent. Permanent contracts concluded with the academic staff will, increase job security among the employees.

Under the conditions where, as from 01/01/2015, the agreements signed with the academic and research staff will be generally open-ended, it is important that the University develop a system that would regularly allow assessment of the compliance of the academic and research staff with the position and the requirements set out for the post on a regular basis.

The University Council of Estonian University of Life Sciences adopted a new Regulation No. 1-5/19 on November 2014 called « [Qualification Requirements for the Teaching Staff and the Research Staff of Estonian University of Life Sciences and the Conditions and Procedure for Assessment of Compliance](#) ». Professional review is the periodical assessment of the employee's conformity of performance to the requirements established for the position. The aim of the professional review is to:

- ensure the conformity of performance of staff members to the requirements set out for the positions;
- support the development and career opportunities of academic staff members;
- assess the achievement of other goals agreed with the employer.

For academic staff members, who work under the contract of employment for an unspecified period, professional review is carried out at least once every five years. The result of the professional review cannot be treated as a means for promotion, because vacancies are filled by the public recruitment procedure.

In cases where the performance is not compliant with the requirements established for his/her position the employer has the right to initiate the procedure of premature termination of the employee's terms of employment in the procedure and conditions described in the [Employment Contracts Act](#). In the case of a negative decision, actions to improve the performance of the employee may also be taken. Pursuant to the earlier regulation (valid till January 1<sup>st</sup> 2015), where the contract of the academic staff was renewed every four or five years, the University was more likely to concentrate on the applicant meeting the qualification requirements and speciality skills at re-election.

The other important aspect of professional review is to support the personal development and career opportunities of the members of academic staff. The need for regular professional review for the academic staff members, hired for an unspecified period increases because it is necessary to monitor their compliance with the requirements established. Regular review will lead to getting regular feedback on teaching and this will make it possible to guide the employee towards in-service training in the necessary fields. The review process also gives the employee the opportunity to inform their supervisor about their achievements as well as their needs and expectations.

### **10.1.2 Appointing an employee for a fixed time period**

A non-public recruitment procedure may be used to recruit regular teaching or research staff and conclude an agreement with him/her for a fixed period of time:

- if public recruitment to the regular teaching or research position has failed;
- if the job performed in this position is of a temporary nature.

In cases where the public recruitment procedure has failed, the contract for a fixed period is continued till a new candidate has been found through public recruitment, but not for longer than five years.

### **10.1.3 Appointing visiting staff**

The Rector of the University has the right to invite researchers or renowned creative artists or reputable practitioners of their field to take up a visiting teaching staff position at the university for up to five years, without public recruitment, on terms defined by the University Council.

It is possible that the visiting teaching staff position is held by a person who does not fulfil all qualification requirements that apply to teaching staff, but may be a very experienced practitioner who does not have the required academic degree necessary to hold the position as a member of the regular teaching staff. Regulation No. 1-5/19 of November 27<sup>th</sup> 2014, adopted by the University Council, «Job descriptions of the members of the teaching and research staff at the Estonian University of Life Sciences» provide information about the academic position, the main tasks of the teaching and research staff, their qualification requirements, the general conditions and procedure for the assessment of compliance, the basis for accounting of work as well as the rights of the members of the teaching and the research staff.

The conditions and procedure described in the regulation are applied when a member of the teaching or research staff is elected, appointed to a position or his/her performance is reviewed. When assessing the competence of the academic or research staff member, their previous academic activity, including scientific activities, teaching and creative work, participation in the work of academic, research and creative expert boards etc. and evaluations given by students for conducting teaching work, are taken into consideration.

### **10.1.4 Appointing non-academic staff**

In cases of a vacancy or after the creation of a new non-academic position, the head of the respective sub-unit organises the public recruitment procedure together with the Personnel Manager. The Personnel Manager notifies the university staff and the students of the vacancy on the University Intranet. The Personnel Manager and the superior officer who will take responsibility for the new employee will interview the applicants and assess their conformity with the job requirements. A permanent employment contract is usually concluded with the new member of the non-academic staff. Temporary job can form the basis for the later signing of a fixed-term employment contract.

Non-academic employees are sought through advertisements published in job search portals (CV-centre, etc.) and on the University website. The employees of the University are recruited pursuant to the Employment Contracts Act.

#### **Allocation of staff to the departments within the Institute**

The allocation of budgeted posts has been developed over past decades to its current level. Requests for additional personnel may be submitted but they are fulfilled only if the need is justified by a substantially increased workload and if funding is available. Public calls for filling the vacancies are organised. An expert commission assesses the conformity of the candidates with the requirements for the position and draws up a shortlist. The assessment from the expert commission forms the guide-

line for the members of the Council in a secret ballot. In cases where the Head of Department wants to hire additional staff, he/she must negotiate with the Director of the Institute, give reasons for hiring the person and show that there are resources for the salary available either in the department's budget or within the budget of a grant. If the Director of the Institute approves the request, the competition for the position is publicly announced.

### **Recruiting and retaining staff**

In some specific fields problems may occur when trying to hire a member of academic staff because it may be difficult to find a specific specialist in a particularly narrow field in Estonia.

The salaries offered by the University are not as competitive as the salaries offered in the private sector.

All members of the academic staff, whose contracts were signed after January 1<sup>st</sup> 2015 work under a contract of employment for an unspecified period. Visiting academic staff are recruited to provide the students with profound knowledge in specific fields and to enhance international cooperation. In 2014 the University Council launched the 'University Development Fund'. Applications to the Development Fund can be submitted twice a year. Among other things, the Fund supports the recruitment and involvement of eminent foreign professors and researchers in the University activities. The applications are evaluated by the evaluation committee, which includes researchers and academics from within and external to the University. One of the criteria in assessing the applications is the impact the project has on the development of a specific field, including guaranteeing sustainability.

The state has also introduced measures to stimulate international exchange of knowledge and to improve the quality of study and research. The DoRa programme (2008–2015) funded both short- and long-term mobility. DoRa programme activity 2.1 "Improving the quality of higher education by supporting the employment of international teaching staff" supported the hiring of foreign teaching staff to regular positions at Estonian universities (for a five-year period).

Increase in the efficiency of PhD studies in recent years has provided better selection for the recruitment of young academics and has added to smooth generational change. No problems are encountered in the recruitment of laboratory assistants. The Institute also hires external experts on a temporary basis for teaching subjects where the Institute (university) lacks the necessary teaching staff. Proposals to teach are made to well-known specialists and capable teachers. Teaching must follow the curriculum, and the head of the corresponding department is responsible for the work of external experts. In 2010–2015 project funding from Structural Funds was used to involve practitioners from outside the University into teaching.

### **Employing additional staff from service income**

In principle it is possible to hire staff from the self-generated revenue, and it is for the leadership to decide how to use the money earned. The usual practice is, however, that only part of the salary is covered from the self-generated revenue. There are, at present, no employees at the Institute whose salary is solely paid from the service income. Some of the positions are supported from the service income, but only partially.

### **Regulations governing outside work, including consultation and private practice**

Pursuant to section 10.2.8 in the EMÜ Work Rules the employee is required to inform their immediate supervisor about working for another employer immediately after the conclusion of the contract. They are to avoid unfair competition, including working for the competitor without the written permission of the employer. Competitors are defined as study and research institutions with a similar profile as well as institutions and enterprises specialising in training and education. The duties of the employee in the employment contract ordain that every employee is obliged to keep the production or business secret and notify the employer of their wish to perform teaching or research activities outside the University. Every employee signs an employment contract.

No regulations have been laid down for holding consultations and/or introducing private practice by the staff, if this is done outside the working hours.

The following regulations govern working outside the University:

- [Employment Contracts Act](#)
- [General Part of the Economic Activities Code Act](#)

### **Scientific meetings and sabbaticals**

The Institute is making every effort to encourage self-improvement in academic staff. As a rule, travel grants or funds from research or educational projects or self-generated revenue are used. Due to budgetary constraints in the study budget there are no special allocations for visiting conferences and scientific meetings, but if they are held in an important sector and contribute to the further development of the Institute and there is no other financing available exceptions can be made and the Institute budget is used.

There is a wide range of possibilities for attending scientific training outside the University financed by the Archimedes Foundation, as well as Estonian and foreign foundations (e.g. grants from the Estonian Academy of Sciences, Estonian Research

The veterinarians working at the animal clinic have the possibility to participate in one in-service training a year, with all the expenses paid by the University.

The University Act and the Statutes of the University provide that the academic staff have the right to a sabbatical semester during a five-year period in order to extend their knowledge at other educational and research establishments.

However, the shortage of funding and difficulties in finding replacement have not made the application of this possibility very popular (so far only one lecturer at the Institute has used this opportunity).

## 10.2 Comments

The overall number of staff is quite satisfactory. However, we need more support staff in the clinics. The Institute also feels the need to hire a procurement specialist who would help with compiling procurement applications and reports. To accelerate development in some narrow clinical areas the engagement of foreign professors would be beneficial, and the number of professors in clinical sciences could be higher to guarantee successors leading the specific field.

[Salary Rules of the EMÜ](#) govern the principles and procedure for the payment of remuneration to the employees of the University as well as the principles and procedure for concluding contracts for the supply of services with the university's employees and for the payment of compensation for the services supplied under such contracts. The salaries of the teaching staff and researchers depend on their positions but cannot be less than the required minimum. The minimum salary of University academic staff has not been increased for a long time, and it is now inadequate compared to the other sectors. Due to lower salaries and high workload at the University, the private sector has become more attractive for young veterinary graduates as salaries there may be twice as high as those provided by academic institutions. Young and competitive staff look for more favourable conditions abroad. The University is going to adopt a new pay scale in October 2015 but the salaries of veterinary surgeons at the University clinic will still be lower than the salaries in small and large animal clinics in the private sector, but they will be higher than those of veterinarians working in the state veterinary services.

The new requirements stipulate that the lecturer should have a PhD degree. As Estonia is a small country, in some cases there is only one specialist for a specific field and finding a replacement, if the specialist were to leave, might be difficult. The only option is to recruit a specialist from abroad. This calls for bigger resources. More attention should be turned to training a successor in every field so that all fields would be covered. To guarantee the high quality of veterinary training, the best graduates should be recruited.

Of the academic teaching staff members 84% have a veterinary education. Clinical subjects are taught only by staff with a veterinary education.

## 10.3 Suggestions

- At present the diploma issued by the European Board of Veterinary Specialisation (EBVS) cannot be used as a certificate of professional qualification to apply for high academic position, such as lecturer or Associate Professor. Negotiations should be carried out with the Estonian Occupational Qualification Authority to grant recognition to such diplomas;
- Increase the number of full-time positions;
- Encourage the young members of staff to apply for either an exchange or regular residency abroad thus increasing the number of European Board certified diplomates at the Institute;
- Seek more external funding to support the teaching process.

# Chapter 11. CONTINUING EDUCATION

## 11.1 Factual information

### 11.1.1 The role of the Faculty in providing continuing education

Pursuant to the [Veterinary Activities Organisation Act](#) both professional organizations and universities can provide continuing veterinary education. The Act provides that licensed veterinary surgeons have the obligation to refresh their knowledge. According to the Veterinary Activities Organisation Act, continuing education is compulsory for practising veterinary surgeons. A veterinarian is required to adhere to the professional code of ethics of veterinarians and follow the good veterinary practice and undergo professional supplementary training at least once every five calendar years. § 24 of the Veterinary Activities Organisation Act defines professional development as follows:

- 1) participating in a professional training day, course, seminar or conference organised by a university teaching a veterinary medicine curriculum or by a professional organisation;
- 2) practicing in a university teaching a veterinary medicine curriculum;
- 3) acquisition of a professional research degree;
- 4) supervision of the theoretical, practical or clinical studies of a student of the veterinary medicine curriculum of a university;
- 5) publication of research and practical work or a professional article in an Estonian or foreign professional magazine, publication of a professional study or research review;
- 6) giving a professional presentation in a training day, course, conference or seminar organised by a university teaching a veterinary medicine curriculum or by a professional organisation. [RT I, 06.06.2014, 1 – entry into force 01.07.2014]

Completion of continuing education is taken into consideration when renewing the licence. There are about 700 licensed veterinary surgeons in Estonia.

In Estonia, continuing education for veterinarians is provided by the Institute of Veterinary Medicine and Animal Science in EMÜ, and the professional association – the Estonian Veterinary Association.

Continuing education at the Estonian University of Life Sciences is coordinated by the Open University (*Avatud Ülikool*) according to Regulation No. 4 of the University Council of 25.03.2010 “Statutes of the Open University of Estonian University of Life Sciences“. The Open University is a unit of the support structure accountable to the Vice-Rector of Studies, and has the following aims:

- 2.1. to provide continuing education based on the principles of lifelong learning;
- 2.2. to provide research and development based services necessary for society;
- 2.3. to serve as an intermediary between the University and alumni, incl. employers.

The Open University provides continuing education to society at the level of higher education, in cooperation with the units within the academic structure of the University, with the aim of enhancing the knowledge, skills and competences of continuing education students according to the needs of the continuing education students, society and the labour market.

There are several possibilities to provide continuing education: courses organised by the University, or the Institute, or Open University; courses arranged in cooperation with professional organisations, or partners from enterprises or industries; courses financed from projects or by external donors, etc. Table 1.1 reflects the number of courses provided through the Open University, which comprises about 50% of the total continuing education courses organised by the Institute.

Table 11.1 Number of courses, academic hours and participants in continuing education of veterinarians in Estonia 2012–2014

	2012			2013			2014		
	Courses (n)	Academic hours	Participants (n)	Courses (n)	Academic hours	Participants (n)	Courses (n)	Academic hours	Participants (n)
Small animal medicine				3	38	47	3	40	143
Large animal medicine	20	240	83	6	38	49	8	95	139
Food hygiene	41	300	654*	31	228	548	28	168	595

\* approximately 10% of the total number of participants were veterinarians and veterinary officers.

Each year, several courses of continuing education are organized. Each course deals with a specific subject, and lasts from one day to a few days, half a day or for just one evening. The complete programme of all courses can be found in the ÖIS under continuing education programmes. Some of the courses are repeated on request, whereas others differ from year to year. Successful participants of the courses are awarded a certificate of attendance, signed by the Vice-Rector of studies.

## 11.2 Comments

The lecturers for the continuing education courses mostly belong to the academic staff, but sometimes also practitioners are used. On special occasions or for specific subjects, national and/or international guest speakers are invited.

The Estonian Veterinary Association, the Estonian Association of Veterinarians in co-operation with the Institute, organizes an annual international conference on veterinary medicine with the participation of about 500 surgeons every year. The Institute also cooperates closely with such national organisations as the MoRA, the Estonian Small Animal Veterinary Association, the Estonian Animal Protection Association, the Estonian Beef Cattle Association, the Estonian Dairy Association, Estonian Agricultural Registers and Information Board, the Estonian Veterinary and Food Board, the Estonian Veterinary and Food Laboratory, the Estonian Animal Recording Centre, the Estonian Equestrian Federation, etc.

From 2009 the Institute has organized the annual national conference “Healthy animal, healthy food”. The two-day conference focuses on knowledge transfer in animal health, food safety, food hygiene and topical aspects of product development, as well as on the presentation of innovative solutions. The conference is a bridge between scientists, veterinarians, breeders and food producers.

Pursuant to legislative regulations participation in continuing education courses is compulsory for practicing veterinarians. Therefore the participation rates are comparatively high. However, the degree of participation could be bigger. The participation rate in the courses offered by the Institute has always been high.

### 11.3 Suggestions

- As the number of courses offered through e-learning tools is likely to increase in the future, it is advisable that more investments should be made to further optimize this type of distance learning.
- Continuing professional development is a mandatory prerequisite for every practitioner. Therefore, the required amount should be defined more clearly.
- A scheme for systematic postgraduate continuing education should be developed, especially for the veterinarians re-entering the professional field, e.g. making it possible for them to participate in the study modules offered in the last year of undergraduate studies.

## Chapter 12. POSTGRADUATE EDUCATION

### 12.1 Factual information

#### 12.1.1 Clinical specialty training (interns and residents)

An internship programme in veterinary medicine was run successfully in EMÜ from 2009 to 2012. Due to administrative reasons the internship positions were modified into junior veterinary clinician-teacher position (See Appendix 5). Junior veterinarian is a temporary one-to-two-year position for young veterinarians and is principally the internship programme. The Institute encourages veterinarians to participate in the European Board of Veterinary Specialisation (EBVS) and focuses on building a platform for launching residency programmes in Estonia. At present we have one EBVS diplomate (Dr Svetlana Belova) in dermatology.

#### 12.1.2 Research education programmes

PhD studies at the University are governed by the following rules and regulations: [Regulation of Studies, Conditions and Procedure for Awarding Doctorates](#), [Conditions and procedure for the evaluation of doctoral students in the Estonian University of Life Sciences](#), [Evaluation report of doctoral students of the Estonian University of Life Sciences](#), [Conditions and procedure for the Estonian University of Life Sciences competition for supervisors of PhD students to be admitted to state-commissioned student places](#), [Requirements of form for PhD thesis](#), [Guidelines for formatting the final theses](#), etc.

A PhD programme covers 240 ECTS, and the nominal length of studies is four years. The core supervisor must come from our University, while co-supervisor(s) may come from other universities in Estonia or abroad. To find supervisors the University organises a competition for the right to supervise a PhD student admitted to a state-commissioned student place. The Academic Committee of the University Council decides on the eligibility of the supervisors, confirms the themes and presents the results to the heads of the institutes and to the admission committee of the University. The coordinator of the Doctoral School publishes the list of supervisors and proposed themes in the University paper and on the University homepage.

The students admitted for PhD studies may choose one pan-University doctoral school that they become a member of. So far most of the veterinary students have been members of the Graduate School in Biomedicine and Biotechnology. In 2015 EMÜ also joined the Graduate School of Clinical Medicine and our students are welcome there. Graduate Schools provide specialised courses and conferences for students, offer different opportunities for the participation in conferences, seminars and courses abroad, support the publication of the theses, etc. The EMÜ Doctoral School is responsible for the organization of general PhD courses to the value of 18–20 ECTS. It provides counselling for the PhD students and their supervisors and develops cooperation between Estonian and foreign PhD schools. The [curriculum](#) includes a basic study module, a speciality module, elective subjects and the preparation and defence of the thesis.

At the beginning of studies the PhD student and the supervisor draw up an individual study and research plan that covers all the four years. At the beginning of each academic year the plan is reviewed. At the end of each study year the progress of the student is assessed.



To apply for a doctorate the doctoral curriculum must have been completed, i.e. all the compulsory modules of the doctoral curriculum and all the courses must have been completed and the prescribed volumes, except for that of the dissertation, reached. The completion is checked on the basis of the data in the ÖIS. The defence of the dissertation is part of the studies and a successful defence will result in the full number of credit points. A duly prepared and printable manuscript of the dissertation, as well as the publication (or at least being accepted for publication) of all the required articles, are also the prerequisites for being allowed to submit a defence. The opponent for the defence must come from another university, usually from abroad.

The Institute provides the Doctor of Philosophy (PhD) graduate degree programme with two specialisations: Veterinary Medicine and Food Science. The main area of research of the food science PhD students is food technology. The numbers of postgraduate students in the PhD programme are given in Table 12.1.

Table 12.1. Number of research students enrolled in PhD programmes (spring 2015)

Type of degree	Fulltime	Part time	Duration
PhD, Veterinary Medicine	21	2	4–8 years
PhD, Food Science	7		4 years

**Note:** All full-time students are supported with a grant (the minimum of 422 € a month) and part-time students are self-funded.

Table 12.2. Statistics on PhD studies in the Institute (Source: *HaridusSilm*, 2015)

	08/09	09/10	10/11	11/12	12/13	13/14	14/15
Number of admitted students	3	2	3	6	2	8	3
Number of students	25	21	17	24	26	32	32
Number of graduates	1	2	1	1	1	2	3
Number of withdrawals	6	4	1	0	1	2	3

Table 12.2 shows that annually 2–4 new PhD student are enrolled in this postgraduate programme. At the moment, 50% of all enrolled postgraduate students are veterinarians. From the beginning of the PhD programme (the programme started in the year 2005 and the first defences of PhDs were in 2008), 11 students have defended their PhD degree. The specialisation of all the graduates was Veterinary Medicine. See Appendix 7.

## 12.2 Comments

The current research financing scheme supports fundamental rather than applied science, including applied clinical veterinary research.

The number of PhD students and the possibility to involve them after graduation is modest. The number of state financed PhD student positions should be higher. There are some PhD students who are fully financed from research projects, but their number could also be higher. Unfortunately, the private sector still shows little interest in supporting PhD students due to financial constraints.

The number of industrial PhD students should also be larger.

## 12.3 Suggestions

- Increase the efficiency of the PhD programme by improving the quality of supervision, and promoting academic interaction;
- Encourage PhD students to participate in the European School for Advanced Veterinary Studies;
- Provide more support, also peer-support, to the students and supervisors during their research work;
- Value the workload of the supervisors higher;
- Continue lobbying to secure PhD positions and maintain scientific competence in narrow fields of veterinary medicine in Estonia.

# Chapter 13. RESEARCH

## 13.1 Factual information

Undergraduate students in veterinary medicine are encouraged to participate in research work. Currently, participation in research for undergraduate students is voluntary. Willingness to pursue active research arises mainly in the fourth or fifth-year students, when they make the decision as to whether they compile a final thesis instead of taking a final examination at the end of the studies. Each year the departments of the Institute propose research topics for undergraduate students for their final theses in veterinary medicine. Topics are mostly related to research projects the proposing department and/or research units are engaged in. An interested student and the responsible researcher of the related research project agree upon the student's research topic together. Sometimes the topics of the projects are related to the specific interests of the student or the department. The involvement of undergraduate students in research depends mainly on the student's will and the department's status in projects and the research budget available. The students' enthusiasm for submitting final theses has differed from year to year. Some students who graduate from their studies by defending their final thesis continue their research at PhD level. Therefore, the Institute is interested in attracting more undergraduate students to research projects so that it will have more options in the selection of PhD students.

The list of the final theses defended in the past years is shown in Appendix 5. The listed topics reflect the responsibility areas in the departments and the Institute which have been involved in undergraduate student research. The Institute of Veterinary Medicine and Animal Sciences is responsible for the academic and research activities in the following areas, and most of the topics for undergraduate research concern them:

### Responsibility Areas

Animal genetics and breeding	Animal genetics, breeding and biotechnology
Animal nutrition	Nutrition, nutritional physiology, incl. metabolism, feeds and feeding technology, animal and poultry husbandry and products quality
Aquaculture	Farming technology of fish and crayfish, genetics, selective breeding and biotechnology of fish, restocking of fish, protection of genetic resources of endangered fish, ichthyopathology and fish health management
Morphology and physiology	Anatomy, histology, cytology and embryology of domestic animals; developmental biology and physiology of animals; pathological anatomy, - histology and - physiology; forensic veterinary science
Environment, animal welfare and herd health	Animal husbandry, pasturing, housing, emission of pollutants, animal behaviour and welfare, animal protection, animal and herd health
Veterinary microbiology and parasitology	Microbiology, virology, parasitology, immunology epidemiology, infectious diseases, veterinary public health
Clinical veterinary medicine	Diagnostics, treatment and prophylaxis of diseases; biotechnology of reproduction
Food science and food hygiene	Biotechnology, processing and storage, quality and quality control of foodstuffs; functional food; biochemistry and microbiology of foodstuffs; food hygiene and safety; production hygiene.

In a number of subjects students are asked to compile a written term paper or essay, where they need to work with specialized scientific literature and interpret it in an appropriate way. In the course of their studies the students have to take the following related courses: Fundamentals of scientific research (1 ECTS), Informatics and biometry (4 ECTS), English for specific purposes (3 ECTS), Veterinary Epidemiology (4 ECTS), Research methodology and study design (2 ECTS). All reports and the final thesis must be prepared according to the University requirements found in the [«Guidelines for formatting final theses»](#).

Term papers and final theses make it possible to apply for different scholarships e.g. from city governments, state- and private companies and from professional associations. For example, there is the Interfarm scholarship for a research paper in obstetrics and gynaecology and the DeLaval scholarship for research in animal-production related specialities, the Udo Mällo scholarship for microbiological analyses, etc. An active student can easily find a means to receive a scholarship. Unfortunately, only a small percentage of students target research within their undergraduate studies. Seeking industrial or public sector partners is encouraged, and is usually done together with the supervisor.

As to scholarships, information on practical training and research the main source of information is the teaching staff followed by scholarly and professional journals. The International Office, as well as the Department of Research and Development, also organise information days on scholarships and mobility offers. Information on grants and scholarships is spread through different mailing lists by the International Officers, the R&D Office, the PR Office and the Student Union.

Students may also take part in summer schools, do additional practical training in clinics and laboratories and participate in the work of veterinarian and student organisations. In order to get credit points students must submit the 'Recognition of subjects' application to the RPL Commission.



Our students have given presentations at several international conferences and have won scholarships. For example, the following students have been awarded the UFAW Animal Welfare student scholarship: Mona Wendelin (2008) «Pain markers in horses recovering from laminitis»; Saara Hiippala (2010) «A simple and inexpensive diagnostic method for canine monocytic ehrlichiosis». Kristi Kerner was awarded the Dorothy Sidley award by the Humane Slaughter Association (a sister organisation of UFAW) in 2012 for «Pre-slaughter and slaughtering techniques of pigs in Estonia and in the UK», etc.

In 2011 the PhD students of EMÜ launched a project called “Living Science”. The aim of the project was to broaden the horizons of young people by talking about science in a simple and interesting way. “Living Science” offers workshops at kindergartens and schools all over Estonia. Today about 50 students have introduced their specialty. In the past five years “Living Science” has provided 400 workshops at 125 schools to over 7,000 spectators. In 2015 “Living Science” organised a competition called “Science Battle” for the 7<sup>th</sup>-9<sup>th</sup> graders. “Living Science” has attracted a lot of attention. In autumn 2011 it was awarded the First Prize for Innovative Idea at the Estonian Science Communication Competition, in 2012 the EMÜ Prize for Science Popularisation and the project was awarded the title “Deed of the Year”. In 2014 the project was awarded the prize “Keskkonnakäpp” for providing environmentally friendly education. In 2014 Kärt Must was awarded a diploma for her thesis at the national student research competition, which will hopefully encourage others to send their papers to the competition, where veterinary students have so far been underrepresented.

## 13.2 Comments

Better research funding at state level would create better opportunities for undergraduate student research. All researchers at the Institute are somewhat involved with student teaching and this helps to apply research-based education and popularize science. The majority of the teaching staff finds that it is possible to provide, and the University should provide, the students with more opportunities to participate in research. Nevertheless, undergraduate student involvement in research may be compromised because the study programme is quite intensive, and there is a discrepancy between the number of credit points allocated and the amount of work. Another challenge that makes planning more complicated is the short-term contracts and the uncertainty of funding on the part of researchers.

## 13.3 Suggestions

- Involve PhD students more in supervising undergraduate students in their research activities and the preparation of final thesis.
- More students should be encouraged to complete their studies with a final thesis instead of the final examination.
- All academic staff should be actively involved with research activities and integrate students into research projects already while preparing the project applications.
- Supervisors should be encouraged and be better acknowledged. Currently, their efforts in supervising the research projects of students are undervalued. A competition for best supervisors could be arranged.
- The students could be also more actively encouraged to submit their theses to national and international competitions, such as the national Student Research Competition organized by the Estonian Research Council.
- Improve the system of communicating information about the research activities at the Institute to the students.

## Appendix 1 (Introduction) Specialised clinical teaching staff

### Clinical staff holding a PhD

- |                                  |                  |
|----------------------------------|------------------|
| 1. Udder health                  | Piret Kalmus     |
| 2. Herd Health                   | Kerli Mõtus      |
| 3. Neurology                     | Ranno Viitmaa    |
| 4. Small animal gastroenterology | Ingrid Hang      |
| 5. Swine Health                  | Julia Jeremejeva |
| 6. EBVS diplomate (dermatology)  | Svetlana Belova  |

### Clinical staff who have taken the residency program

- |                                    |                        |
|------------------------------------|------------------------|
| 7. Small Animal cardio-pulmonology | Paul Fridtjof Mõtsküla |
| 8. Dermatology-allergology         | Maarja Uri             |
| 9. Small ruminant health           | Ants Kuks              |
| 10. Anaesthesiology                | Heli Säre              |

## **Appendix 2 (Introduction, Chapter 6) Equipment purchased in 2010–2014 used in teaching**

### **Department of Aquaculture**

Diagnostic microscope *Nikon i Eclipse 80*, with the monitor and computer;  
Microscope *Leica EZ4 D*;  
Diagnostic microscope *Nikon Eclipse 2000 e* (2 pcs)

### **Department of Animal Nutrition**

Gas chromatograph Agilent Technologies 7890 A GC System  
Gas chromatograph Agilent Technologies 7890 B GC System  
High-performance liquid chromatograph Shimadzu HPLC 20A  
UV-Vis spectrophotometers Helios  $\beta$  and Helios  $\Delta$   
Tromboelastograph (Lattodinamografo)  
Microwave muffle furnace CEM Phoenix  
Microwave reaction system CEM Mars 6  
Protein analyzer FOSS Kjeltex 8400  
Fat analyzer FOSS Soxtec 2043  
*In vitro* digestability analyzer ANKOM Daisy II Incubator  
ANKOM 220 Fiber Analyzer  
Centrifuge Sigma 2-16K  
Knife mill Grindomix GM 200  
Anhon Bar Physica MCR 301  
AAS spectrophotometer Analytic Jena Contra AA<sup>®</sup> 700  
Clinical chemistry analyzer Erba XL-300

### **Equipment and software purchased to Food Hygiene Department in 2010–2014**

Quadrupole Time of Flight mass-selective detector, Accurate-Mass Q-q-TOF MS/MS;  
Ultra High Performance Liquid Chromatograph, UHPLC-DAD;  
MagNa Pure Compact Instrument for nuclein acid isolation and purification (Roche Diagnostics GmbH);  
Ultra-low temperature freezer -86 °C, 519 L for storage of foodborne pathogen strains (Sanyo);  
BioNumerics 6.0 software for recording and analysing of biological data (five modules);  
Shaking Incubator GFL 3032 for food microbiology.

### **Department of Basic Veterinary Sciences and Population Medicine**

Microscope Leica DM 5500  
Systec Autoclave VB -75 l .Top Loading  
Ventilation hood  
Digital microscope Nikon 451268

### **Department of Clinical Veterinary Medicine**

Digital radiograph for small animals  
Digital radiograph for larg animals  
Mobil radiograph  
Dental radiograph  
Video endoscope PV-G 28-300 PAL SN:2180  
Bronchoscope  
Arthroscop  
Endoscope for small animals  
Inhalation anesthesia system NARKOVET  
Pulse oximeter LifeVet P  
Oxygen compressor “Oxyvet”  
Capnovet Deluxe Multiparameter Monitor  
Electrodiagnostics system Keypoint and Perfect Vet  
CardioPoint Holter H600  
Electrocardiograph MAC 1200ST  
Ultrasonograph MyLab30 Vet Gold  
Ultrasonograph Honda HS 120  
Ultrasonograph Honda LOGIQ  
Mobile ultrasonograph  
Blood biochemia analysator Vetest

## Appendix 3 (Chapter 7) Diagnostic investigations of the Veterinary Food Laboratory in 2014

	Material	Species	Material amount	Investigation				
				Histological	Bacteriological	Parasitological	Mycological	virological
<b>1</b>	Carcass	pig	31	0	28	8	0	11
		sheep	9	0	9	7	0	0
		goat	2	0	2	0	0	0
		rabbit	2	0	2	2	0	0
		wild boar	2	0	0	0	0	0
		dog	11	1	4	0	0	1
		cat	2	0	0	0	0	0
		chicken	23	3	12	4	0	0
		ostrich	1	0	1	1	1	0
		quail	6	1	3	1	0	0
		goose	1	0	1	0	0	0
		duck	1	0	0	0	0	1
		zoo animals and pets	1	0	0	0	0	0
		fish	1,288	0	5	1,228	0	58
		<b>Total</b>	<b>1,380</b>	<b>5</b>	<b>67</b>	<b>1,251</b>	<b>1</b>	<b>71</b>
<b>2</b>	Organs	bovine	36	0	35	7	0	10
		pig	51	3	39	18	0	1
		sheep	9	0	9	3	0	0
		goat	2	0	2	1	1	0
		rabbit	1	0	1	1	0	0
		wild boar	98	0	2	0	0	5
		dog	9	9	0	0	0	0
		cat	4	4	0	0	0	0
		bovids in zoo	17	11	16	2	4	0
		other zoo animals and pets	2	2	1	0	0	0
		zoo birds	2	1	2	0	1	0
		pigeons	1	0	0	0	0	0
		fish	10	0	1	0	0	0
		<b>Total</b>	<b>242</b>	<b>30</b>	<b>108</b>	<b>32</b>	<b>6</b>	<b>16</b>
		<b>3</b>	Bone marrow	wild boar	99	0	0	0
<b>Total</b>	<b>99</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>
<b>4</b>	Cerebra for rabies (diagnostic)	domestic animals	47	x	7**	x	x	47
		wild animals	136	x	0	x	x	136
		<b>Total</b>	<b>183</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>183</b>
<b>4</b>	Cerebra to check the effectiveness of vaccination against rabies	raccoon dog	1,326	x	x	x	x	1,326
		fox	442	x	x	x	x	442
		<b>Total</b>	<b>1,768</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,768</b>
<b>5</b>	Cerebra for TSE investigation	bovine	4,225	0	9**	x	x	4,225
		Sheep	181	0	7**	x	x	181*
		goat	14	0	0	x	x	14*
		weasel	30	30	0	x	x	x
		<b>Total</b>	<b>4,450</b>	<b>30</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>4,420</b>
<b>Total (1+2+3+4+5)</b>			<b>8,122</b>	<b>65</b>	<b>198</b>	<b>1,283</b>	<b>7</b>	<b>6464</b>

\*Prion protein determination; \*\* additional listeria analysis; X cells not filled in.

# **Appendix 4 (Chapters 7 and 10) Criteria for Appointment and Promotion to the Positions of Veterinary Clinician-Teacher**

## **I Recruitment Policy: Veterinary Clinician-Teacher Position**

### **1. Definition of Veterinary Clinician-Teacher**

A Veterinary Clinician-Teacher is a veterinary medicine professional who has an appointment with the Animal Clinic as a clinician, and whose responsibilities involve a combination of clinical service, teaching and/or research.

### **2. Career structure of the Veterinary Clinician-Teacher positions (see Appendix 1 : Levels of appointment to the Veterinary Clinician-Teacher positions at the Animal Clinic of the Estonian University of Life Sciences)**

2.1. Levels of appointment to the positions of Veterinary Clinician-Teacher in ascending order:

2.1.1. Junior Veterinary Clinician-teacher;

2.1.2. Veterinary Clinician-teacher;

2.1.3. Senior Veterinary Clinician-teacher.

2.2. The system of a defined career structure provides internal career planning opportunities for the veterinarians at the Animal Clinic.

### **3. (Procedures for) Appointment to the Veterinary Clinician-Teacher positions**

3.1. Appointments to the different levels of the Veterinary Clinician-Teacher positions and staff changes, made on the recommendation of the Head of the Clinic, are approved by the Director of the Institute.

3.2. The creation of the position of Clinician-Teacher is based on the forecast of the personnel requirements of the Clinic, and is aimed at;

3.2.1. Professional and career development;

3.2.2. Retention of qualified staff to fill future vacancies;

3.2.3. Improving the efficiency and overall performance of the clinic.

3.3. Appointments to the Clinician-Teacher positions are filled through competitive selection, except as provided in paragraph 6.1.

### **4. Competencies required for the position of Veterinary Clinician-Teacher**

4.1.1. Competencies are categorised into general competencies and specific competencies.

4.1.2. All Clinician-Teacher post holders are required to meet the general competency level.

4.1.3. The specific competencies determine the level of the Clinician-Teacher's position on the career ladder.

### **5. Description of competency requirements for the Veterinary Clinician-Teacher positions**

#### **5.1. General competencies**

5.1.1. Documented proof of professional qualifications (university degree, specialism, work experience) required to practice as a veterinarian in the Republic of Estonia;

5.1.2. Knowledge of legislation, standards, practices, policies and procedures pertinent to the position;  
(Amended by Decision No. 2 of the Scientific Council of the Institute of 21<sup>st</sup> February 2014)

5.1.3. Basic knowledge of relevant information and communication technologies;

5.1.4. Ability to use software applications needed to carry out the duties of the post;

5.1.5. Knowledge of the basic management principles and practices needed to carry out the duties of the post;

5.1.6. At least an intermediate level of a foreign language (preferably English);

5.1.7. Good communication skills, capacity to work independently and in collaboration with the staff, ability to take initiative, analytical skills, flexibility/adaptability, creativity, ability to handle pressure, efficient, professional accuracy and correctness, loyalty to the Clinic.

#### **5.2. Specific competencies required for the position of Junior Clinician-Teacher**

5.2.1. A Junior Clinician should have an approved veterinary degree or at least two years of relevant practical work experience.

(Amended by Decision No. 2 of the Scientific Council of the Institute of 21<sup>st</sup> February 2014)

### **5.3. Specific competencies required for the position of Clinician-Teacher**

5.3.1. In case of an initial appointment, the following will be taken into account:

5.3.1.1. Clinical experience, typically at least two years' junior clinical experience;

(Amended by Decision No. 2 of the Scientific Council of the Institute of 21<sup>st</sup> February 2014)

5.3.1.2. Participation in teaching at undergraduate and/or postgraduate levels;

5.3.1.3. Participation in research projects;

(Amended by Decision No. 2 of the Scientific Council of the Institute of 21<sup>st</sup> February 2014)

5.3.2. In cases of reappointment, the following will additionally be taken into account:

5.3.2.1. A minimum of six years' successful practical clinical experience; improvement of qualifications since the previous appointment (further training courses undertaken; clinical competence, documented from residency, fellowship or practice settings; extensive work in professional literature); local/regional recognition as a clinician;

(Amended by Decision No. 2 of the Scientific Council of the Institute of 21<sup>st</sup> February 2014).

5.3.2.2. Participation in research and development projects within the last five years (desirable);

(Repealed by Decision No. 2 of the Scientific Council of the Institute of 21<sup>st</sup> February 2014)

5.3.2.3. Participation in postgraduate teaching/training programmes: supervision of junior clinical team members, delivery of lectures and practical classes, etc.

(Amended by Decision No. 2 of the Scientific Council of the Institute of 21 February 2014)

### **5.4. Specific competencies required for the position of Senior Clinician-Teacher**

5.4.1. Clinical experience.

5.4.1.1. Prior to appointment, a minimum of six years' work experience in a veterinary practice or as a clinical lecturer;

5.4.1.2. Improvement of qualifications since the previous appointment: further training courses undertaken; clinical competence, documented from residency, fellowship or practice settings; extensive work in professional literature;

5.4.1.3. Strong track record in clinical practice; proficiency in a specialist subject area;

5.4.1.4. Work experience as a leading specialist whose duties include supervision of junior staff members, as appropriate, and provision of counselling to external veterinary practitioners.

5.4.2. Participation in research and development projects in the previous five years:

5.4.2.1. Participation in teaching at undergraduate and/or postgraduate levels;

5.4.2.2. Authoring at least one article in a peer-reviewed journal indexed by Thomson Reuters Web of Science, and participation in research projects in the past five years;

5.4.2.3. Active participation in professional organisations (desirable);

5.4.2.4. Doctoral degree or its equivalent from a major EU or North American university (desirable).

## **6. Promotion**

6.1. A Veterinary Clinician-Teacher may apply for a higher position before expiry of the appointment period if he/she demonstrates compliance with the required specific competencies for the position.

## **II Levels of appointment to the positions of Veterinary Clinician-Teacher at the Animal Clinic of the Estonian University of Life Sciences**

**Junior Veterinary Clinician-Teacher** is appointed for a period of at least two years, after which he/she will undergo review for possible promotion to the position of Veterinary Clinician-Teacher. The maximum duration of appointment is four years. Job responsibilities of a Junior Veterinary Clinician include provision of referral services and carrying out the tasks of on-duty veterinarian. He/she will also perform general assistance to senior staff members in the delivery of undergraduate teaching activities, and, when appropriate, collaborate on research projects. A Junior Veterinary Clinician-teacher may apply for the academic position of Assistant/Junior Research Fellow if he/she meets the necessary qualification requirements. Based on the outcomes of the performance appraisal and/or taking into consideration additional responsibilities, the position of Junior Veterinary Clinician-teacher is categorised into two salary levels.

**A Veterinary Clinician-teacher** is appointed for a period of four years. After a performance appraisal the appointment may be renewed, or he/she may apply for the position of Senior Veterinary Clinician. Major job responsibilities include provision of referral service and carrying out the tasks of on-duty veterinarian. In addition, he/she will independently deliver practical instruction to undergraduate veterinary students, along with PhD/residency studies and participation in research activities. A Veterinary Clinician-teacher may apply for the academic position of Lecturer/Research Fellow if he/she meets the necessary qualification requirements. Based on the results of the performance appraisal and/or taking into consideration additional responsibilities, the position of Veterinary Clinician-teacher is categorised into three salary levels.

**Senior Veterinary Clinician-teacher** is appointed for a four-year term, after which he/she shall apply for reappointment. Primary responsibilities include provision of specialist referral services, participation in on-duty rotation, delivery of teaching as responsible lecturer and participation in research activities. A Senior Veterinary Clinician-teacher who already holds a doctoral degree may apply for the academic positions of Associate Professor or Professor, as well as Senior Researcher or Lead Researcher.

Based on the results of the performance appraisal and/or taking into consideration additional responsibilities, the position of Senior Veterinary Clinician-teacher is categorised into three salary levels.

The levels of appointment require the approval of the director of the Institute.

## **Appendix 5 (Chapter 13) Final theses defended by the students of veterinary medicine 2008–2014**

### **KADRI PETERSON**

Production hygiene in meat industry and control of *Listeria* spp.

### **MINNA KAIKKONEN**

Monitoring of vital physiological parameters during anaesthesia in the Small Animal Clinic of Estonian University of Life Sciences

### **AIRE ILVES**

On Insulin Resistance in Estonian Holstein and Estonian Red Cows

### **KATRIINA HIETANEN**

Vulvar, Perineal, Vestibular, Vaginal and Cervical Pathologies and Their Influences on Mares Ability to Conceive

### **ANNELY ALEKSEJEV**

Identification and antimicrobial susceptibility testing of *Brachyspira* spp in swine herds on island Saaremaa

### **KADRI VESKI**

Efficacy of systemic and local treatment of clinical mastitis with penicillin against gram-positive bacteria

### **AILE KULL**

Adaptive Behaviour and Behavioural Abnormalities of Dairy Cows in Transition from Tied to Loose Housing System

### **REELIKA LAANEMAA**

Prevalence and pathomorphology of proliferative enteropathy in Estonian swine herds

### **JENNI RAUMAN**

Stem cell therapy in equine tendon injuries

### **JULIA VÓHHODINA**

Interpretation of the relationships between swine respiratory diseases and concentrations of aerial dust, ammonia, carbon dioxide in the enclosed pig buildings

## **2009**

### **AULI HOLOPAINEN**

Scintigraphic appearance of horse brain and imaging using dopamine transporter 123I-PE2I radioligand

### **MARILIN KOOSKORA**

Treatment of feline chronic gingivostomatitis by removal of all premolar and molar teeth – local and global experiences

### **PIRKKO PENTTILÄ-HILTUNEN**

Farm level bovine acute phase proteins concentrations and their associations with herd virus infections status

## **2010**

### **ANNA ELIISA MALINEN**

Analysis of the Estonian swine and cattle meat inspection data, years 2006–2008

### **HEDI KRUUSLA**

The connection of post-partum metabolic indicators and acute phase proteins with cattle anew gestation

### **KADRI KAUGERAND**

Clinical mastitis and their impact to cows post-inflammatory milk production

### **LENA LINDH**

A retrospective study of canine artificial inseminations performed at a private small animal clinic during 2002–2009

### **MONA CHARLOTTA WENDELIN**

Assessing practical markers for their suitability in estimating pain experienced by horses with laminitis

### **PIIA PEKKOLA**

A semiquantitative evaluation of alterations in transthyretin and thyroxine binding globulin concentrations in dogs with severe non-thyroidal illness



**SATU RAUTIAINEN**

Rehabilitation of dogs with spinal cord injuries: functional recovery and the owners' ability to assess the dogs' condition and progress

**TARMO NIINE**

Porcine circovirus type 2 infection related histopathological findings in swine

**JUHA TUOMAS HALTIALA**

The risk profile of ovine catarrhal fever, surveillance and control measures in Estonia

**VENLA KÄRKI**

The prevalence of canine endoparasites in Tartu

**CAROLA ANNELI LAINE**

Assessment of the occurrence of the diseases in cows transferred from tied housing to the loose housing on the basis of interviewing the Finnish farmers and hoof trimmers

**HEDI HELLENURM-SEPP**

Sanitation efficiency studies of the innovative disinfectant-antiseptic solution in Estonian meat industry

**MIRKA MAARIT EVELIINA VIISANEN**

Viper bites and dogs

**2011****SABRINA ALANEN**

Ferret (*Mustela putorius furo*) Hyperadrenocorticism: Case Series Study

**ANASTASIA FILIMONOVA**

The Spread of Endo- and Ectoparasites in Dogs and Cats in Tallinn District On The Basis of Patients in Haabersti Zoovetkeskus

**LIISA-MAIJA HUTTUNEN**

Associations of Bovine Acute Phase Proteins Response with Infectious Disease Status of the Herd

**JULIJA KOLTSOVA**

Evaluation of the Kitchen Hygiene and Microbiological Quality of Drinking Water in Dormitories of Tartu

**MERI MÄÄTTÄ**

Equine Pastern Dermatitis: A Case Series Study

**KÄDI NEARE**

Selenium content in blood and paratuberculosis antibodies in Estonian sheep herds: possible connection with serum haptoglobine concentration

**JAANIKA PAALMÄE**

Serum amyloid A Changes in The Plasma of Horses Suffering from Recurrent Airway Obstruction

**ALEKSANDER SEMJONOV**

The incidence of longbone fractures and their treatment possibilities in Estonia

**HANNE TIKKANEN**

A review of the reproductive cycles in the bitch. Progesterone and ionized calcium concentration in bitches with dystocia

**NATALIA VASKOVTSŪK**

The Normal Conjunctival Cytology of Dogs

**MAIJU HÄNNINEN**

Udder Pathogens and Their Antimicrobial Resistance in Dairy Cows in Estonia 2007–2009

**2012****ANDRES ALJAS**

Milk progesterone dynamic in superovulated embryodonor cows

**MIKA PETTERI ASIKAINEN**

RNA purifying and gene expression analysis from fresh and frozen bovine embryos

**MEERI RANTANEN**

Radial exostoses as a finding in carpal sheath tenoscopy: a case series study

**MARIA VINOGRADOVA**

Pigs parasitic diseases and their control

**EPP ÜLEVAINO**

Chiari-like malformation and syringomyelia in Cavalier King Charles Spaniels – world experience and pilot study in Estonia

**2013****ALEKSANDR DEDJULJA**

Acute phase proteins as inflammatory markers in dogs: comparison between healthy dogs and dogs with pyometra

**SINI-MARIA PELTOLA**

Efficiency of Ivermectin and Pyrantel against nematoda in Estonian horses

**ARJA MARJATTA PÖNTINEN**

Dose response study in preventing squamous ulcers in thoroughbred racehorses in training

**KAISA VELSTRÖM**

Wild boar (*Sus scrofa*) *Toxoplasma gondii* seroprevalence and hunters feeding grounds as parasitic hubs

**JEVGENIA VOLKOVA**

The antimicrobial resistance of normal enteric microflora in clinically healthy dogs

**2014****ANNI NOOL**

The occurrence of cells and microorganisms in conjunctival cytology of a clinically healthy eye and an eye with signs of conjunctivitis in cats

**KÄRT MUST**

*Toxoplasma gondii* seroprevalence in cats in Estonia

**2015****TUULI MARIA ÅHLBERG**

Prevalence of *Taenia solium* cysticercosis in Estonian pigs

**ELISABETH DORBEK-KOLIN**

Prevalence of *Taenia saginata* cysticercosis in Estonian cattle

**HEIDI MARIA HALME**

INVOS monitoring in dogs and horses

**ANNA JOSEFINA KILPI**

Serum concentrations of globulins, albumin and serum amyloid A of neonatal lambs and associations with weight gain during summer rearing period

**SUSANNA KATRIINA MÄKI**

Concentration of serum amyloid A in serum and synovial fluid from dogs with cranial cruciate ligament rupture

**MATILDA ELEONOORA NURMI**

Success of teat cleaning in robotic milking farms

**PAULIINA ELISABETH PIETILA**

Effects of dairy farmers' attitude on cow welfare

**MAARJA TAGEL**

Seroprevalence of *Toxoplasma gondii* in cattle in Estonia

**TINJA-MARIA KAROLIINA VUORI**

Association of acute phase proteins with group size in rearing calves

**IDA ELISA TIAINEN**

Overview of growth and energy status and nutritional management of weanling horses in winter in different housing systems

## Appendix 6 (Chapter 13) Research funding in Estonia

The instruments of the Estonian R&D funding system are:

- Institutional financing;
- Baseline funding;
- Research grant funding;
- National research and development programmes;
- Funding of research and development infrastructures.

**Institutional financing** is decided by the Minister of Education and Research on the recommendation of the **Estonian Research Council**. Both basic and applied research is funded. Evaluated and registered research institutions may apply.

The Estonian Research Council organises the peer-reviewing of submitted applications and advises the Minister on opening funding for new research themes and the continuation of funding for previously-approved ones. The funding period for approved research topics is up to six years, subject to periodical assessment of progress.

**Baseline funding** was introduced in 2005. The purpose is financing R&D institutions on the basis of research quality in order to support the development and initiative research of R&D institutions. Also, it is aimed for co-financing of cooperation projects, both international and local, between academia and industry. There are no specific guidelines for spending, making the institutions responsible in this matter. The proportion of baseline funding in overall public financing will gradually increase.

The Estonian Research Council awards **research grants** to individuals and research teams on a competitive basis. Project applications are evaluated by expert commissions and approved by the Estonian Research Council.

Data on institutional financing and research grants is available on the Estonian Research Information System, ETIS.

National **research and development programmes** are launched and funds allocated, by the ministry responsible for the implementation of the programme. Information on national R&D programmes can be found at the web page of the State Chancellery of the Republic of Estonia.

Through Enterprise Estonia and its sub-units, the Ministry of Economic Affairs finances R&D programmes that involve product development, co-operation with enterprises and entrepreneurs, and technology programmes for priority areas. Enterprise Estonia provides support for new companies as well as supporting the research and development activities of already active companies, NGOs and R&D institutions.

Read more about the R&D Funding in the [Estonian Research Portal](#).

### Research landscape

Most research and development in Estonia is performed in the public sector. The largest public research university is the University of Tartu, followed by Tallinn University of Technology, EMÜ and Tallinn University. Other large research institutions that perform high-end research are the Estonian Biocentre, the Tartu Observatory, the Estonian Literary Museum, the National Institute of Chemical Physics and Biophysics, and the Institute of the Estonian Language. The work of R&D institutions is supported by several foundations and research parks that aim to create a favourable environment for research in Estonia.

Estonia's research and technology policy is drafted by the Cabinet of Ministers and submitted to the *Riigikogu* for adoption. The Cabinet of Ministers is advised on R&D issues by the Research and Development Council.

The Estonian Ministry for Education and Research, which receives advice from the Research Policy Committee, is responsible for the planning, coordination, execution and monitoring of the country's research and education policy.

The main funding body for R&D in Estonia is **the Estonian Research Council (ETAg)** which was established as a government foundation in March 2012 by merging the Estonian Science Foundation with the Research Cooperation Centre, a department of the Archimedes Foundation. The Estonian Research Council is a member of Science Europe, an association of European research funding and research performing organisations.

The main functions of the Estonian Research Council are those performed by its five departments. The Department of Research Funding is responsible for the distribution of institutional and personal grants and the handling of grant applications. The Department of R&D Analysis assesses the effectiveness of grants and monitors the creation and use of intellectual property. The Department of International Research Cooperation acts as a National Contact Point for the EU Framework Programme for Research and for Horizon 2020, and represents Estonia in several international cooperation programmes and networks. The Science Communication Department runs a wide variety of science communication activities addressing

diverse audiences from young people to the general public. The last, department administers the work of the Estonian Research Information System (ETIS) which concentrates information on researchers, research projects, R&D institutions and various research results. The database allows searches to be performed for researchers, biographies, granted projects, publications, etc. ETIS also functions as a channel for submitting and processing grant applications and for submitting and validating project reports.

**The Ministry of Economic Affairs and Communications** is responsible for the planning, coordination, execution and supervision of innovation policy. The Ministry of Economic Affairs and Communications is advised by the Innovation Policy Committee. The national support measures for innovation policy are implemented by Enterprise Estonia.

**Enterprise Estonia** is one of the largest institutions within the national entrepreneurship support system in Estonia, providing grants for product development, specialized advice, partnership opportunities and training for entrepreneurs, research and development institutions and for the public and the third sector.

Run by Enterprise Estonia, **the Competence Centre Programme** is aimed at improving the competitiveness of businesses through strategic cooperation between the research and industry sector in Estonia. Competence centres are small R&D organisations jointly established and operated by a number of companies and universities. Such centres are characterised by their strong focus on applied research, which is essential for developing the products of the partners who found these centres. As of summer 2013, there are eight competence centres: Electronics, Information and Communication Technologies; Food and Fermentation Technologies; Healthy Dairy Products; Software Technology and Applications; Nanotechnologies; Cancer Research; Reproductive Medicine and Biology; and Innovative Manufacturing Engineering Systems.

**The Estonian Academy of Sciences** unites 75 top-level Estonian scientists and scholars (as of May 2013) and acts as an umbrella organisation for a number of associated R&D organisations. The primary mission of the EAS is to advance scientific research, providing high-level expertise and advice for shaping the government's science policy, disseminating knowledge and promoting research cooperation at national and international level. The EAS represents Estonian research internationally, supports Estonian membership in international research associations and funds and operates a research exchange programme with 29 partner organisations abroad.

**The Archimedes Foundation** is an independent organisation founded by the Ministry of Education and Research to implement programmes and projects in the area of education and research. The Archimedes Foundation coordinates the EU Lifelong Learning Programme and administers several national and international scholarship schemes for improving academic mobility as well as for promoting Estonian higher education and research abroad. The Academic Recognition Information Centre (Estonian ENIC/NARIC Centre), a unit of the Foundation, is responsible for evaluating foreign qualifications. Another unit of the Foundation, the Estonian Higher Education Quality Agency, carries out institutional accreditation and quality assessment of research groups.

### **Research Centres of Excellence**

Research Centres of Excellence are internationally prestigious research groups which work under common leadership and have clearly defined common goals. They receive funding from the Research Centres of Excellence (CoE) measure. The Centres of Excellence support Estonian top-level research to strengthen the position of Estonian research cooperation and competitiveness in Europe. Currently there are 12 centres of excellence.

### **R&D Strategy**

The main strategy document for Estonia's RD&I policy is *Knowledge-based Estonia 2014–2020* the third strategy on research and development and innovation approved by the *Riigikogu* (Estonia's parliament) in the autumn of 2013. Whereas the two previous RD&I strategies focused on R&D capacity building, the current strategy aims to exploit the established potential for the benefit of Estonia's development and economic growth. Priority setting in the strategy is based on a new methodology of smart specialisation.

The strategy document sees Estonia as an active and visible international cooperation partner in the field of R&D and innovation and outlines the aspiration of Estonia's research institutions to high quality and versatility. One of the aims laid out in the strategy is to make Estonia an attractive place for R&D and to motivate more people to choose a career in research. Furthermore, it emphasises the need for R&D to serve the interests of Estonian society and economy as well as increase the knowledge-intensity of the Estonian economy in general.

### **Useful links:**

[Estonian Research Portal](#)

[Estonian Research Infrastructures Roadmap;](#)

[Knowledge-based Estonia 2014–2020](#)

## Appendix 7 (Chapter 13) Themes of the PhD theses

PhD theses defended at the Institute from 2008–2015

Mati Roasto	28.04.2008	<i>Campylobacter</i> spp. in poultry and raw poultry meat products in Estonia with special reference to subtyping and antimicrobial susceptibility
Ivi Jõudu	30.08.2008	Effect of milk protein composition and genetic polymorphism on milk rennet coagulation properties
Jaak Samarütel	11.06.2009	Relationships between energy balance estimates, luteal activity and fertility in Estonian holstein cows
Brian Lassen	17.12.2009	Diagnosis, epidemiology and control of bovine coccidiosis in Estonia
Kadrin Meremäe	25.06.2010	<i>Campylobacter</i> spp. in Estonian broiler chicken production chain and the co-effect of pro- and prebiotics on the <i>Campylobacter</i> spp. strains <i>in vitro</i>
Terje Elias	4.10.2010	Nitrate and nitrite contents in vegetables and vegetable-based foods, transformation dynamics and dietary intake
Marge Malbe	10.10.2011	The role of selenium in udder health of dairy cows
Priit Päkk	15.02.2012	Alterations of epidermal cells' functional activity in fish due to infection
Sirje Värvi	21.03.2012	Marker-based genetic characterization of the Estonian dairy cattle breeds
Kerli Mõtus	26.11.2012	Epidemiology, impact on herd health and control of bovine herpesvirus 1 in Estonian dairy cattle herds
Hanno Jaakson	14.12.2012	Insulin resistance in dairy cows in reference to breed, body condition and milk yield
Mirjam Vallas	28.06.2013	Genetic and modelling aspects of milk coagulation properties in dairy cattle
Hedi Harzia	23.12.2013	Associations between metabolic profile and coagulation ability of bovine milk, effect of feeding and lactation stage
Piret Kalmus	24.01.2014	Clinical mastitis in Estonia: diagnosis, treatment efficacy and antimicrobial resistance of pathogens in Estonia
Esta Nahkur	16.05.2014	Comparative morphology of European elk and cattle pelvises from the perspective of calving
Marko Kass	27.06.2014	Effect of crude glycerol feeding on feed intake, lactational performance and metabolic status of dairy cows
Kätlin Leisson	24.11.2014	Molecular composition of the contractile apparatus of skeletal muscle of Akhal-Teke horses - according to age, gender and genetic background
Indrek Suitso	28.11.2014	<i>Bacillus smithii</i> TBMI12 as a potential probiotic feed additive
Julia Jeremejeva	17.04.2015	Prostaglandin F2a and parenteral antibiotics as a treatment of postpartum metritis and endometritis, and possible relation of acute phase proteins with subsequent fertility in dairy cows

PhD theses to be defended at the Institute in the next few years (from October 2015)

<b>Garri Tralman</b>	Rod-through-plate fixator in the treatment of long bone fractures of small animals
<b>Kristi Praakle</b>	<i>Campylobacter</i> spp. and <i>Listeria monocytogenes</i> in poultry products in Estonia
<b>Annemari Polikarpus</b>	Management and animal effects on the behaviour of lactating ruminants when entering the milking parlour
<b>Hannes Mootse</b>	Investigation of seasonal and lactational variations in milk microstructure
<b>Aivar Namm</b>	Expression of genes involved in formation of human brain
<b>Triin Lepik</b>	Human factors influencing the dynamics of parasite infections in Estonian cattle farms
<b>Mihkel Mäesaar</b>	Molecular epidemiology and control of <i>Listeria monocytogenes</i> and <i>Campylobacter jejuni</i> in Estonian food chain
<b>Marilyn Janson</b>	Zoonotic parasite prevalence study and identification of risk factors ( <i>Giardia</i> , <i>Cryptosporidium</i> , <i>Toxoplasma</i> , <i>Echinococcus</i> )
<b>Ulrika Tuppits</b>	Factors affecting the conception of mares after deep-horn insemination
<b>Aleksandr Semjonov</b>	Bone fractures fixation and the factors affecting the regeneration of bone tissue
<b>Toomas Kramarenko</b>	Verotoxigenic <i>Escherichia coli</i> , <i>Salmonella enterica</i> and <i>Listeria monocytogenes</i> in Estonian food chain
<b>Age Kärssin</b>	<i>Trichinella</i> infection sources of humans and species distribution in Estonia
<b>Andžela Lehtla</b>	Leptospirosis in animals and risk factors in Estonia
<b>Madis Leivits</b>	Birds as bio-indicators for monitoring toxic substances in Estonian environment and their health implications
<b>Tarmo Niine</b>	Neonatal period effects on the health and performance of dairy cows
<b>Monika Nõmm</b>	<i>In vitro</i> production of dairy cattle embryos
<b>Andre Veskioja</b>	Factors influencing rheological properties of Dutch type cheeses
<b>Raivo Kalle</b>	Use of plants for making dairy products according to Estonian ethnocultural data and investigation of its practical aspects
<b>Darja Matt</b>	Food quality depending on different production method
<b>Hannelore Kiiver</b>	Relationships between activity patterns (activity, number of steps, lying time, lying bouts) fertility, health and ability to adapt in dairy cows
<b>Kärt Must</b>	<i>Toxoplasma gondii</i> infections in cats
<b>Paul Fridtjof Mõtsküla</b>	Early non-invasive diagnostics of the Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) and the differences in the prevalence in different populations
<b>Andres Sats</b>	Study into bioactive compounds in colostrum and properties of their isolates
<b>Kristel Peetsalu</b>	Systemically and locally produced serum amyloid A isoforms and their role in the inflammatory response
<b>Kädi Neare</b>	The spread of Q-fever among animals and humans in Estonia, risk-factors for infection and molecular epidemiology of <i>Coxiella burnetii</i>