Utrecht University

Faculty of Veterinary Medicine

EAEVE site-visit

16 – 20 Sept 2024

Self-Evaluation Report

July 2024

These appendices are available as download on SURFdrive

Introduction

The Faculty of Veterinary Medicine is the veterinary knowledge centre of the Netherlands. It is the only institution in the Netherlands that trains students to become veterinarians and contributes to Life Sciences challenges on campus and in society from a veterinary perspective. Our mission is to acquire and transfer veterinary knowledge and expertise in line with societal challenges. Our ambition is to understand animals so that we can meet tomorrow's health challenges today.

In 2022, the Veterinary Medicine programme in Utrecht celebrated its 200th anniversary. Over that period, our profession evolved from state veterinarians focused on healing animals kept for food production and transportation to veterinary professionals focused on animal, public and environmental health. In both education and research Utrecht approaches health issues from a One Health perspective that has its origin in the realisation that the health and well-being of humans, animals, and their environment are closely intertwined and must be studied and educated in context.

What makes Utrecht unique is the strong connecting between science and society. Changing societal challenges such as making livestock farming more sustainable, circular agriculture, nitrogen problems, shortage of veterinarians, and quality assurance of veterinary care inspire us to continuously update the content of our curriculum. This can only be achieved through intensive collaboration at regional, national, and international levels. We actively seek links with relevant stakeholders, including alumni, veterinary and human sectors (healthcare), businesses, politicians, policy makers, private organisations, and the general public. The VEE entered into several strategic partnerships in the field of education, including with the Utrecht University's Faculty of Science and Faculty of Medicine, as well as with the Netherlands Food and Consumer Product Safety Authority (NVWA) and Wageningen University's Animal Sciences Group. In addition, we are increasingly organizing our extramural education with veterinary clinical practices and corporates within the Netherlands.

At the VEE, we train students to become veterinary professionals who can sustainably enter the complex and changing job market. Veterinary knowledge and skills are the foundation of our education. But more is needed to properly prepare students for their future fields of work. What identifies Utrecht's curriculum is the focus on developing generic competencies and skills in our programs. This includes communication, collaboration, entrepreneurship, and dealing with work pressure and moral dilemmas. We teach students, based on feedback, to continually set new goals and take control of their own learning. Developing an exploratory, curious, and self-directed attitude deserves as much attention as acquiring knowledge.

In Utrecht we emphasise that education should make a visible contribution to an inclusive community, a just society with equal rights and opportunities for all. When it comes to Equality, Diversity, and Inclusivity, we are making great strides through an interdepartmental working group under intensive guidance from the Faculty Board.

We are proud of where 200 years of veterinary education has brought us, but we are eager to continue learning. We hope that this visit will lead to in-depth and constructive discussions and inspire us in our future choices.

Utrecht, June 2024

Prof. dr. A.D. (Debbie) C. Jaarsma
Dean of the Faculty of Veterinary Medicine,
Utrecht University

Area 1. Objectives, Organisation and Quality Assurance Policy

Standard 1.1: ***The VEE must have as its main objective the provision, in agreement with the EU Directives and ESG Standards, of adequate, ethical, research-based, evidence-based veterinary training that enables the new graduate to perform as a veterinarian capable of entering all commonly recognised branches of the veterinary profession and to be aware of the importance of lifelong learning.***

The Faculty of Veterinary Medicine at Utrecht University

The Faculty of Veterinary Medicine at Utrecht University (VEE) is the only institution in the Netherlands that offers an academic degree in veterinary medicine. The knowledge and expertise present at the VEE make it the leading veterinary knowledge centre in the Netherlands. The institute contributes to addressing life sciences-related topics and issues within the university and in society at large.

Profile and mission statement

Drawing on the veterinary proficiency of our community, the VEE contributes to addressing life sciences-related topics and issues within the university and in society at large. Our most vital mission is to train the veterinarians of the future, and to develop veterinary knowledge and expertise in relation to societal challenges. We build bridges between science and society and provide specialist care in our academic veterinary hospital. We actively pursue multidisciplinary collaborations within Utrecht University and with national and international partners. Our ambition is understanding animals in order to meet tomorrow's health challenges today. We approach those health challenges based on the One Health principle, which stems from the awareness that the health and well-being of animals, people, and their environment are closely interrelated and must be studied in their shared context.

Core curriculum

The VEE's entire curriculum is designed from an outcomes-based perspective (see Area 3 for a detailed description. The curriculum balances knowledge transfer (through lectures, guided self-study and self-study materials), application of knowledge and achievement of understanding (through seminars and group assignments), and development and application of knowledge and skills (through practicals and clinical rotations). The students are trained to acquire and apply knowledge and understanding, make judgements, and develop relevant skills and attitudes as a strong foundation to enter the veterinary profession.

The VEE's overall educational philosophy encompasses eight guiding principles:
1. Learning is stimulated by the didactical design of the programme;
2. Students are given, and bear responsibility for, their own professional and personal development;
3. The relevant and authentic veterinary context for professional practice (in the broadest sense) is the foundation of education;
4. A supported system of coaching, individual feedback, and assessment is in place;
5. Activating and small-scale education with close relationships between teachers and students, and among the students themselves, is fostered and is an important characteristic of the educational programme;
6. Systematic and explicit attention is paid to scientific training and professional conduct;
7. The educational programme is coherent in its content and consistent in its didactic approach; and,
8. Information about the educational programme is transparent, clear, and easily accessible.

These guiding principles are translated throughout the curriculum from high-level, evidence-informed curriculum design, through to the level of individual courses. This is done by defining programme learning outcomes (PLOs) that align with the learning objectives, the learning activities and assessment activities for each individual module.

Standard 1.2: ***The VEE must be part of a university or a higher education institution providing training recognised as being of an equivalent level and formally recognised as such in the respective country.***

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Website:	https://www.uu.nl/en/organisation/faculty-of-veterinary-medicine
Phone number:	+31 (0)30 - 253 24 89
VEE's Head:	Prof. dr. A.D.C. (Debbie) Jaarsma

Organisational chart: see Appendix 1.2.1

Utrecht University

The VEE is a faculty at one of the oldest universities of the Netherlands, Utrecht University. Utrecht University is a state university, which means it is governed by the Dutch Ministry of Education, Culture and Science and the Dutch Higher Education and Research Act (WHW).

Utrecht University organises its education and research endeavours across seven faculties. Its management structure[1] consists of two layers of governance: i.e., the central university and, next, the faculties and departments (see Figure 1.2.1). The governance structure of the university is arranged according to a series of specific regulations[2], including those for governance and management.

Governing bodies

Executive Board

The Executive Board[3] (*College van Bestuur)* is the highest administrative body within Utrecht University. Its members are appointed by the Supervisory Board. It has four members, including a student member.

Supervisory Board

The Supervisory Board[4] (*Raad van Toezicht*) is appointed by the Dutch Ministry of Education, Culture and Science and serves as the governing body of Utrecht University. The Executive Board requires approval from the Supervisory Board for its strategic plan, Annual Report, and the Annual Accounts.

University Administration

The University Administration[5] consists of the University Corporate Offices and the University Library. Within the University Corporate Offices, six departments work alongside the office of

1 *https://www.uu.nl/en/organisation/governance-and-organisation*
2 *https://www.uu.nl/en/organisation/governance-and-organisation/the-university-service-departments/the-university-corporate-offices/the-general-affairs-office/legal-affairs/regulations-regarding-the-organisation-of-governance*
3 *https://www.uu.nl/en/organisation/governance-and-organisation*
4 *https://www.uu.nl/en/organisation/governance-and-organisation/supervisory-board*
5 *https://www.uu.nl/en/organisation/governance-and-organisation/the-university-service-departments*

General Affairs to provide integrated support to the Executive Board. The University Library provides information services for purposes of education and research to both students and staff.

Faculties

Utrecht University has seven faculties; Science; Veterinary Medicine; Humanities; Geosciences; Law, Economics & Governance; Social & Behavioral Sciences and Medicine, that provide education and conduct research in their fields. Additionally, the university has two University Colleges, University College Utrecht and University College Roosevelt.

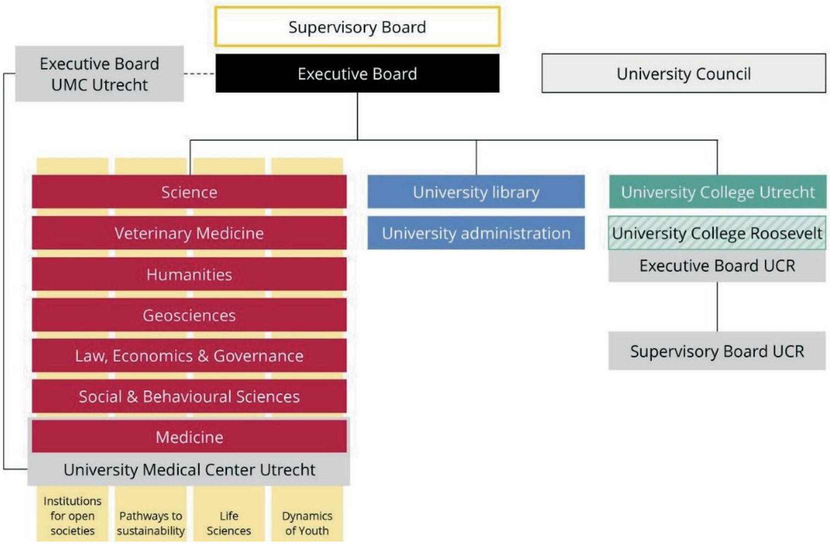

Figure 1.2.1 Organisation chart of the governance structure of Utrecht University

Institutional accreditation

To receive state funding and the right to award degrees and titles recognised and protected by law (such as the Master's degree in Veterinary Medicine and the title Veterinarian), study programmes in the Netherlands must be accredited by the Accreditation Organisation of the Netherlands and Flanders (NVAO)[6]. The NVAO is an independent quality assurance agency that safeguards the quality of higher education in the Netherlands and Flanders (Belgium), with its responsibilities set within legal frameworks[7] [8].

List of departments

The VEE is led by a Faculty Board headed by the Dean, two Vice Deans for education and research, a Faculty Director and a Student Assessor. Both the Dean and the Vice Dean for Education are veterinarians. The VEE has three departments:

- Biomolecular Health Sciences
- Clinical Sciences
- Population Health Sciences

The VEE is organised in a matrix structure (see Appendix 1.2.1). Both education and research are supported by the Faculty Office.

Governance

The VEE's organisational matrix structure was implemented between 2018 and 2021. The goal of this organisational change (called LEAD) was to strengthen the VEE's profile and make it more accessible to the outside world. The existing areas of expertise of, formerly, eight departments were combined into three (see Appendix 1.2.1 for the organisational chart).

6 https://www.nvao.net/en
7 https://www.enqa.eu
8 https://www.nvao.net/nl/besluiten/universiteit-utrecht

Faculty are assigned to each of the departments. Support staff, not directly related to the core tasks (education, research and the care of patients), are assigned to the Faculty support organisation (FSO) such as HR, Finance, Marketing, Communication & Multimedia, and Students & Education office (OSZ).
In addition to strengthening the content of the areas of expertise, LEAD also sought to make the organisation more efficient. Larger departments are able to work more independently, and and have been awarded greater opportunities in terms of talent management, facility sharing, and investment.
Additionally, LEAD has separated responsibility relating to content and quality of education and research from the management of people and resources. At the intersections of the matrix structure, those responsible for quality, budget and employment of professionals make joint decisions on education and research. This helps to clarify roles and responsibilities and to streamline administrative management.

Faculty board
The Dean is the head of the Faculty Board and is responsible for the general leadership of the VEE. Currently, the board is staffed as follows:
- Dean: Prof. dr. A.D. (Debbie) C. Jaarsma (DVM PhD)
- Vice Dean for Education: Prof. dr. G. (Harold) J. Bok (DVM PhD)
- Vice Dean for Research: Prof. dr. C. (Celia) R. Berkers (MSc PhD)
- Faculty Director: M. (Mark) van der Streek (MSc)
- Student Assessor 2023-2024: S. (Suus) Wiersma, BSc
- Corporate Secretary: B. (Benedikte) D.L. Sam (LLM)

The Faculty Board is in charge of the general management of the faculty, including the administration and organisation for education, research and patient care. The board develops and implements the strategic plan for the VEE. The strategic plan is developed and monitored through regular communication between the Faculty Board and the department boards.

Furthermore, the Faculty Board oversees:
- establishing the Education and Examination Regulations (OER), as well as the regular assessment thereof;
- establishing general guidelines for the practice of science;
- establishing the faculty's annual research programme;
- supervising the implementation of the Education and Examination Regulations (OER) and the annual research programme, as well as regularly reporting on this to the Executive Board of the university;
- establishing the examination committees, as well as appointing the members of those committees; and,
- appointing the boards of the departments and directors of education.

Departmental board
Each department has its own board and is authorized taking managerial decisions about the daily management and the practical organization of the department. The board consists of a Head of Department (chair), Operations Manager, Research Manager, and Teaching Manager. The board of the Department of Clinical Sciences also consists of a Hospital Manager (see also Appendix 1.2.2).

Departmental boards oversee:
- promoting the quality and wellbeing of staff;
- determining the departmental scope of the work in accordance with the VEE's strategic plan;
- monitoring the coherence between teaching, patient care, research and its (societal) impact in accordance with the VEE's strategic plan.

More information on the three departments can be found here: https://www.uu.nl/en/organisation/faculty-of-veterinary-medicine/about-the-faculty
The VEE also accommodates the Central Laboratory Animal Research Facility[9]. This is an institute of Utrecht University that conducts research and education for which laboratory animals are required. Most experiments are conducted by scientists from University Medical Centre Utrecht (UMCU).

Name and degrees of the person(s) responsible for the veterinary curriculum and for the professional, ethical, and academic affairs of the VTH

Directors of Education

The VEE's study programmes as well as the VEE's Continuing Professional Education programme have a Director of Education, who is responsible for the organisation and coordination of the curriculum and its overall quality. Currently the directors are:
- Bachelor's programme in Veterinary Medicine: Dr. J. (Jooske) IJzer (DVM PhD)
- Master's programme in Veterinary Medicine: Dr. C. (Cornélie) Westermann (DVM PhD)
- Continuing Professional Education (OvP): Dr. R. (Robert) Favier (DVM PhD)

Teaching Managers

Each department has a Teaching Manager who is responsible for the management of people and resources on education.
- Biomolecular Health Sciences: Prof. Dr. F. (Femke) Broere (DVM PhD)
- Clinical Sciences: Dr. J. (Jeffrey) de Gier (DVM PhD)
- Population Health Sciences: Dr. L. (Len) Lipman (DVM PhD)

Course coordinators

Each programme offers courses led by course coordinators. The course coordinator is:
- responsible for the content, design, implementation, testing and evaluation of the teaching in their course;
- responsible for the quality and quality assurance of their course; and,
- accountable to the Director of Education for the quality of education and testing in their course.

Please find a list of all course coordinators and their degrees in Appendix I.

List of the councils/boards/committees

Committees and councils

Formal, teaching-related committees and councils

The *Board of Studies* is an administrative advisory body that provides both solicited and unsolicited advice to the Faculty Board on educational policies. The Board of Studies monitors the quality and organisation of education. It consists of the Directors of Education, the Teaching Managers, an undergraduate student, a graduate student, the head of the Students & Education Office (OSZ), and is chaired by the Vice Dean of Education, supported by an administrative secretary.

The Faculty Education *Committee* (OC) is the participatory and representative advisory body for educational matters within the VEE. The OC advises the Directors of Education and the Vice Dean for Education on the quality of the study programmes.

9 *https://www.uu.nl/organisatie/gemeenschappelijk-dierenlaboratorium*

The OC is made up of the chairs of the student and staff sections from each of three *Education Advisory Committees* (OACs). Each OAC consists of three students and three members of the programme's teaching staff. The main duties of the OC and OACs are to:

- advise on the Education and Examination Regulations (OER);
- monitor the quality of education, and
- provide solicited and unsolicited advice on current and future educational developments.

Each of the VEE's three programmes has a *Board of Examiners* (EC). The Dutch Higher Education and Research Act states that the Board of Examiners is responsible for monitoring if programme outcomes are achieved and for maintaining the quality standards of the examination system. The board handle individual requests, such as retaking exams, arranging additional test facilities and exemptions, awarding diplomas, handling reports of fraud and, where applicable, providing binding and non-mandatory study advice at the end of the first undergraduate year. They are responsible for making reasonable and fair adjustments in assessments for students with disabilities. They also appoint the *Assessment Quality Committee* (TCD) that assists the EC with reviewing the quality of assessments and providing support to course coordinators.

Informal, teaching-related committees and councils

Every cohort for each of our programmes has its own student representative panel (in Dutch *jaarkern* or *masterkern*), a group of students who represent their fellow students. The chairs of the panels are in close contact with the Directors of Education and meet at regular intervals during the year.

The Student Council consists of chairs of the student representative panels and the student assessor of the Faculty Board, and student members of Faculty Council (see below) and Education Committee. The student council provide solicited and unsolicited advice to the Directors of Education and the Faculty Board.

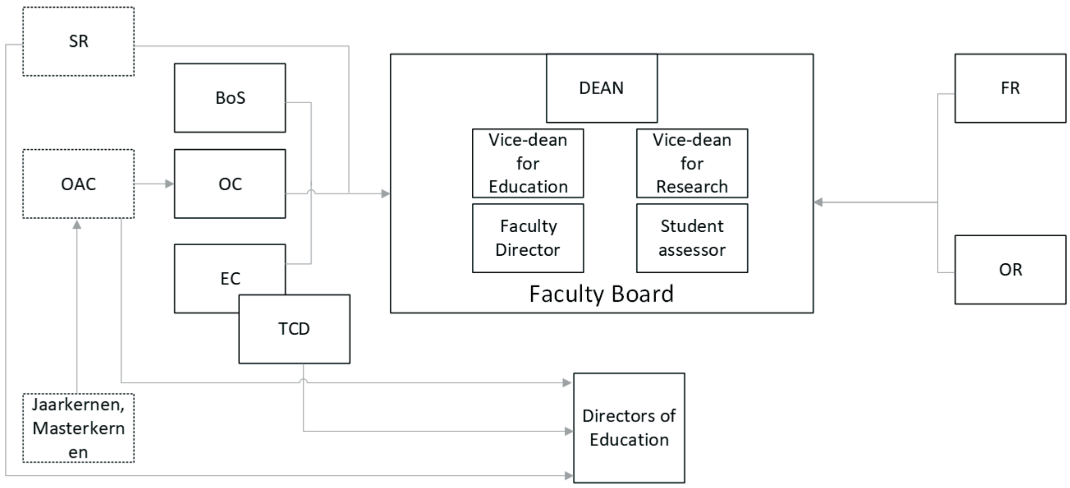

Figure 1.2.2. Schematic of councils and committees. SR: Student council, BoS: Board of studies, OC: Education committee, OAC: Education advisory committee, EC: Board of Examiners, TCD: Assessment quality committee, FR: Faculty council, OR: Research board, Jaarkernen

Not teaching-related committees and councils

The Faculty Council is the employees' and students' consultative body for staff and students. The Faculty Council is authorised to consult with the dean about all VEE's-related matters. In some important decisions of the dean, such as the adoption of the Education and Examination Regulations (OER), the council has the right of consent. The council consists of eight student members and eight staff members. The council meets with the board every month and is supported by a secretary.

The Research Council is an advisory body, appointed by the dean, that provides solicited and unsolicited advice to the Faculty Board on Research Policy. The council is chaired by the Vice Dean for research.
A well-organised employee and student representation is of vital importance to the performance of the university. For a full overview of student and employee representation at Utrecht University see: www.uu.nl/en/organisation/governance-and-organisation/employee-and-student-representation

Collaboration with other VEE's
Being the only Dutch institute for veterinary medicine, it is important to stay well connected to other VEE's worldwide. The VEE is EAEVE- and AVMA-accredited. In addition, through UU, the VEE is part of the League of European Research Universities (LERU)[10] and a member of the Veterinary School Council.
As both the Bachelor's and Master's programmes are taught in Dutch, we believe it is important to encourage our students to spend time abroad. As part of their research internship and electives this can be for a period of two weeks up to one year, depending on personal preferences (e.g., research project, clinical rotations as well as a variety of other courses). In the past years (excluding the period of the Covid-19 pandemic), roughly 30% of our students had an international study experience during their Master's education.
Students can choose from a network consisting of 15 veterinary partners worldwide with respect to clinical rotations. For general electives, students can choose from the full Utrecht University partner network, consisting of 100 partners. For research internships, students are free to participate in research through both established and new channels, once formal procedures are followed. Each year, three of our students take part in the Boehringer Ingelheim scholarship, which enables them to conduct their research internship in a US-based research university.

Standard 1.3: ***The VEE must have a strategic plan, which includes a SWOT analysis of its current activities, short- and medium-term objectives, and an operating plan with a timeframe and indicators for its implementation.***

The VEE is currently operating under the 2020-2025 strategic plan[11]. Under this, and previous plans, a variety of programmes have been established, including Vet 2020 (leadership and culture), LEAD (organisational structure), Academics4Animals (proposition of clinics), and Vet Forward (attractive working environment and culture).
The VEE is the veterinary knowledge platform in the Netherlands that operates at the intersection of various scientific disciplines and societal challenges. Because the VEE wishes to further strengthen and expand that platform and network function in the coming years at the regional, national, and international levels, it actively pursues connections with stakeholders including alumni, those in the veterinary and human healthcare sectors, businesses, politicians, policymakers and private organisations and interest groups, as well as the general public.
More sustainable employment of our staff is also a key focus. We are creating an attractive working and learning environment for everyone at the VEE. Every day, our staff and students commit themselves to making ambitions a reality. In groups, teams and networks, our staff contribute to research, to developing knowledge and expertise, to teaching and training, and to promoting animal health and welfare. This requires a safe working and learning climate in which we are mindful of one another, and one that calls for development-oriented leadership.

10 https://www.uu.nl/en/node/4701/collaborate/partners-and-networks/international-networks/leru
11 https://www.uu.nl/en/organisation/strategic-plan-2025/veterinary-medicine

The VEE's strategic plan builds on the course set out by the 2017-2020 strategic plan. The current strategic plan was informed by a SWOT analysis of current activities:

Strengths:
- High-quality and well-reviewed educational programmes.
- Research is highly regarded. Building bridges with other disciplines is an important premises.
- Engaged and knowledgeable employees and staff members.

Weaknesses:
- Some facilities no longer meet our requirements in terms of sustainability and flexible working.
- The high ambition with respect to quality sometimes causes high workload experienced by employees.
- Retaining staff. As part of a large university, it can be difficult to offer our employees competitive compensation in a tight labour market.

Opportunities:
- Updated financial policy gives confidence in offering permanent appointments more quickly, and better allow the VEE to retain staff.
- Large grants currently provide opportunities to further improve our educational programmes and student well-being and to intensify our research.
- Programmes (e.g., Vet Forward[12]) are launched which aim to improve the working and learning environment for employees and students.
- (Inter)national collaborations with strategic partners in the veterinary field offer opportunities for (continuing professional) education, research and patient care.
- The construction of several new facilities will lead to a better working environment.

Threats:
- Shortages and competition in the labour market make it challenging to recruit new colleagues.
- Inflation and higher construction costs require us to make difficult choices with regard to the new facilities.

Operating Plan

In the period ahead, the VEE will work to embed the above-mentioned programmes and refine its focus in keeping with the ambitions of the university. The Faculty Board has made this explicit by formulating three ambitions and six goals to deal with the current and future challenges up until 2025.[13] These ambitions and goals stem from the current Strategic Plan and the SWOT-analyses (above), and are explicitly linked to projects, concrete milestones, timeframes and deliverables (see Appendix 1.3.1 and 1.3.2 for a detailed description of these projects).

Our ambitions

1. To increase societal impact
2. To promote sustainability
3. To create an attractive work and learning environment for everyone

Our goals

1. Sustainable employability and satisfaction for staff and students
2. Long-term financial stability
3. Strengthen strategic research partnerships
4. Develop study programmes with professional practice and knowledge institutions

12 https://intranet.uu.nl/en/faculty-of-veterinary-medicine/vet-forward
13 https://www.uu.nl/en/organisation/faculty-of-veterinary-medicine/about-the-faculty/profile-and-mission/board-agenda

5. Focus and innovation in our veterinary hospital
6. Green actions to make the VEE more sustainable

Standard 1.4: ***The VEE must have a policy and associated written procedures for the assurance of the quality and standards of its programmes and awards.***

Utrecht University and the VEE has established specific regulations governing conduct. These are based on the key principles of professional and quality academic conduct and ethically responsible research. All policies in place are publicly available at the following website: www.uu.nl/en/organisation/about-us/codes-of-conduct.
Since 2019 graduating students can voluntarily take the veterinary oath. It is intended to provide graduates with guidance in dealing with societal expectations in veterinary professionals.[14]

Quality Assurance policy
To continuously ensure the quality of education, the VEE further elaborated on the Faculty Board's vision on education in a Quality Assurance framework, describing the minimum requirements that the Bachelor and Master programme must incorporate in their quality assurance processes.

Course evaluation
All courses in the Bachelor and Master curriculum are formally evaluated at least once every three years, although many course coordinators also evaluate their courses informally after each repetition. Input for the formal evaluation varies according to the type of course, but the opinion of students and teachers involved, as well as a measure of the assessment in the course (yield or an analysis by the Assessment Quality Committee (TCD)), are standard input.
Course evaluation, as well as improvements made in response to the results of the evaluation, is the responsibility of the course coordinator. Course coordinators are assisted in their efforts by support staff. Major adjustments to a course are first discussed with the Director of Education.

A report is made of each evaluation, which includes intended improvements. This report, after approval by the Director of Education, is sent to the Education Advisory Committee (OAC) for its advice.

To close the loop of the PDCA cycle at course level, students are informed by the course coordinator of any planned or implemented adjustments in the course.

Curriculum evaluation
The curricula of our VEE are evaluated externally and internally to collect, analyse and use relevant information for further improving the curricula. The results of all curriculum evaluations are reported on and shared with the OAC for advice.
The internal evaluation falls under the responsibility of the Directors of Education and is performed in a three-year cycle. The Directors of Education are assisted in the evaluation by a Curriculum Committee, which consists of relevant functionaries of the programme, such as teaching managers and course coordinators. A student and a teaching member of the OAC are also part of the committee.

The curricula are evaluated in two ways:
- By evaluating course clusters. For both programmes several clusters of courses can be identified. For example, in the Bachelor's a cluster can be characterized by all courses in a teaching period

14 *https://www.uu.nl/nieuws/veterinaire-eed-of-belofte-voor-de-dierenarts (in Dutch)*

and within the Master's, each differentiation can be considered a cluster. By evaluating these clusters together, an overview of the whole programme is made and provides insight into curriculum coherence.

- By evaluating the whole programme. By means of an exit survey and an alumni survey. The exit survey, which is provided to students at the time of their graduation from the Bachelor's and the Master's, provides the students' opinion on the quality of the programme as a whole. The alumni survey is only sent to alumni of the Master programme. The results provide information on the extent to which students feel they are prepared for their current (mostly first or second) position, in relation to the Programme Learning Outcomes. If alumni feel insufficiently prepared in certain aspects, they have the opportunity to indicate what the programme could have done to improve this. Although there is no survey for alumni of the Bachelor programme, the close contact between both Directors of Education ensures that relevant information about these alumni is shared with the Bachelor's programme.

The external evaluation is performed by the NVAO once every six years, most recently in 2021[15]. The assessment framework used by the NVAO is compliant with the ESG standards. Another important actor in external curriculum evaluation, is the so-called Veterinary Profession Advisory Board. This council comprises representatives from the entire veterinary profession (e.g., primary care, corporate business, pharmacy, government, university). This advisory board is convened twice a year and provides (un)solicited advice to the Director of Education of the Master programme. The curriculum of the Master programme and its evaluations are discussed with the Veterinary Profession Advisory Board. Although the focus lies on the Master programme, the Bachelor's Director of Education is a permanent guest at its meetings and can discuss important matters with the council.

Course coordinators and other teaching staff are informed by the Director of Education of evaluation results and/or any planned or implemented adjustments in the curriculum, for example during one of the regularly planned course coordinator meetings.
For quality assurance purposes, the VEE has a dedicated research group in veterinary education, i.e., chair 'Educational Scholarship in Veterinary Medicine'. The mission of this research group is to optimise the learning environment for both students and academic teachers and to bridge the important gap between 'evidence-based education' and the daily educational practices at the VEE.

Standard 1.5: ***The VEE must provide evidence that it interacts with its stakeholders and the wider society. Such public information must be clear, objective and readily accessible; the information must include up-to-date information about the study programme, views and employment destinations of past students as well as the profile of the current student population.***

The VEE publishes the ESEVT status and its last Self-Evaluation Report on the public website of Utrecht University: https://www.uu.nl/en/organisation/faculty-of-veterinary-medicine/education.

The VEE informs stakeholders and the public on:

- *Its objectives*

The VEE informs its stakeholders and the public on its objectives via the Utrecht University website at https://www.uu.nl/en/organisation/faculty-of-veterinary-medicine/about-the-faculty/profile-and-mission

15 *https://publicaties.nvao.net/ACCR_010500_21PD-56570_Besluit_2021.pdf and https://publicaties.nvao.net/ACCR_010501_21PD-66570_Besluit_2021.pdf*

• *Its education, research and teaching activities*
Information on its education and research can also be found via the UU website at https://www.uu.nl/en/organisation/faculty-of-veterinary-medicine/education and https://www.uu.nl/en/organisation/faculty-of-veterinary-medicine/veterinary-research. For potential students of veterinary medicine, the university also offers a separate website, with information on the programme, selection, prospects, etc. at https://www.uu.nl/bachelors/diergeneeskunde. The information on this website is, as for the programme itself, offered in Dutch.

• *Employment destinations of past students*
General information on career paths is found on the information page for prospective students of both the Bachelor as the Master programme. Each year, the VEE sends out a questionnaire to alumni who have graduated within the last twelve months to gather data about their employment. This information is used for internal quality assurance purposes and discussed during stakeholder meetings (the *Veterinary Profession Advisory Board*, see next page for more information).

• *Profile of the current student population*
This information is communicated in several ways. These include the annual report[16] of Utrecht University (see page 201 of the report for a profile of the current student population) as well as websites such as 'Studiekeuze 123'[17], which offer advice and information for prospective students.

The ESEVT status and the Self-Evaluation Report and Visitation Reports are publicly available on the VEE's website: https://www.uu.nl/en/organisation/faculty-of-veterinary-medicine/education.

Standard 1.6: *The VEE must monitor and periodically review its activities, both quantitative and qualitative, to ensure that they achieve the objectives set for them and respond to the needs of students and society.*

Every year the Faculty Board meets with the University Board to discuss progress on achieving the goals in the University strategic plan and the quality of research and education programmes of the VEE. The boards meet at the Bilateral Meeting, during the fourth quarter of each year. The University prepares a factsheet with all relevant management information on staff, students, qualifications, etc. This information is discussed during the meeting and agreements are made on improvements or adjustments for the following year(s). During this meeting, both student assessors of the Faculty Board and the University Board are present to discuss the student perspective on the items on the agenda.

Additionally, the VEE meets regularly with both the Ministry of Agriculture, Nature and Food Quality (LNV) and the Royal Dutch Society for Veterinary Medicine (KNMvD) to discuss developments in the field, achieved goals, societal changes and the need for adjustments in the education and/or research programmes. For example, in the last two years these parties have been discussing the need for more veterinarians in the field and the possibilities of organising funding for the training of veterinary specialists through pathways analogous to human medicine. The progress on these meetings is regularly discussed in the Faculty Council, in which both representatives from students and staff are present. When suggestions for changes in the curriculum or research programmes arise from these meetings, the relevant educational committees or the Faculty Council offer advice and, where appropriate, consent to these changes.

Additionally, a *Veterinary Profession Advisory Board* was established in 2022 (see under 1.4 above).

16 https://www.uu.nl/en/organisation/about-us/annual-reports
17 https://www.studiekeuze123.nl/opleidingen/1342-diergeneeskunde-universiteit-utrecht-wo-bachelor

Communication of the strategic plan to staff, students and stakeholders

Every five years, Utrecht University determines its new strategic plan, with the consent of the University Council. From here, the Faculty Board initiates discussion about the drafting the new Faculty strategic plan which needs to align with the university plan. These discussions are held with the departmental boards, the advisory boards on education and research, and other relevant stakeholders. Thereafter, the new strategic plan is presented to the Faculty Council for consent and added to the University strategic plan and published on the UU-website.

During the five years the Faculty Board regularly monitors the implementation of the strategic plan and communicates on its progress, mainly with the Faculty Council but also with the Board of Studies on education and with the Board of Research on research. When any changes are required to the organisation, education and/or research programmes, or QA policy, based on the outcomes of the QA system as described in Standard 1.4, the Faculty Board will present those to the Faculty Council. Depending on the addressed topic different committees or councils will be involved (see Figure 1.2.2).

Communication to staff, students and stakeholders is organized by targeted newsletters and the VEE's website. Employees receive a general newsletter and a departmental newsletter. Students receive a program-specific newsletter.

Standard 1.7: *The VEE must undergo external review through the ESEVT on a cyclical basis. Evidence must be provided of such external evaluation with the assurance that the progress made since the last ESEVT evaluation was linked to a continuous quality assurance process.*

The last ESEVT visitation took place in July 2014, together with the NVAO and AVMA visitations. Any deficiencies have been followed up in 2015 and regularly been discussed with the Directors of Education of our Bachelor and Master programmes. The recommendations made about the assessment committee were taken into account during the revisions of both the Bachelor and the Master programmes. Regular updates have been discussed at EAEVE meetings attended by our Vice-Dean of Education or our Dean.

Comments on Area 1

- The VEE's governance is largely bound to rules set by Utrecht University. This gives us strict frameworks within which education, research and patientcare must be organised.
- There is active student participation at all levels within the quality assurance system. Apart from the formal system, there are numerous informal contacts between students and teaching staff about the quality of courses and the curricula.

Suggestions for improvement in Area 1

- Prior to the COVID-pandemic, the VEE implemented its new governance structure per January 2020. The pandemic however effected the pace of the implementation, and therefore, this process still requires and receives the attention of all those involved in management positions.
- One of the Faculty Board's key ambitions is to create an attractive work and learning environment for both staff and students. Since 2023, this topic has received increased attention by the start of the so-called 'VetForward'-project[18]. Within this multi-year project focused interventions and initiatives are and will be organized. This requires continuous effort over a longer period of time.

18 VET Forward Introduction video https://www.youtube.com/watch?v=Gt2546VOG18&t=42s (subtitle in English is available)

Area 2. Finances

Standard 2.1: ***Finances must be demonstrably adequate to sustain the requirements for the VEE to meet its mission and to achieve its objectives for education, research and services.***

Global financial process

Utrecht University utilises a robust system of financial structures and procedures. These structures are organised according to an annual planning and control cycle which begins each May with a substantial distribution of funding from the Dutch government (Ministry of Education, Culture and Science). A specific amount of funding is ring-fenced for the VEE for education, research and housing. In addition, the VEE receives supplementary funds to finance practical education and research in the teaching hospitals, and an array of support activities (referred to as 'specific fund'). Overall, these funds from the national government are referred to as the first flow of funds. The VEE also benefits from a second flow of funds, in the form of research grants from the Dutch Research Council, as well as a third flow of funds e.g., various other grants from the EU and industry collaborations, and revenues of clinical veterinary services.

These three cash flows set the foundation for the VEE's operational budget which covers the faculty administration, three departments and support organisation. This budget is first approved by the VEE's Faculty Council, before being presented to the University Board in early September, discussed and tailored in November, before final adoption in December.

VEE's revenues and expenditures throughout the annual cycle are monitored carefully and frequently to ensure that they align with the overall budget. Quarterly financial reports are discussed with the Faculty Council and the University Board. The Faculty Council has an explicit role and responsibility in this process with oversight of the information, advisory and approval rights regarding the financial policy. This tight monitoring allows the VEE to respond and adapt to emergent financial issues and enact any necessary adjustments.

At the end of the financial year should the VEE yield a positive revenue, these funds are diverted to faculty reserves. By orders of Utrecht University, the faculty must maintain a minimum reserve of 2.5% of total revenue and may accumulate up to a maximum reserve of 12.5%. The application of these reserves, to make investments or facilitate financial transition, when necessary, is subject to the approval of the University Board.

Percentage (%) of margin paid as overhead to the official authority overseeing the VEE

VEE overheads are funded from different sources. For example, 10% of the income from grants and veterinary services (third flow of funds) is reserved for overheads. In addition, costs incurred by the support organisation (FOO) qualify as overhead and are funded by the Dutch government (first flow of funds). Overall, VEE overhead costs correspond to approximately 20% of annual turnover, a percentage that meets Utrecht University guidelines.

Annual tuition fee for national and international students

In the Netherlands, there are two types of tuition fee: the statutory tuition fee and the institutional tuition fee. Depending on the situation, one of the two fees applies.

Statutory tuition fee

- Full-time EU/EEA, Surinamese or Swiss students pay € 2,530 per year (academic year 2024-2025)
- Part-time EU/EEA, Surinamese or Swiss students pay € 2,248 per year (academic year 2024-2025

Institutional tuition fee

Non-EU/EEA students are required to pay an institutional tuition fee of € 30,580 per year. In some cases, non-EU/EEA students are eligible for the statutory fee if they receive an UAF grant (University Asylum Fund) for refugee students in the Netherlands, or if they meet the nationality requirement for a government study grant. As is the norm for the Netherlands, educational programmes do not attract any further costs for students.

Table 2.1.1 Annual expenditures in €K

	LE* 2023	2022	2021
Personnel	72,896	67,027	62,284
Operating costs	20,969	21,018	17,665
Maintenance costs (depreciation)	1,405	1,305	1,323
Equipment (housing)	30,493	20,543	21,519
Total expenditures	125,763	109,893	102,791

**LE = last estimate*

Table 2.1.2 Annual revenues in €K

	LE* 2023	**2022**	**2021**
Public authorities	76,203	63,635	60,605
Tuition fee (statuatory fee-paying students) **Tuition fee (institutional fee-paying students)**	1,609	2,922	2,769
Clinical services **Diagnostics services** **Other services**	18,764	17,458	18,512
Research grants	20,204	20,078	19,039
Continuing education (incl. contract education)	2,065	1,908	1,993
Donations	0	0	0
Other sources	5,980	5,014	4,780
Total revenues	124,825	111,015	107,698

**LE = last estimate*

Table 2.1.3 Annual balance between expenditures and revenues in €K

Year	**Total expenditures**	**Total revenues**	**Balance**
2023	125,763	124,825	-938
2022	109,893	111,015	1,122
2021	102,791	107,698	4,907

Over the last three years, the VEE has benefited from an increase in revenues which derives, in part, from an increase in government funding. There has been a change in how funds are allocated, with reimbursement for housing now added to the VEE budget. In addition, public funds have been increased to address increased personnel costs (as a result from a recent staff collective bargaining agreement increase of 9%). This increment is also likely to trigger increase in revenues from VEE veterinary services due to the increase cost incurred in staffing arrangements. As for most higher education institutions, the VEE has experienced increased personnel, operational and housing costs in 2023 and it is expected that this year will yield a deficit. However, the VEE has robust financial reserves which can absorb the deficit. Furthermore, the increased costs of operating the VEE have been fed into planning for the 2024 financial year and beyond.

Standard 2.2: ***Clinical and field services must function as instructional resources. The instructional integrity of these resources must take priority over the financial self-sufficiency of clinical services operations.***

Modus operandi financing clinical activities

The clinical activities in the teaching hospitals are funded from several sources. The most important is the 'specific fund' as part of the first flow of funds. In addition, direct revenues from patient care (third flow of funds) are relevant as a source of income.

The financial management is aimed at the effective functioning of the teaching hospitals, where continuity and stability are the important principles. This ensures that there is always sufficient room for high-quality education and educational support. There is no profit objective. Improper competition with private veterinary clinics is prohibited. For example, the faculty could use the cost advantage to charge lower prices for veterinary medical services (because the infrastructure is largely paid for with public money). That, however, is not allowed.

Degree of autonomy of the VEE on the financial process

Within the general frameworks of laws and regulations (for higher education), university strategy and policy, and accounting regulations, the VEE has considerable autonomy to spend the available resources. The VEE itself draws up a strategic plan that guides the interpretation of the core tasks of education, research, patient care, and related support. The VEE can determine to a great extent how the resources are allocated and adjust it annually if desired or necessary. The planning and control cycle, with accountability and frequent, regular audits, can be seen as a test to determine whether the VEE is conducting an efficient, effective and lawful financial policy. In addition, the Faculty Council must approve the financial policy. Because of the checks and balances present, there is thus 'controlled autonomy'.

Standard 2.3: ***Resources allocation must be regularly reviewed to ensure that available resources meet the requirements.***

List of the ongoing and planned major investments

In the upcoming years, Utrecht University has planned several major investments in the infrastructure of the VEE. These include a new main building for the VEE, replacing two old buildings, as well as a new education and research facility for farm animals that will be built near our teaching farm. The expected delivery of the education and research facility is 2026 and that of the new main building in 2031.

The costs of construction and related financing and depreciation are borne by Utrecht University. The VEE is responsible for purchasing equipment and user facilities. The VEE will use its accumulated financial reserves for this purpose. Multi-year financing plans will be drawn up for this purpose. The continuation of the VEE's core mission and functioning is guaranteed throughout the entire process.

Prospected expenditures and revenues for the next 3 academic years.

Table 2.3.1 Overview: income and expenditures 2024-2026			
	Budget 2024	**Budget 2025**	**Budget 2026**
Income			
Government funding	59,321,370	59,171,487	59,866,781
Housing costs budget	15,851,838	15,851,838	15,851,838
Transfer 'Zwaartekracht'grant	-2,496,734	-2,571,971	-2,571,971
Free Budget (Executive Board UU)	418,000	418,000	418,000
Internal revenues	349,754	343,226	343,226
External revenues	41,150,503	41,150,303	41,150,303
Other revenues	3,284,374	3,284,374	3,284,374
Total income	**117,879,104**	**117,647,257**	**118,342,551**
Expenditures			
Personnel costs	72,917,915	72,917,915	72,917,915
Other personnel costs	1,161,527	1,161,527	1,161,527
Housing costs	25,452,000	25,452,000	25,452,000
Material costs	20,394,002	18,894,002	18,894,002
Depreciation	1,211,894	1,211,894	1,211,894
Total expenditures	**121,137,339**	**119,637,338**	**119,637,339**
RESULT	**-3,258,235**	**-1,990,082**	**-1,294,788**

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

There are multiple parties involved in the VEE's financial policies. In both resource allocation and budgeting and in accountability through the planning and control cycle, the Faculty Board, the departmental boards and the Faculty Council all have their own role and specific responsibility. A mandate regulation[19] states which authorizations executives and budget owners have on behalf of the Faculty Board. Whether it concerns regular expenditures, investments or claims on the reserves, consultation and coordination are always necessary and formally regulated (partly in legislation). In this, the Dean has overall final responsibility.

In managing financial procedures, there is regular and frequent coordination with the Executive Board, the highest administrative body within Utrecht University, with the VEE providing periodic reports. Use of reserves always requires the approval of the Executive Board. The financial policy of the University itself is monitored by the University Council (participation), audit committees and the Supervisory Board.

19 *Regulations regarding the organisation of governance - Organisation - Utrecht University (uu.nl)*

The annual planning and control cycle (see global financial process) also provides the framework for communication with employees, students and the Faculty Council about the spending of funds. The Faculty Board periodically consults with department boards and heads of departments in the support organization (FOO) to check whether the use of resources still corresponds with the plans made, whether adjustments are needed, whether investments are desired, etc. Results of evaluations, new insights or changed needs are involved in the preparation of annual plans (within the strategic multi-year perspective). In this way, there is an ongoing and open dialogue between stakeholders.

Comments on Area 2

- The VEE's governance on finances is largely bound by rules from Utrecht University.
- The VEE is currently working towards approaching their finances and budgeting from a multi-year perspective. This will allow the VEE to better absorb any potential fluctuations in the budget.
- Costs related to the development and realization of the VEE's new accommodations are covered by Utrecht University.

Suggestions for improvement in Area 2

- The VEE is currently working on more transparency in how the funding regarding education and research are allocated on a 'lower level'. At the moment, course coordinators or principal investigators have suboptimal insight in the allocated budget. Therefore, the Faculty Board is currently discussing with the heads of department on how to come to a more transparent system for allocating funds to education and research.

Area 3. Curriculum

Standard 3.1 ***The curriculum must be designed, resourced and managed to ensure all graduates have achieved the graduate attributes expected to be fully compliant with the EU Directive 2005/36/ EC (as amended by directive 2013/55/EU) and its Annex V.4.1. The curriculum must include the subjects (input) and must allow the acquisition of the Day One Competences (output) listed in the ESEVT SOP Annex 2.***

Description of the educational aims of the VEE and the general strategy for design, resources and management of the curriculum

The VEE aims to teach students through the application of state-of-the-art pedagogical approaches in a safe and inspiring learning environment. Competence-based education is firmly aligned with our educational philosophy and forms the backbone of both the Bachelor and Master programme. The AAVMC's Competency-Based Veterinary Education framework[20] provides the foundation for programme outcomes. Members of the VEE played key roles in the development of this framework, based on our expertise in educational scholarship in veterinary medicine[21].

Design

The entire curriculum is grounded in our educational philosophy, which is described in detail in Appendix 3.1.1 From an outcomes-based perspective, the curriculum balances knowledge transfer (through lectures, guided self-study and self-study materials), application of knowledge and achievement of understanding (through seminars and group assignments), and development and application of knowledge and skills (through practicals and clinical rotations). Students are trained to acquire and apply knowledge and understanding, make judgements, and develop relevant skills and attitudes as a strong foundation to enter the veterinary profession.

The VEE's overall educational philosophy encompasses eight guiding principles (see Area 1 and Appendix II. for a detailed description). These guiding principles are translated throughout the curriculum from high-level curriculum design, through to the level of individual courses. This is done by defining programme learning outcomes (PLOs) that align with the learning objectives, the learning activities and assessment activities for each individual course. An important guiding principle for achieving this is constructive alignment. The VEE's assessment programme for the entire curriculum is outlined in Area 8.

Resources

1. Teachers: The VEE's teaching staff has a strong background in specific areas of expertise. Furthermore, teaching staff are trained in pedagogics and have continuous access and encouragement to undertake further didactical training (see Area 9).
2. Facilities: The VEE's facilities include the teaching hospital for companion animals and horses, the on-site teaching farm, an on-site ruminant clinic, necropsy halls, dissection halls, lecture theatres, seminar rooms, self-study facilities, and skills-lab facilities for teaching while reducing use of animals where appropriate. Furthermore, Utrecht University offers a wide range of facilities (e.g., library, sports, day care) for teachers and students within the broad university community[22]. The Utrecht University Library provide a wide range of services to the VEE's staff and students, including providing assistance in searching literature, applying digital technology, working with research data (see website for more information[23]). The University Farm Animal Practice (ULP)

20 *Competency-based Veterinary Education, www.cbve.org*
21 *Bok, H. Competency-based veterinary education: an integrative approach to learning and assessment in the clinical workplace. Perspect Med Educ 4, 86–89 (2015). https://doi.org/10.1007/s40037-015-0172-1*
22 *https://www.uu.nl/en/organisation/campus/facilities*
23 *https://www.uu.nl/en/university-library*

offers students a high farm animal case load (individual and farm visits) for large and small ruminants, as well as for swine in the Master programme (see Areas 4 and 5)

3. Extramural network: The VEE has a large network of extramural veterinary practices that participate in the curriculum; see Standards 3.5-3.7 for a detailed description of how the network is organised and educational quality maintained.
4. Finances: As stated in Area 2, the VEE funds educational activities from the first funding stream. Based on the university distribution model, the VEE receives increased funds for education compared to other faculties due to the practical, clinical component of the curriculum. The amount of funding from the government is determined by the amount of granted ECTS and diplomas issued. In addition, the VEE receives funding for maintaining the clinical facilities which is indexed annually. In the current distribution model of the VEE, each course is funded based on the number of participating students, the number of ECTS and the amount of teaching hours of the course. The amount is determined and paid retroactively each year. Based on the affiliation of the teachers, the money is distributed among the departments. The VEE is currently in the process of updating the distribution model. In the new model, funds will be distributed based on the number of participating students, the number of ECTS and an intensity factor based on the course attainment levels. This updated model will be implemented in the 2026 financial year.

Management

The VEE's educational management, as well as its quality control cycle which is based on the PDCA-cycle, is described in detail in Area 1.

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

The legal requirements of the veterinary medicine programme in the Netherlands are equal to the EU requirements, as in EU Directive 2005/36/EC (as amended by directive 2013/55/EU) and its Annex V.4.1. There are no additional requirements from the Dutch authorities, thus the curriculum can be developed in full compliance with the EU directive.

Higher education in the Netherlands: research-oriented higher education

In the Netherlands, veterinary medicine is a university programme. Nationally, there are two types of higher education: higher professional education (hoger beroepsonderwijs, HBO); and research-oriented higher education (wetenschappelijk onderwijs, WO). Veterinary medicine falls into the latter category.

NVAO-accreditation[24]

The VEE is accredited at the national level by the Dutch-Flemish Accreditation Organisation (Nederlands-Vlaams Accreditatieorganisatie, NVAO). Accreditation by the NVAO takes place every six years, with the most recent accreditation in 2021. The NVAO accreditation system is based on respect for the autonomy of the institution that bear primary responsibility for their quality. It begins by considering the philosophy, aims, and objectives of the institution or programme without assessing their content. The fundamental idea is that both students and staff play a crucial role in substantiating the education and programme, essentially acting as 'owners'. However, the accreditation system also recognises that society at large is a stakeholder in education, and that accessible and high-quality higher education is indispensable for the sustained and balanced development of modern society, from both economic and societal perspectives. The NVAO evaluates and accredits all Utrecht University study programmes.

AVMA-accreditation

In addition, the VEE has been accredited by the American Veterinary Medical Association (AVMA)

24 https://www.nvao.net/en/procedures/the-netherlands

since 1973. The most recent visitation of the AVMA was in May 2023. The visit resulted in a visitation report which commended the quality of the teaching facilities, the competency-based education including programmatic assessment, the development-oriented and open culture, and the bespoke nature of our education[25].

Description of how curricular overlaps, redundancies, omissions, and lack of consistency, transversality and/or integration of the curriculum are identified and corrected
Identifying overlaps, inconsistencies, omissions, etc. is an integral part of the VEE's quality assurance protocol. Through frequent course evaluations, feedback from teachers and/or students, and through the Curriculum Committee, there is continuous attention to educational quality. The Curriculum Committee (and the current implementation team) advises the directors of education on how overlaps, inconsistencies or omissions in the curriculum can be best addressed.

Through course evaluations, students are asked to provide feedback on a wide range of topics including any overlaps or omissions, and consistency. The survey results are discussed during periodic meetings, between course coordinators and student representatives, to ensure that any issues are identified and managed as they arise. If overlaps or inconsistencies are identified, directors of education, educational coordinators and relevant course coordinators discuss and resolve such issues. At the start of each course, course coordinators make changes based on feedback and communicate such actions to students in their introductory lecture. Furthermore, a full programme evaluation is performed every three years. In addition to the current students, programme evaluation data is also sought from VEE alumni.

Bachelor programme
During the curriculum design for the recently optimized Bachelor programme (first cohort started in Sep. 2022), specific attention was paid to the coherence and alignment of courses. During the development of this curriculum (see Appendix II.A), the directors of education, education coordinator, course coordinators, teaching staff, and education planners discussed the plans and potential areas that would need specific attention. These discussions included potential overlap in teaching material across courses/modules, identifying any potential omissions, study load for students, and workload for teachers. When overlap or omissions in teaching material was flagged, the course coordinators involved in the respective courses discussed the issue and how to resolve it. Implementation of the revised curriculum is guided by the implementation committee consisting of members with above mentioned expertise.

Master programme
The first cohort of students in the current Master programme enrolled in September 2022. In developing this revised programme, specific attention was paid to ensure consistency in the curriculum, including addressing overlaps, omissions, redundancies and integration. A large team of educational staff members engaged in discussions around defining the ambition, objectives, goals, and design of the revised Master programme (see Appendix 3.1.2), including ensuring that the cross-species parts of the programme were sufficiently represented but did not introduce redundancies into the various species-specific parts of the curriculum. During the implementation of the revised programme, course coordinators and the Curriculum Committee held frequent meetings to evaluate both specific courses, as well as the overall programme, more holistically. See also Area 1, Standard 1.4.
The VEE's curriculum consists of a six-year programme, divided into a three-year Bachelor programme and a three-year Master programme. Each year consists of 60 ECTS, which is equivalent to 40 weeks of 40 hours of study. Overviews of the curricula can be found in Appendices 3.1. Curriculum Digest Bachelor and 3.1.4. Curriculum Digest Master. The Master programme consists of

25 *https://www.uu.nl/en/organisation/faculty-of-veterinary-medicine/education* three parts: 1) the Uniform Phase, 2) the Differentiated Phase including a Master's thesis, and 3) the Elective Phase. The information requested in Table 3.1.4. cannot be provided as there is a large variation of curriculum hours and educational activities in the different elective courses. Table 3.1.5. is not included in the SER as an extensive overview of the elective courses is provided in both curriculum digests.

Table 3.1.1. Curriculum hours in each academic year taken by each student
Table 3.1.2. Curriculum hours taken by each student
Table 3.1.3. Practical rotations under teaching staff supervision (excluding EPT)
For these tables, see Appendix VI.

Description of the core clinical exercises/practicals/seminars prior to the start of the clinical rotations
Throughout the entire curriculum, students attain clinical knowledge, skills and competences in order to enter clinical practice. The Skills Lab is an important facility that offers students opportunities to engage in hands-on, (un)supervised, training using mannequins and simulators and allows students to be adequately prepared before entering their clinical rotations.

Bachelor programme
In the Bachelor programme students are prepared to successfully embark on their clinical rotations during the longitudinal course The Veterinary Clinician (LVC). In this course, students become acquainted with the natural behavior of various animal species and how to handle them. Students learn how to perform and gain insight into all aspects of clinical and additional investigations related to the organ-directed courses. Also, Veterinary Clinical Reasoning (VKR) is covered within LVC. A detailed description of the learning objectives per year is listed in the course study guide (see Appendix II.A. for a full description of all courses in the Bachelor programme).

Master programme
During the Master programme, several courses are specifically designed to provide the students with a solid foundation prior to the start of the clinical rotations. These are (see also Appendix II.B. for a detailed description for each course):

- Master's introduction course
- Paraclinical and cross species education
- Basic rotations in Veterinary Public Health, Farm Animal Health, Companion Animal Health and Equine Medicine
- Preclinical course Companion Animals
- Preclinical course Equine Medicine
- Preclinical training during Farm Animal Health courses

Description (timing, group size per teacher, ...) of the core clinical rotations and emergency services (both intra-mural VTH and ambulatory clinics) and the direct involvement of undergraduate students in it (responsibilities, hands-on versus observation, report writing, ...)
The schematic representation of the Master programme in Figure 3.1.2. provides an overview of the timing of the core clinical rotations and emergency services. In alignment with the educational philosophy, students are essential members of the clinical team within the VEE's teaching hospitals. As a result, during the core clinical rotations and emergency services students are actively involved in patient care and will receive increasing responsibilities as they progress in their learning journey. In the curriculum digest (Appendix II.B) a detailed description is provided on the learning objectives.

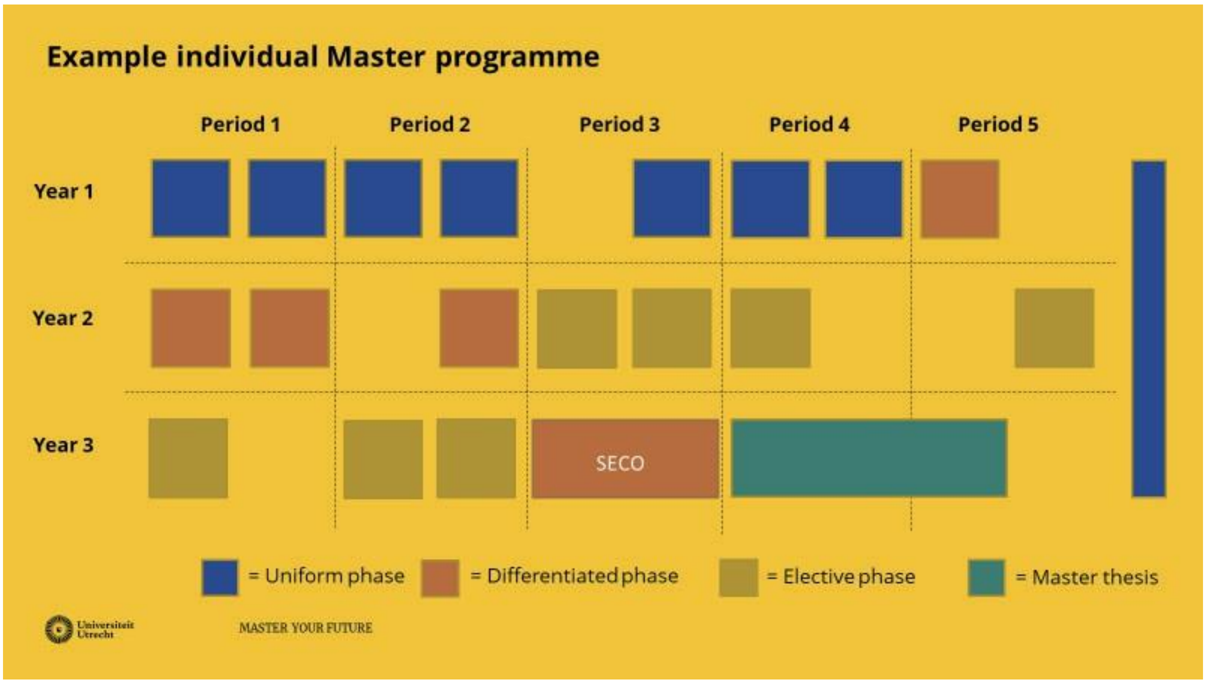

Figure 3.1.2. Schematic overview of the Master programme

<u>Clinical rotations in the uniform phase</u>

All rotations in the uniform phase have a duration of five weeks and are offered ten times a year to groups of 24 students. During these clerkships, the group is further sub-divided into smaller groups. During these rotations, students work in teams with other more experienced students, all under the supervision of teaching staff. A general guideline is that students' responsibility and active involvement in clinical cases increases over the year(s).

During the uniform course Paraclinical and Cross-Species Education, students perform post-mortem investigations and write reports in small groups (approx. four students per patient). Microbial and other lab diagnostics and clinical pathology labs are also performed in small groups depending on the capacity. During the basic rotation Farm Animal Health, group size varies per topic (3-12). For instance, during the 'piglet-week' the group size is three students per teacher. During the basic rotation Equine Medicine, the first week focuses on preparing students with the knowledge and skills required to participate in the equine clinic, with most training carried out in groups of 24 students. For practical sessions, group size is limited to four students. During the four weeks in clinic and ambulatory clinic, group size is six students per teacher.

To engage in peer-assisted learning during the basic rotations in Companion Animal Medicine and Equine Medicine, students are always part of a clinical team consisting of students that have different levels of expertise (e.g., students from Master's Year 1, Year 2 and Year 3). These teams are always supervised by teaching staff. The basic rotation in Companion Animal Medicine also starts with a so-called 'pre-week' consisting of theoretical sessions and practicals. This is followed by four weeks of clinical teaching, for which the students are divided into four groups of six students.

During their uniform phase, students engage in a junior extramural clerkship in a veterinary primary care practice (JECO). The clerkships last five weeks and, every Thursday, all JECO students return to the VEE from their individual practice to engage in supervised, reflective peer-group meetings. In each veterinary practice, a well-equipped and trained qualified person (see Area 9) is in place to guide, educate and supervise the student.

Clinical rotations during the differentiation phase (Years 2 and 3)

During the differentiation phase, students take part in clinical rotations in their chosen animal species track. Similar to the uniform phase, students are divided in small groups of approximately four to six students. These groups are also heterogenous with respect to the students' level of experience (i.e., each team consist of approximately two students from the uniform phase, two from the differentiation phase and two students from electives). As more experience is gained, students' responsibility, and subsequently their hands-on involvement in the clinical team, increases.

During their ten-week (individual) senior extramural clerkship (SECO) in a veterinary primary care practice, students also participate as a team member. This time, however, as they are in their final year, they have more responsibilities, independence, and active involvement than JECO students. These students also return to the VEE each Thursday to engage in reflective sessions. In the SECO, specific attention is paid to basic clinical skills, basic surgical skills, dentistry, nutrition, ethical dilemmas, veterinary public health, and practice management.

Description (timing, group size per teacher, ...) of the teaching in slaughterhouses and in premises for the production, processing, distribution/sale or consumption of food of animal origin

Bachelor programme

Third year course Veterinary Public Health (5.5 ECTS) focusses on the basic concepts of process control in safe food production chain and the role of veterinarians. Subjects include microbial and non-microbial cycles that may influence humans, animals, or the environment. Attention is paid to relevant zoonoses in companion animals and livestock farms not primarily operated as production systems. Aspects of animal welfare and public health are dealt with in their social context. Processing techniques for animal-based foods in relation to food hygiene, preservation and storage are discussed. Small group teaching size is 25 students.

Master programme

In the uniform phase, all students follow the basic rotation in Veterinary Public Health which includes teaching in slaughterhouses. This rotation uses an integrated approach to discuss the various dimensions of public health, animal welfare and ethics and law through a real-life case study. This is embedded in an introductory week covering the basics of veterinary public health (direct and indirect zoonoses, food safety, food chain quality), animal welfare, laboratory animal science, ethics, law, biosecurity and epidemiology using evidence-based veterinary medicine. This theoretical embedding is followed by field visits in weeks 2, 3 and 4 to a slaughterhouse, laboratory animal site, an animal shelter and a children's/care farm, respectively. The group of students taking the whole course in week 1 (max. 24 students) is split into three groups of eight students in weeks 2, 3 and 4 that alternately perform the three site visits. During these visits, students determine public health risks including food safety monitoring and assessment, assess the acute welfare status of the animals (e.g., presence of injuries, abnormal behaviour, etc.), relate the potential animal welfare risks to their environment/management, assess biosecurity and check these against laws and regulations. In the slaughterhouse, antemortem and post-mortem inspection, slaughter hygiene and chain responsibility are assessed based on checklists and subject lists provided to the students for this purpose. In addition, sources of information will be made available to the students such as data sets, farm analyses, etc., so that these can be included in assessing and determining risks. Students are also trained in how to slaughter a cow (shooting mask and exsanguination) through a practical session. In the slaughterhouse each student can apply the shooting mask on live animals, following instruction and under supervision.

The slaughterhouse visit specifically addresses the role and actions of a veterinarian in the context of antemortem and post-mortem inspections and emergency slaughter procedures. Students write an individual narrative review or evidence-based case report on a topic related to one of the visits. The topic will be chosen in week 2. In week 5, students complete their assignment and present their findings/analyses to each other and engage in peer feedback. Students provide feedback in the form of written analyses and opinions to the management of the visited sites.

Description of the selection procedures of the Electives by the students and the degree of freedom in their choice (e.g., what happens when too many students select one specific track)

Bachelor programme

In the Bachelor programme, electives can be taken in years 2 (15 ECTS) and 3 (7.5 ECTS). Students can follow electives within the VEE, within Utrecht University at other faculties, and outside Utrecht University. The selection procedures for the Bachelor's elective courses are outlined on the website[26]. The Bachelor's Board of Examiners (EC) determines whether a course is to be accepted as an elective course based on the following criteria: 1) the course is at university level, 2) there is no (substantial) overlap with compulsory education in the Bachelor programme and/or in previously followed elective courses by the student, and 3) assessment is applied.

Master programme

In the Master programme, a total of 52.5 ECTS is allocated for electives. 15 ECTS must involve clinical courses, and, of the remaining 37.5 ECTS, at least three courses (22.5 ECTS) must involve courses within the Life Sciences (i.e., Veterinary Medicine, Medicine, Sciences. The requirements for electives are available online[27]. The Master's Board of Examiners (EC) determines whether a course is to be accepted as an elective course based on the following criteria: 1) the course is at university level, and 2) there is no (substantial) overlap with compulsory education in the Master programme and/or in previously followed elective courses by the student.

Students can pre-register for elective courses with a first-, second- and third-choice elective. If there are too many students pre-registered for an elective, then a lottery takes place. Students who are not selected for the first-choice elective are then placed in their second- or third-choice elective. Following the pre-registration, regular registration opens, and students can register for any electives until full capacity for an elective is reached.

Description of the procedures (e.g., logbooks) used to ascertain the achievement of each core practical/clinical activity (pre-clinical, clinical, ambulatory clinics, EPT) by all students

Bachelor programme

In the Bachelor programme, pre-clinical skills training is organised within the longitudinal course The Veterinary Clinician (see Appendix II.A. for a detailed description). The aim of this course, which is assessed by a second- and third-year Objective Structured Clinical Examinations (OSCEs), is to support students to achieve all relevant clinical activities at this point in training.

Master programme

In the Master programme, each student has a logbook (i.e., electronic portfolio 'Scorion', see Area 8 for detailed information) in which their clinical performance in relation to the Programme Learning Outcomes (i.e., competencies) is recorded. During their core clinical rotations, the ambulatory clinics, the extramural rotations and the electives, each student has ample opportunities to practice all relevant clinical activities in order to develop towards graduation level. This is assessed through the VEE's assessment programme that is grounded in the principles of longitudinal and programmatic assessment (see Area 8 for a detailed description).

26 https://students.uu.nl/dgk/diergeneeskunde-ba/onderwijs/studieprogramma/profileringsruimte (in Dutch)
27 https://students.uu.nl/dgk/diergeneeskunde-ma/onderwijs/studieprogramma/profilering (in Dutch)

Standard 3.2: ***Each study programme provided by the VEE must be competency-based and designed so that it meets the objectives set for it, including the intended learning outcomes. The qualification resulting from a programme must be clearly specified and communicated and must refer to the correct level of the national qualifications framework for higher education and, consequently, to the Framework for Qualifications of the European Higher Education Area.***

The VEE must provide proof of a QA system that promotes and monitors the presence of a teaching environment highly conducive to learning including self-learning.

Description of how the VEE ensures that the study programmes meet the objectives
The Programme Learning Outcomes (PLOs) as described for both the Bachelor's and the Master programmes serve as the foundation on which the entire curriculum is build. During the development of both programmes, a backward design approach was used in which, starting from the PLOs, teaching, learning and assessment activities were identified. For each individual course, learning objectives are aligned with the overall PLOs. Specific attention has been paid to ensure a logical build up with respect to the level of learning objectives (i.e., Bloom's Taxonomy). Appendix II.B provides an overview on how the learning objectives per course relate to the PLO for both the Bachelor and Master programmes. Furthermore, it provides an overview of how the PLOs relate to the ESEVT Day One Competences.

Description of how the VEE ensures/promotes a teaching environment conducive to learning
The educational philosophy of the Bachelor and Master programmes is based on the Utrecht University Education Model[28] that has four main principles:
1. A clear distinction between the Bachelor's and Master's phases
2. Flexibility and freedom of choice
3. Personal and activating
4. Professional development of lecturers

These principles were translated into the VEE's educational philosophy as previously described in standard 3.1. A distinct feature in this philosophy relates to the promotion and fostering of students' proactive behaviour in their learning journey gaining insight on their strengths and weaknesses during training. They should have ownership in their development and feel intrinsically motivated to use their respective programme to the best of their advantage. To foster motivation, the VEE invests in promoting the autonomy of students, and in making them feel at home and part of the VEE's community. As described in Area 9, the VEE's teaching staff receive training with respect to the Utrecht University Education Model and how to apply this, in concordance with the VEE's educational philosophy in daily practice.

Competency-based education and programmatic assessment
In 2007, the VEE implemented the Bachelor and Master programme following a competency-based approach, which is continued in the revised Bachelor and Master programmes. In a constructively aligned combination of knowledge transfer (through lectures, guided self-study, and self-study materials), application of knowledge and achievement of understanding (through seminars and group assignments), and development of skills and attitudes (through practical and clinical rotations), students are trained and assessed to acquire and apply knowledge and understanding, make judgments, and develop the relevant competencies (as described in the Programme Learning Outcomes, see appendix II.B) required to enter the veterinary profession. In the Master programme, the VEE implemented a programme of assessment based on the principles of longitudinal and programmatic assessment (see Area 8 for more information). This programme aims to create an

28 https://www.uu.nl/en/education/education-at-uu/the-educational-model

educational environment in which the provision of feedback is fostered, empowering students to learn from mistakes and engage in reflective behaviour. The tutor fulfills an essential role in supporting and fostering students in this behaviour, stimulating students to self-regulate their learning.

Workplace-based learning

An essential part of the Master programme are the clinical rotations. Although there are small differences between the animal-specific courses, they are all organised within the authentic clinical work environment. In small groups, students work side-by-side with teaching staff (e.g., specialists, veterinarians, residents) and other essential members (e.g., nursing staff) and participate in daily patient care by working up patients.

Flexibility and freedom of choice

Both the Bachelor and the Master programmes have a substantial amount of elective space. In the differentiation phase of the Master programme, students also have the opportunity to choose one out of three animal-species tracks. This allows students to take ownership of their learning trajectory and choose courses that are in alignment with their ambitions and talents.

Preparation for the labour market

Bachelor programme

Preparation for the labour market is embedded in longitudinal course ‘The Veterinary Professional’ (LVP). Reflection on personal qualities in Year 1, reflection on motivation and exploration of career possibilities in Year 2, and exploration of matching career opportunities to personal competencies, with orientation on study and profession. Also, career opportunities are discussed with students during the individual student-tutor LVP-meetings.

Master programme

Students are prepared for the labour market during intra- and extracurricular activities. At least 22.5 ECTS of the Master programme is spent on extramural rotations. Students may also opt for extra internships (also see Appendix II.B) in their elective space. The ‘Thursday afternoon’ sessions also have labour market orientation activities, such as:
Vetlink: the career-event for Master students that is organised by the Veterinary Students Association (DSK). During this afternoon, a variety of relevant stakeholders are present at the VEE to provide information about future career challenges and possibilities.
Van ‘Bul tot Baan’: an annual event held at the VEE in close collaboration with the Royal Dutch Association for Veterinary Medicine (KNMvD) and the DSK. A variety of workshops (e.g., practice management, communication skills, resilience, time management) are organised to prepare students in bridging the gap between study and veterinary clinical practice.

Besides these activities, the KNMvD offers student membership at a reduced fee. Student members have access to all KNMvD’s relevant services, such as its job agency. This association also manages a database with job opportunities in the veterinary sector for which students and (recent) graduates may apply.

Equality, Diversity, and Inclusion

Utrecht University is working towards a better world and sees equality, diversity, and inclusion (EDI) as a central starting point for the policy domains of education, research, and impact. The importance of the topic is reflected in our actions focusing on creating an open and inspiring community, where everyone can feel at home, with opportunities for everyone, and with space for new forms of thinking, learning, and working.

Utrecht University believe that diversity of students and employees enrichens the academic debate and that everyone deserves equal opportunities. We see it as our social responsibility to live up to this ambition. Therefore, a university-wide diversity programme has been launched. In this programme, in which VEE participates actively, the following objectives for the period 2021-2025 are defined:

- Increasing awareness regarding equality, diversity, and inclusion within and outside the university.
- Actively supporting and promoting equality, diversity, and inclusion.
- Making students and employees feel welcome and valued at the university.
- Stimulating an inclusive, open and safe learning and working environment.
- Monitoring the progress of these actions.

The EDI programme is coordinated by the UU Steering group. The VEE's EDI committee consists of staff and student members representing the various groups and perspectives in the organisation. The chair of the VEE EDI committee is member of the UU Steering Group.

Each year, the committee determines three focus areas that are in line with the objectives of the University. The VEE's current focus areas are Inclusive Education, Accessibility and Cultural Diversity. The committee translates initiatives developed at the UU level to tailor made actions within the VEE. For the upcoming period the following actions are defined:

Inclusive Education
The VEE participates in the project 'Intercultural Competences: Building Bridges to Connect Worlds'. The aim of this project is to develop training programmes for students and (teaching and support) staff in the VEE to enhance intercultural competences.
Further, students with learning disabilities have access to additional educational resources, such as extended test time, oral exams, among others. Many students have a personal programme with reasonable adjustments to their needs, without losing sight of the qualification criteria.

Diversity
The VEE's communication to potential students is adapted so that a more diverse population feels addressed. Currently, the VEE is evaluating its selection and admission procedures to establish a more diverse student population. The VEE offers an introduction programme (the so-called KiCKstart programme) for first-generation students and all other students who may face barriers in the step into academia. For the gender balance in staff, the university has set the target of 40-60% women in all positions at all faculties. This topic has priority and, already, there has been an increase from 39% (2021) to 42% (2023) for female professors and from 23% (2021) to 46% (2023) for female associate professors.
At Master programme level, students with different educational backgrounds are encouraged to enrol. Recently, Animal Sciences undergraduate students from Wageningen University have been permitted to enter the Master programme after completion of a preparation programme of 30 ECTS credits at the VEE. Moreover, undergraduate students from EAEVE- and AVMA-accredited schools have access to our Master programme after completion of a preparation programme. For veterinarians from non-EAEVE and non-AVMA-accredited schools, the VEE is establishing a remediation programme to prepare them for practising in the Netherlands and Europe.

Accessibility
The VEE has, in accordance with university regulations, taken the necessary steps to ensure that students with disabilities have easy access to all teaching facilities.

Under the Participation Act (in force since 2015), the VEE endeavours to create workplaces for people who cannot independently earn the legal minimum wage. At this moment, the VEE has 21 employees appointed under this Act.

Description of how the VEE ensures, encourages and prepares students for self-learning and lifelong learning.

As previously described, the VEE's educational philosophy is focused on encouraging and preparing student for self-regulated learning and lifelong learning. Besides what is already described, the tutoring system plays an essential role in enhancing this behaviour. From Year 1 of the Bachelor programme to Year 3 of the Master programme (six years), every student is assigned to a tutor, which is a staff member actively involved in the programme. Depending on the year of study, tutor and student meet several times per year for individual student-tutor meetings. Based on the personal development plan, prepared by the student in advance, they discuss progress, identify possibly issues and challenges, and discuss future learning goals.

With the goal of promoting students' self-regulated learning within the clinical environment (i.e., Master programme), an e-learning is offered in the third year of the Bachelor programme. In this e-learning, students learn about programme outcomes and competence domains, about self-regulated learning, professional development plans and learning goals. In addition, the e-learning provides them with a model for structured reflection and a serious game is incorporated to practise and improve reflection skills. In the first year of the Master programme, students are offered a number of e-learnings in which peer group reflection is explained and taught. Across four group meetings, students subsequently learn to perform peer group reflection effectively. As reflection is an important skill in self-regulated learning, students are supervised throughout the entire six-year curriculum by trained tutors whose main task is to deepen the student's reflection. In the context of competency-based education and programmatic assessment, starting in the first Master's year, students are guided in the preparation of personal development plans in which all competencies must be addressed on a regular basis. In the Master programme, the student makes such formal plans at least twice a year.

Veterinary professionals sometimes participate in continuing education courses together with the veterinary students. These professionals serve as role models for the students with respect to their engagement in lifelong learning. E-modules, which are frequently used in teaching for professionals, familiarises students with this format. Finally, the flexibility in having ownership of their own learning trajectory within the elective space encourages students to seek out educational opportunities that either follow their own interests or fill in gaps they perceive in their own knowledge and skills.

Standard 3.3 ***Programme learning outcomes must:***

- ***ensure the effective alignment of all content, teaching, learning and assessment activities of the degree programme to form a cohesive framework***
- ***include a description of Day One Competences***
- ***form the basis for explicit statements of the objectives and learning outcomes of individual units of study***
- ***be communicated to staff and students***
- ***be regularly reviewed, managed and updated to ensure they remain relevant, adequate and are effectively achieved.***

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

Both the Bachelor and Master programmes have recently been revised. For the Bachelor programme, this was organised as a bottom-up activity, in which teachers and others involved in education were important stakeholders. The curriculum was optimised to reduce the study load and to increase feasibility for students, allow for more interdisciplinary training opportunities, and increase alignment with the Master programme. The curriculum is under constant monitoring by a Curriculum Committee (also see standard 3.1)

The Master programme has also recently been revised. A committee of teachers, students and education professionals was convened to construct a new framework for the programme based on a report of the consultation of alumni and other relevant veterinary professionals. A project group then took up the design and development of the programme (i.e., learning goals, assessments, etc.) in strong collaboration with teaching staff. The implementation of the revised programme is under supervision of an implementation committee chaired by the Master programme's Director of Education. Structural quality assurance of the programme following implementation is performed by the Curriculum Committee under supervision of the Director of Education (also see Standard 3.1 and Area 1).

Description of how the VEE ensures that the learning outcomes fit with the ESEVT Day One Competences

The Programme Learning Outcomes as described for both the Bachelor and the Master programmes serve as the foundation on which each curriculum is build. In the development of both programmes, a backward design approach has been used in which, starting from the PLOs, teaching, learning and assessment activities were identified. Appendix II.B provides an overview on how the learning objectives per course relate to the PLO for both the Bachelor and Master programmes. Furthermore, it provides an overview of how the PLOs relate to the ESEVT Day One Competences.

Description of how (procedures) and by whom (description of the committee structure) the learning outcomes are decided, communicated to staff, students and stakeholders, assessed and revised

Bachelor & Master programmes

The learning outcomes are decided in an active exchange between the Directors of Education, the curriculum committees, course coordinators and teaching staff. These are supported by education specialists. When significant revisions to the learning outcomes are envisioned, meetings are held with the relevant stakeholders and discussed in the Board of Studies. The Director of Education holds the mandate to decide on the learning outcomes for the courses within their respective programme. Learning outcomes are communicated through study guides, Osiris (see Area 6), dedicated teacher meetings, and through meetings with teaching teams.

Standard 3.4: *The VEE must have a formally constituted committee structure (which includes effective student representation), with clear and empowered reporting lines, to oversee and manage the curriculum and its delivery.*

Description of how (procedures) and by whom (description of the committee structure) the core curriculum is decided, communicated to staff, students and stakeholders, implemented, assessed and revised

The VEE's organisational structure is described in Area 1. An organisation chart can be found in Appendix 1.2.1. All VEE's study programmes, including the Continuing Professional Education programme, have a Director of Education, who is responsible for the entire curriculum and its overall quality. Any substantial changes to the core curriculum have to be supported by the Director of Education. The Director of Education needs to consult the Board of Studies and the Education Committee to propose and discuss the change. Both the Board of Studies and the related Education Advisory Committee are advisory bodies for educational matters and provide feedback to the Director of Education. Both bodies also provide advice to the Vice Dean for Education who is mandated by the Dean to decide on significant adjustments to the core curriculum.

Standard 3.5: ***Elective Practical Training (EPT) includes compulsory training activities that each student must achieve before graduation to complement and strengthen their core theoretical and practical academic education, inter alia by enhancing their experience, professional knowledge and soft skills.***

Extramural practical training (EPT) in the Master programme is divided into two courses: the Junior Extramural Clerkship (JECO) and the Senior External Clerkship (SECO). In both the JECO and SECO, the emphasis is on participating and gaining experience in a veterinary practice with first opinion patients. This takes place under supervision of a qualified veterinarian. The JECO has a duration of five weeks (7.5 ECTS), and the SECO 10 weeks (15 ECTS).

During the JECO, students spend a minimum of 16 days on-site in their veterinary practice. Students can choose out of a list of available extramural practices during their preferred time period. This list is distributed to eligible students, who decide together which student goes to which practice. In the event students are unable to collectively decide, they discuss with the Coordinator Extramural Education. To participate in the SECO, students need to have completed their animal specific courses in the differentiation phase. As a result, SECO students will experience increased independence and responsibilities within the clinical team. The first students are due to enrol in the SECO from September 2024 onwards. The placement procedure for SECO is similar to JECO.

During the extramural practical training, students primarily encounter first opinion patients. The VEE’s university hospitals mainly provide secondary and tertiary care (except for Equine Medicine, Exotic animals and birds). Within the VTH it is the ambition to approach every patient as if it was a first opinion patient, providing students with ample opportunities to practise consultation, examination and diagnostic skills. Hence, the EPT is complementary to the core clinical training, as it provides experiences for students within the authentic first opinion context.

Standard 3.6: ***Description of how the EPT providers are linked to the VEE (a copy of one of the agreements to be provided in the Appendices), assess the students and provide feedback to the VEE***

Extramural practical training (EPT) takes place in an extramural practice that is included on the VEE’s list. To be included on the listing, at least one veterinarian in the practice must complete training to qualify as a Supervisor of Extramural Training (DEO). This training consists of two modules that must be completed. The first module comprises of eight hours of study, with six hours of self-study and two hours of online education. Topics addressed include defining the role of the DEO, discussing the JECO/SECO learning objectives, and explaining the assessment system (Scorion). The second module includes live coursework at the VEE and specifically focusses on coaching and feedback within the context of JECO/SECO. Both modules are required for DEOs and can be found on the VEE’s website (in Dutch)[29].

The Coordinator Extramural Education is in close contact with the extramural practices. Before a practice is included on the list, the coordinator contacts the practice and performs a site-visit. Very rarely, if circumstances prohibit a physical visit, this is performed online. The quality criteria for practices eligible to participate in EPT are laid down in an agreement (see Appendix 3.6.1). The week prior to the start of a new round of EPT, the coordinator holds an online Q&A-session with the DEOs

29 https://professionals.uu.nl/nl/cursus/docentprofessionalisering-extern-onderwijs (in Dutch)

to review expectations and answer any questions. This online meeting is especially popular with new DEOs. Instructions on how to use the different assessment forms in the students e-portfolio system (Scorion) are accessible on the virtual learning environment for both students and DEOs.

During the clerkship, students can contact the Coordinator Extramural Education in case of any questions, issues or emergencies that may arise during EPT. For practices supervising students for the first time, the coordinator actively contacts the DEO during the clerkship. In most cases, the DEOs supervising students for a second time are also actively contacted by the coordinator. During the ‘return days’, the cohorts meet and discuss their experiences during the clerkship under guidance of a teacher. This serves both to allow students to learn and reflect on others’ experience in relation to their own and provide the coordinator with valuable information about the quality of the placement. All students are also present for a group discussion and evaluation of the JECO/SECO at the end of the course.
Students also fill in an evaluation form about their experience regarding the placement. Once several of these have been collected (to ensure anonymity) a summary of the findings will be given to the respective extramural practice. As the JECO has just started since last year, feedback to extramural practices has not yet taken place.
Students are assessed by both the DEO and by an internal supervisor at the VEE. The assessment procedure is similar to that used in core clinical training. For a detailed description of this procedure see Area 8.

Standard 3.7: ***Students must take responsibility for their own learning during EPT. This includes preparing properly before each placement, keeping a proper record of their experience during EPT by using a logbook provided by the VEE and evaluating the EPT. Students must be allowed to complain officially and/or anonymously about issues occurring during EPT. The VEE must have a system of QA to monitor the implementation, progress and then feedback within the EPT activities.***

Description of the implications of students in the preparation, recording and assessment of their EPT
In line with the VEE’s educational philosophy, the students themselves bear a large responsibility to engage in learning activities and take ownership of their learning. Before enrolling in their EPT, students formulate their personal learning goals in addition to the compulsory learning goals for JECO and SECO. This is carried out during a supervised introductory meeting at the VEE. Subsequently, students have an intake with the EPT-qualified person, the DEO, with whom they discuss concrete ways to achieve the learning goals. During the JECO, students have to perform specific exercises including noting which type of animals were presented at the practice and why (the reason given by the owner). During the EPT, students need to ask for feedback on their performance from the DEO, but also from the other members of the clinical team they join. The JECO and the SECO both have a mid-term and final evaluation in which the students discuss progress with the DEO. All information is recorded in the relevant JECO/SECO logbook in the e-portfolio.

Description of the complaint process in place concerning EPT
In general, the first point of contact for complaints is the Coordinator Extramural Education. When a student desires to file a formal complaint, the same procedure as described in Area 8 can be followed. There is also a general complaints procedure available for students at Utrecht University.[30]

30 *https://students.uu.nl/en/practical-information/policies-and-procedures/complaints-objections-and-appeals*

Comments on Area 3

- Implementation of the new Bachelor and Master programmes is well underway. Any potential issues and challenges in translating the intended curriculum goals into daily educational practice requires careful monitoring and adjustments in the coming years. So far, with the first two years fully implemented, no major issues were identified. The VEE's research group 'Educational Scholarship in Veterinary Medicine' is closely involved in these developments.
- Within both Bachelor and Master programme specific attention is given to the development of soft skills. An illustrative example is the integration of the veterinary Dialogue Trainer (a simulation tool developed within Utrecht University and currently applied globally) in the students' training in communication. Over the next couple of years, the VEE will continue to further strengthen this programme.
- In line with the VEE's strategic agenda elements in relation to community engaged learning, interdisciplinarity and sustainability, are increasingly incorporated within the Bachelor and Master programmes. This aligns with the Utrecht Education Model that puts emphasis on engaging students in relevant, authentic and current societal challenges.
- The VEE underscores the significant importance of the involvement of the professional field in the Netherlands in the curricula and in preparing graduates to make a successful transition from veterinary training to clinical practice. This is illustrated by the willingness of many veterinary clinics in EPT and also in their commitment in the Veterinary Profession Advisory Board.

Suggestions for improvement in Area 3

- In order to optimize the educational experience for both students and teaching staff, effective communication about the curriculum (e.g., about updates, underlying principles, faculty development) is essential. However, especially for teaching staff also involved in clinical practice and research it is sometimes difficult to prioritize active involvement in this communication. To address this issue, 'booster'-days are currently organized several times per year for specific target audiences (e.g., for bachelor teaching staff, teaching staff involved in clinical rotations).
- Currently what is and can be expected from students during their clinical rotations in the VTH is not fully clear. Views can differ per rotation, resulting in uncertainty among students. To address this issue a working group, consisting of students and VTH teaching staff, established a set of guidelines. In academic year 2024-2025 these guidelines will be implemented.
- The understanding and implementation of EPAs (Entrustable Professional Activities) within the Master programme is not yet optimal. This requires further alignment with the competency-based assessment programme and training for both students and teaching staff.

Area 4. Facilities and equipment

Standard 4.1: ***All aspects of the physical facilities must provide an environment conducive to learning, including internet access at all relevant sites where theoretical, practical and clinical education takes place. The VEE must have a clear strategy and programme for maintaining and upgrading its buildings and equipment. Facilities must comply with all relevant legislation including health, safety, biosecurity, accessibility to people including students with a disability, and EU animal welfare and care standards.***

Introduction

The VEE owns several facilities for education, research, and patient care. The veterinary science campus is located in the Utrecht Science Park, easily accessible by public transport, and consists of numerous laboratories, offices, teaching rooms, lecture halls, two teaching hospitals, a farm animal clinic and a teaching farm.
Off-campus, we have a large farm animal practice (University Farm Animal Practice or ULP), and access to a network of approx. 100 primary care veterinary clinics. The latter provide our students with ample opportunities for primary veterinary care experience (EPT), held to a high standard of quality by the guidelines and processes of the Master's programme.

The three primary teaching locations used by the VEE

Students spend most of their time in three locations:
- Veterinary medicine campus (located at Utrecht Science Park (USP)): Bachelor's programme, and the majority of the Master's programme
- Primary care veterinary clinics: Extramural studies
- University Farm Animal Practice in Harmelen (ULP): students who differentiate in farm animal health

All locations on the USP campus are within walking distance. A map of the veterinary medicine campus can be found in Appendix III. List of buildings can be found in appendix 4.1.1.
Travel time to our primary care practices depends on their location in the Netherlands. However, the Netherlands is a small country with excellent public transportation and road networks. Therefore, travel time rarely exceeds two hours.

The veterinary medicine campus

The VEE is situated at the Yalelaan at USP. USP is also home to the University Medical Center (including the Faculty of Medicine), the Faculty of Science, the Faculty of Social and Behavioral Science and the Faculty of Geoscience, and several innovative companies (e.g., Danone, Nutricia), research organizations and public healthcare institutions (e.g., The National Institute for Public Health and the Environment[31]). In short, the campus enhances collaborations between the VEE and other relevant institutions.

Maintaining and upgrading the current facilities and equipment and/or acquiring new ones

The Maintenance and Management Department of the Facility Service Centre (FSC) of Utrecht University (UU) is responsible for the maintenance of UU buildings. Its mission is to ensure that UU buildings meet the requirements of legislation and regulations, as well as UU policy requirements with regards to maintenance. In specific cases, the UU has further specified its policy requirements in a Service Level Agreement (SLA).

31 https://www.rivm.nl/en

The maintenance department has set up its main work process in accordance with Deming's Quality Circle: Plan, Do, Check and Act. Below is an explanation of each activity:

- Plan: The maintenance department draws up a maintenance programme. This maintenance programme consists of high-frequency programming for daily maintenance and low-frequency programming for long-term maintenance (multi-year maintenance plan) for a period of 30 years. This programme includes management tasks, maintenance tasks and inspection tasks.
- Do: The maintenance department carries out the management tasks and maintenance tasks in accordance with the maintenance programme.
- Check: The maintenance department carries out inspection tasks in accordance with the maintenance programme. Inspection tasks may include inspections, tests, calibrations and validations. Based on the results of the inspection tasks, the maintenance department analyses whether the maintenance that has been carried out meets the requirements as formulated in its assignment.
- Act: The maintenance department defines improvement measures and implements them in its maintenance programme. The aim of these adjustments is to comply (again) with the assignment.

The maintenance department ensures that the activities in its main work process are traceable and demonstrable.

Upgrading facilities

Three buildings, Androclus, Nieuw Gildestein, and Marinus G. de Bruin, have reached the end of their lifespan. A more energy efficient faculty building will be built in the next 6-8 years. Currently, in-house changes are being carried out to create space for the building by the time of the site visit. The plans are made with the participation of many staff members and students, collected in multiple working groups, including one that focuses on teaching facilities.

As mentioned above, three buildings (Androclus, Nieuw Gildestein, and Marinus G. de Bruin buildings), have reached the end of their lifespan. A more energy efficient faculty building will be built in the next 6-8 years. Within the next 2-3 years a new farm animal Research & Education facility will be constructed near 'De Tolakker' to replace the current facilities in the Marinus G. de Bruin building. Once the new R&E facility is established, the Marinus G. de Bruin building will be demolished. Once the new faculty building is built, also the Androclus and Nieuw Gildestein buldings will be demolished. A team of experts from UU 'Real Estate and Campus' and the faculty is currently taking the necessary preparation steps for the new faculty building. By creating efficient and sustainable facilitates, the VEE will not only reduce energy emissions but also keep operation costs manageable.

The Jeannette Donker-Voet building has recently had several technical upgrades (e.g., air management). Similarly, the Prof.dr. H. Jakob and Willem C. Schimmel buildings have undergone upgrades to their office environments to optimise space and support the needs of modern office working practices.

Compliance

The buildings and physical facilities are compliant with Dutch legislations and UU standards for building laboratories, offices, education facilities and other facilities. Regular internal audits (e.g., by Team Safety) are carried out on the facilities to ensure that they comply with the appropriate internal procedures and Dutch legislation. The Facility Service Centre has responsibility for the cleanliness and general maintenance of physical facilities. In addition, all electrical equipment is regularly checked to ensure safety.
The VEE is also audited by external inspectors like the 'Regionale Uitvoeringsdienst' and other ministerial inspectors who perform regular checks to ensure compliance with environmental law, biosafety, working with animal byproducts, and several other safety and legislation aspects.

Standard 4.2: ***Lecture theatres, teaching laboratories, tutorial rooms, clinical facilities and other teaching spaces must be adequate in number and size, equipped for instructional purposes and well maintained. The facilities must be adapted for the number of students enrolled. Students must have ready access to adequate and sufficient study, self-learning, recreation, locker, sanitary and food service facilities.***

The VEE deals with a consistent incoming cohort of 225 Bachelor students and 240 Master students each year. All facilities meet the needs to accommodate these students in terms of teaching space and access to other relevant requirements. Information regarding the premises can be found in Appendix 4.2.1: # of lecture theatres, group work, practical work skill labs, self-learning, canteens, locker rooms, accommodation for on call students, leisure activities, etc.
The VEE has adopted a new format for staff offices, the so called 'activity-based working' (AGW). This means that there are no personal, individualized workspaces, and offices are furnished to provide a range of activities, such as individual workspaces, collaborative workspaces and meeting rooms. All workspaces are available for all staff members; a sitting/standing desk, adjustable chair, two screens, docking station, keyboard and mouse are available at each workstation. Furthermore, all staff members are provided a mobile work phone. This AGW type of working will be introduced in the entire VEE over the next few years.

Standard 4.3: ***The livestock facilities, animal housing, core clinical teaching facilities and equipment used by the VEE for teaching purposes must:***

- ***be sufficient in capacity and adapted for the number of students enrolled in order to allow safe hands-on training for all students***
- ***be of a high standard, well maintained and fit for the purpose***
- ***promote best husbandry, welfare and management practices***
- ***ensure relevant biosecurity***
- ***take into account environmental sustainability***
- ***be designed to enhance learning.***

Marinus G. de Bruin (MGB) Building - Yalelaan 7
In order to meet the need for teaching and research, the clinical facilities have multi-functional stables for cattle, pigs and poultry (the latter including a dissections room). This building contains an operating theatre, an ultrasound facility, a separate isolation room with isolated (manure) waste disposal, two sperate milking facilities (one for healthy cattle and one for patients), a pharmacy, a sterilisation unit and labs, all designed for farm animals. The facility houses diagnostic equipment like an ECG monitor, several ultrasound machines, a milk cell count analyser, haematocrit analyser and microscopes. For students and staff, the building contains instruction rooms, workstations and a skillslab.
Due to Dutch legislation, cattle, sheep, goats, swine and poultry used as patients in our courses and clinical rotations must be purchased because of the containment rules regarding infectious animal diseases. Consequently, all animals within this clinic are owned by the VEE and are considered legally as experimental animals. Strict welfare and legal regulations apply for using these animals in teaching. These animals (patients and healthy animals) are used in skills training programs and rotations (for students in the farm animal health track students as well as for students following the 'basic rotation' Farm Animal Health). After use in teaching, they are subjected to necropsy which adds to the teaching experience. In some cases, animals may go for slaughter; only young calves are sold to other farms. The clinic is only accessible via a hygiene barrier.

Between 80 and 100 cows, between 10-20 small ruminants and between 80-140 pigs are housed in this facility. There are different housing options for pigs, ruminants, small ruminants and poultry. Animals are kept in group units, but also individual housing is available. For our healthy cattle, housing that allows for free roaming is available. See Appendix III.A for a detailed floorplan.

Prof.dr. H. Jakob Building- Yalelaan 108
The building offers twenty consulting rooms for companion animals (fifteen regular, two emergency, and three exotic species and birds 24/7 emergency rooms). Furthermore, there are six surgical theatres with additional preparation and recovery facilities for companion animals.

Three types of wards for clinical patients can be distinguished within the building. A regular ward with twenty placements, a medium care unit with facilities for seven dogs and twelve cats, an intensive care unit (ten regular cages, two oxygen cages, and one ventilation station) which also has an isolation ward nearby with two additional cages.
This building also houses a physiotherapy room with hydro training facilities. The building has extensive facilities for birds and exotic animals with a separate quarantine area for birds on the west side of the building. In 2016, a new parrot and pigeon facility was added.

The Division of Diagnostic Imaging, that is situated between the companion animal clinic and the equine clinic, is specialised in all current imaging modalities: X-ray (two rooms for companion animals, one room voor horses, one mobile unit), ultrasonography (6 systems), CT (including a standing CT for horses), MRI (1.5 Tesla), C-arm imaging, ANGIO system, PACS image database and SPECT. In 2009, a bunker was added to the existing building to house the radiotherapy facility in which a new linear accelerator was placed in 2020. The VEE is the only place in the Netherlands where this treatment is possible for animals with cancer. See Appendix III.B. for a detailed floorplan.

Willem C. Schimmel Building - Yalelaan 112-114
This building houses equine patients with stables made-up of small units, making it possible to compartmentalise groups of animals. The internal medicine ward hosts extensive facilities including special (neonatal) intensive care units. Furthermore, the department has extensive facilities regarding equine fertility & reproduction. This building houses several facilities to diagnose equine lameness, including optical motion capture, inertial measurement unit sensors (IMUs), force-/pressure plates and surface electromyography (sEMG). The facilities also include a blacksmith, treadmill, dressage ring, menage and several pastures and paddocks. The design of the clinic and surgery rooms with associated support rooms is state-of-the-art, enabling optimal functioning with respect to hygiene and efficiency. See Appendix III.B for a detailed floorplan.

Androclus Building – Yalelaan 1
This building houses one large and one small necropsy room (see Appendix 4.2.1). Furthermore, there are several dissection rooms for anatomy courses.

Premises used for the practical teaching of VPH
All students visit a slaughterhouse nearby Utrecht (about 25 km from the VEE). The slaughterhouse is operated by a private company which has worked with the VEE since 2005. The business comprises of a slaughterhouse, a farm of approx. 300 animals (cows), and a network of 13 butcher shops. The slaughterhouse includes animal housing and cold storage, as well as offices, and staff rooms. It provides separate accommodation for about 30 cows and 60 pigs. Only the animals that are scheduled to be slaughtered during the day are present. The animals arrive very early in the morning or late the evening before. In 2023, approximately 3100 cows and 7200 pigs were slaughtered. The facility is licensed by the Netherlands Food and Consumer Product Safety Authority (NVWA). During the slaughterhouse visit students are accompanied by a teaching staff member. Travel to the facility is organized after consultations with the students. Sometimes buses from the VEE are used,

sometimes personal cars. If students use their own car costs are compensated. The VEE furthermore compensates the slaughterhouse for using the facilities, teaching assistance and reduced slaughter speed. In the mandatory basic rotation in Veterinary Public Health the students visit (besides the practical teaching in the slaughterhouse) also a laboratory animal site/an animal shelter and a petting farm. The first facility is visited to check animal welfare conditions, the second for both animal welfare conditions as spread of infectious diseases between animals and humans. The laboratory animal site is the laboratory animal facility of the Utrecht University (GDL) close to the VEE. Animal shelters and petting farms are located in Utrecht. Students who follow the Farm Animal Health track also visit a veal and poultry slaughterhouse. The visit to the poultry slaughterhouse was not allowed the last few years related to the Avian Influenza outbreak regulations in the Netherlands. Emodules/3d-movies were developed for self-study purposes as an alternative when circumstances (e.g., influenza outbreak) prohibit visiting the slaughterhouse.

Standard 4.4: ***Core clinical teaching facilities must be provided in a veterinary teaching hospital (VTH) with 24/7 emergency services at least for companion animals and equines. Within the VTH, the VEE must unequivocally demonstrate that the standard of education and clinical research is compliant with all ESEVT Standards. For ruminants, on-call service must be available if emergency services do not exist for those species in a VTH.***
The VEE must ensure state-of-the-art standards of teaching clinics which remain comparable with or exceed the best available clinics in the private sector.The VTH and any hospitals, practices and facilities which are involved with the core curriculum must be compliant with the ESEVT Standards and meet the relevant national Veterinary Practice Standards.

Ambulatory clinics

University Teaching Hospital for Companion Animals

The VEE owns a high-standard emergency care and referral clinic for companion animals. The University Teaching Hospital for Companion Animals offers clinical veterinary services to pet owners. The facility is open from Monday till Friday from 8.00 – 17.00h. The emergency care unit is open from Monday till Thursday between 17.00 – 9.00h and during weekends from Friday 17.00h till Monday morning 9.00h. The Teaching hospital is open 365 days per year. The numbers of hospitalised patients and visits can be found in table 5.1.2.

University Equine Hospital and Ambulatory Clinic for Horses

The University Equine Hospital provides clinical services to equine veterinary clients. The facility is open from Monday till Friday from 8.00 – 17.00h. The emergency care unit is open from Monday till Thursday between 17.00 – 9.00h and during weekends from Friday 17.00h till Monday morning 9.00h. The Teaching hospital is open 365 days per year. During office hours, the ambulatory clinic provides on-call clinical services. The numbers of patients consulted in the ambulatory clinic can be found in table 5.1.4. Apart from the ambulatory first line treatment and emergency services, the VEE execute pre-purchase examinations.

University Farm Animal Practice (on campus)

The VEE also provides students with training in farm animals through the university farm animal practice. There are no opening hours for the public regarding this clinic. Supervised by teaching staff, students are in charge of the daily management of this clinic. Staff is always on call and ward rounds are part of the daily routine. Numbers of visits and hospitalised animals can be found in table 5.1.2.

University Teaching Hospital for Companion Animals, and University Equine Hospital and Ambulatory Clinic for Horses

Relevant clinical cases from this teaching hospital are used for skills training in the Bachelor programme and for clinical training during the clinical rotations in the Master programme (for students that choose companion animals as their preferred track and during the 'basic rotations' for non-companion-animal-track students). Training of students is maximised by facilitating and fostering their active participation within the clinical team in a diverse range of activities from consultations, diagnostic procedures, patient care, ward rounds, patient visits, etc. Also see the VEE's Educational Philosophy in area 3.

University Clinic for Farm Animals (on campus)
As previously described, farm animal health students in their differentiation phase are responsible for running the clinic under supervision of teaching staff. Students in their basic rotation in farm animal health practise with ruminants (cattle, sheep, and/or goats) almost every Wednesday during the five-week programme. Within the clinic, students actively work up clinical cases, beginning with clinical examination, and moving into diagnostic and treatment plans with appropriate client communication under the direct supervision of a staff member.

Veterinary Practice Standards
The VEE is compliant with the European Veterinary Code of Conduct of the Federation of Veterinarians of Europe. National veterinary standards and legislation are followed by all staff members. Where applicable, staff members or organisational units meet mandatory national accreditations (e.g., diagnostic imaging).

Standard 4.5: ***The VEE must ensure that students have access to a broad range of diagnostic and therapeutic facilities. Procedures and facilities should also be available for soft skills training, e.g. communication skills training through role-play.***

Teaching facilities, such as classrooms, self-learning facilities, Skills Labs, etc. are open to all students during office hours. The access to clinical, diagnostic and research facilities is limited via electronic locks, to avoid the general public from entering these areas. Bachelor's students who need to enter these facilities will be granted access through the relevant teaching staff member. Master's students who are engaged in clinical rotations, receive electronic entry cards which give them access to the relevant clinical and therapeutic facilities.

Standard 4.6: ***Appropriate isolation facilities must be provided to meet the need for the isolation and containment of animals with communicable diseases.***

In the VTH up-to-date isolation facilities are provided. Access to these facilities is restricted with electronic security in place to keep out unauthorised individuals. The facilities consist of a functionally separated unit with a hygiene barrier for students and staff. Relevant protocols are clearly posted in the isolation facilities to ensure isolation procedures are maintained, and to optimise instruction of staff and students.

Prof. dr. H. Jakob Building- sub departments Companion Animal- Yalelaan 108
The intensive care unit has an isolation ward nearby with two additional cages. The building also offers an additional separate quarantine area on the west side of the building for the treatment of an individual patient.

Willem C. Schimmel Building - sub department Equine Health - Yalelaan 112-114
All stables are made-up of small units, making it possible to compartmentalise groups of animals.

Six separated individual isolation units, each with its own hygiene barrier, are available to treat horses with infectious diseases.

Marinus G. de Bruin (MGB) Building – sub department of Farm Animal Health - Yalelaan 7
To meet the need for teaching and research, the clinical facilities have multi-functional research stables for bovine, pigs and poultry, and one separate quarantine unit. Several rooms can be isolated from the main facility. Most of these units are suitable for all kind of farm animals.
See appendix III.A and B for the detailed floorplans of these buildings.

Standard 4.7: *The VEE must have an ambulatory clinic for production animals or equivalent facilities so that students can practise field veterinary medicine and Herd Health Management under the supervision of teaching staff.*

During the basic farm animal health rotations of the Master programme, all students are taught the foundational topics on field veterinary medicine and herd health management in cattle, sheep, goats, pigs and poultry. Within the differentiation phase, a more in-depth level is reached with those students that have chosen the farm animal health track. For all students additional elective courses in herd health management are available.

Standard 4.8: *The transport of students, live animals, cadavers, materials from animal origin and other teaching materials must be done in agreement with national and EU Standards.*

The vehicles used for transportation of students (e.g. to extra-mural facilities)
For the ambulatory clinic for horses the VEE has three fully equipped vans available. One of the vehicles additionally has special equipment for dentistry care on board. Students and the supervising teaching staff member use these vans on their visits. Within the farm animal health division, six vans are available for staff members and students to visit local farms. These are either Volkswagen Transporter vans or Renault Dacias. A reservation system is in place for these vehicles. In most cases the reliable public transportation system is used by students to travel back and forward to extramural facilities.

The vehicles used for transportation of live animals
The VEE owns a large van and a truck for transportation of small cattle. Vehicles and trailers are equipped with a lift or ramp. On the premises of the Marinus G. de Bruin (MGB) Building there is separate facility to clean these vehicles.

The vehicles used for transportation of cadavers/organs
Research on material:
Small cadavers/organs/samples are transported (double packed, in leak free, unbreakable containers with absorption material) in closed, transport boxes which can be cleaned and disinfected after use. Each transport is accompanied with a document describing the transport of animal by-products and derived products not intended for human consumption in accordance with regulation (EC) nr. 1069/2009 within the European Union.

Waste:
Cadavers are disposed as Category 1 waste and according to Dutch legislation disposed via hospital waste (small animals and organs) or through an authorised cadaver disposal company (large animals). Also see area 5 for additional information.

Standard 4.9: ***Operational policies and procedures must be taught and posted for students, staff and visitors and a biosecurity manual must be developed and made easily available for all relevant persons. The VEE must demonstrate a clear commitment for the delivery and the implementation of biosecurity. The VEE must have a system of QA to monitor and assure clinical, laboratory and farm services, including regular monitoring of the feedback from students, staff and clients.***

The VEE's manual for biosecurity, health and safety must be provided as an Appendix (with a summary in English).
At the faculty, the FOO department IHV (IT, Housing & Safety), especially Team Safety is in charge of organising, delivering and implementing sufficient policies and procedures with respect to biosecurity, good laboratory practice and good clinical practice. Safety protocols are published on the VEE's intranet pages and in protocols on location. A subset of this information is available in Appendix 4.9.1.

Working in the laboratory
Individuals who work and study within laboratories are provided with clear guidance and regulatory advice through protocols on intranet. Departments have their own additional work protocols describing additional and/or specific requirements. A tailor-made online course, General Laboratory Safety, provides training around the VEE's general safety rules before starting to work in a laboratory.

Laboratories are designed in such a way that they support biosecurity, health and safety of people and animals. New employees/students are instructed on the local laboratory procedures, by qualified and experienced staff members. Students always work under the supervision of an experienced staff member.

Registration of purchase, consumption and disposal of chemicals
Purchase and presence of chemicals, as well as substance information, are recorded in the programme SOFOS360, which is used throughout the VEE. The VEE complies with laws and regulations in this area, arising from the Environmental Permit of the Municipality of Utrecht. The storage of hazardous substances complies with regulation PGS-15.

Biological agents
For working with biological agents, the majority of procedures and protocols, drawn up by Utrecht University Real Estate & Campus (V&C), Section Safety & Environment and the VEE, are found on intranet[32]. Furthermore, each department provides relevant information, instructions and protocols, about biosecurity and working with biological agents (including genetically modified organisms) with respect to Dutch legislation. These procedures are monitored and audited by the Biosecurity Officer. A new e-learning module, Biological Safety, which will complement existing online training, is currently under development. New employees are instructed by experienced staff and made aware of biological agent risks, prophylaxis and proper use of personal protection. Students are not allowed to work in laboratories with Class 3 pathogens (BSL3/ML-III).

Radioactive substances
A radiation commissioner has been appointed within the VEE. All matters concerning radioactivity are handled by this officer. The VEE complies with the Radiation Protection Act and the Transport of Nuclear Substances, Ores and Radioactive Substances Decree.

Waste processing
The VEE has defined how to deal with hazardous waste in compliance with national legislation. Within each laboratory, staff are grounded in applicable waste flows and rules and provided with necessary

32 https://intranet.uu.nl/en/environmental-health-and-safety

equipment such as waste drums. Hazardous waste is classified in accordance with legal recommendations and disposal of waste is carried out by specialist companies under the supervision of the FSC Waste Management. In addition, wastewater is constantly monitored by the University. The municipal Environmental Permit sets requirements for wastewater quality and the VEE meets these requirements.

Personal protective equipment

In addition to normal work clothing, safety shoes, and gloves, VEE staff are provided with appropriate personal protective equipment. Examples of this include hearing protection for blacksmiths and animal caretakers working in noisy environments, as well as facial masks (FFP2) when working with laboratory animals and dusty conditions during grooming. Within the clinics, boots and appropriate clothing are available for students, staff and external visitors.

Working alone

The VEE has a Working Alone policy that describes the conditions under which working alone is allowed. Safety devices (e.g., fire extinguishers) are in place for working alone in laboratories. Students are not allowed to work alone. In the clinics, people do not work alone, and teams are rostered for all shifts, including evening and weekend shifts.

Registration of accidents and incidents

Dangerous situations, incidents and (near) accidents are recorded in TOPdesk, a confidential self-service portal on intranet. Team Safety carries out an analysis together with the reporter of the incident and makes recommendations for improvement where possible.

Emergency response team and first aid

Every faculty building has an in-house emergency response team with qualified in-house emergency and first-aid workers. The size of the teams is tailored to the hazards posed by the activities in the building. The emergency response team is trained at least once a year in dealing with emergencies. Students from various study associations are part of emergency response teams in the buildings.

For each building, the emergency response plan describes the activities and risks involved. The annual emergency response drill is aligned with this plan. Boards of study associations receive annual training in emergency response procedures and can call on the emergency response organisation for their own events. There is a ‘What to do in case of...’ sign in every room indicating what to do in case of an emergency. This information is also available on intranet.

For high-risk rooms, the procedures for entering the room in case of an emergency, what may or may not be done, and how to leave the room again are indicated. External staff (e.g., technical service and security) are also versed in these procedures and must comply with them. Only authorised and responsible laboratory staff or security officers supervise access to high-risk areas by external staff.

Emergency response officers in laboratory departments are familiar with the risks of incidents involving hazardous substances and receive specific training hazardous substances. Laboratories are marked with standard pictograms for the fire brigade. This marking offers clear guidance to emergency service when responding to an incident.

Working with animals

In the stables, clinics and at lectures, precautions and measures have been taken to ensure the maximum safety of the employee/student in contact with the animal. These can be architectural measures (an escape route at the back of horse stalls, facilities to provide food and fresh water to companion animals from outside the pen, a gallery to observe an operated horse), personal protective equipment, but also organisational measures such as rules of engagement with respect to entering the pens of unknown dogs.

Vaccinations and Periodic Medical Examination

Students are offered vaccination against tetanus in their first year of study. Employees can repeat their tetanus vaccination at the VEE. Annually, employees who are at risk of coming into contact with flu viruses because of their work are provided with related vaccinations. These medical services are provided in collaboration with an external service. If necessary (e.g., for certain examinations), employees and students can receive specific vaccinations, a process which is regulated under the VEE vaccination policy.

A Periodic Medical Examination (PMO) is offered to employees working with pigs (vets, caretakers) and blacksmiths, specifically related to the relatively high noise levels in their work. Employees working with laboratory animals are also offered a PMO in relation to developing a laboratory animal allergy.

Pregnancy

The faculty has policies in place for pregnant employees and students. Based on the individual situation tailor-made adaptations can be made in their activities, and extra measures are taken when working with hazardous substances based on the risks involved. If mothers are breastfeeding, there are facilities for pumping breast milk.

There are also protocols in place to protect pregnant individuals who work with reproductive toxic substances. Measures can also be taken for students, in consultation with the study advisor, to adjust or temporarily stop their studies.

Physical strain

Physical strain is an ongoing concern. Staff are provided with access to training and appropriate aids with respect to the ergonomics of workstations.

Information on RSI/CANS

The VEE's policy on screen work provides guidelines for setting up workstations in offices and for students. Employees can request a workplace survey if they experience problems with the workplace. An elearning module, Screen Work, provides information and training with respect to workplace settings and other important issues, is available for self-study.

Students are provided with information on the risks of CANS on the VEE website. In addition, Work&Move (software that reminds you to take regular small breaks) is available to all staff and students.

Working hours

The VEE monitors the working hours of veterinarians and animal caretakers with respect to the rules of the Working Hours Act. In an annual audit, rosters and actual working hours are analysed, results presented and any recommendations for improvement made.

Comments on Area 4

- The VEE has started its Green Team in 2023. This active group of staff and students will carry out analyses and make suggestions for improvements on various areas, like energy use and sustainability in the clinics.
- The University and VEE's ambition is to limit waste streams and recycle as much as possible.

Suggestions for improvement in Area 4

- Some buildings are end-of-life and no longer meet the VEE's standards for sustainability. New, more sustainable accommodations will be designed and constructed in the upcoming years.

Area 5. Animal resources and teaching material of animal origin

Standard 5.1: ***The number and variety of healthy and diseased animals, first opinion and referral cases, cadavers, and material of animal origin must be adequate for providing the practical and safe hands-on training in all relevant areas and adapted to the number of students enrolled.***

Description of the global strategy of the VEE about the use of animals and material of animal origin for the acquisition by each student of Day One Competences (see Annex 2)

Transition to animal-free innovation (TPI)

The VEE attaches overarching importance to animal welfare. The global strategy of the VEE centres on reducing the use of living animals in veterinary curricula yet maintaining high standards regarding educational experience for both undergraduate and postgraduate students. This strategy incorporates decision-making around evidence-based teaching and learning strategies and the judicious use of virtual reality, plastination technology and other forms of simulation-based learning. For example, the VEE makes use of the Skills Lab which offers students a safe place to practice skills repeatedly and under expert guidance.

Furthermore, the VEE supports embedding animal-free models within its curricula. One example of this is the VEE's Teaching and Learning Community which provides a platform for educators to share experiences and best practices regarding animal-free innovations in education. In addition, VEE's staff members hold lead roles in TPI Utrecht[33], an interdisciplinary group which combines the efforts of Utrecht University, UMC Utrecht and Utrecht University of Applied Sciences to innovate on animal-free models[34].

Use of animals and material of animal origin

In the Bachelor programme, students begin their studies with a curriculum that is largely preclinically oriented and is organised according to organ systems (see appendices 3.1.1. and 3.1.2. for the curriculum digests). Animal use is primarily of concern for anatomy education, and whilst some material of animal origin is used, a significant amount of learning is facilitated through online learning, library and anatomy museum resources, models and plastinates. Animal material such as cadavers are reserved for students to gain essential hands-on experience in terms of dissection and the practical application of anatomy concepts. The majority of cadavers used during anatomy education are obtained by means of the animal donor codicil (see Appendix 5.1.1). This means that pet owners can consent for their deceased animals to contribute to veterinary education in this way.

In the Master programme, students tend to work mostly with live, clinical patients, with a limited number of anatomy practicals where animal materials/cadavers are used. See Table 5.1.1. for the number of cadavers and material of animal origin used in anatomical training.

Animal cadavers also contribute to pathology education at the VEE, both undergraduate and postgraduate. Once again, cadavers are donated with owner consent, through the VEE teaching hospital and other primary care practices in the region. Also, cadavers of deceased animals owned by the VEE are used.

33 https://www.uu.nl/en/research/life-sciences/communities/tpi-utrecht
34 https://www.uu.nl/en/news/dutch-national-growth-fund-invests-1245-million-in-transition-to-animal-free-innovation

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

Species	2022 - 2023	2021 - 2022	2020 - 2021
Cattle	8 ox eyes 45 uteri	12 stillborn calves 45 uteri 36 claws	12 stillborn calves 45 uteri 36 claws
Small ruminants	4 intestines 60 heart and lungs	4 intestines 60 heart and lungs	45 intestines 60 heart and lungs
Pigs	60 stillborn piglets	60 stillborn piglets 3 pigs 60 hearts and lungs	60 stillborn piglets 3 pigs 60 hearts and lungs
Companion animals	60 cats 1 dog	60 cats 4 dogs	60 cats 4 dogs
Equine	n/a	2 ponies	2 ponies
Poultry & rabbits	60 chickens	60 chickens	60 chickens
Aquatic animals	45 sharks 45 salmon heads	45 sharks 45 salmon heads	45 sharks 45 salmon heads
Exotic pets	20 reptiles 20 amphibians	20 reptiles 20 amphibians	20 reptiles 20 amphibians

Note: the origin of the animals and organs mentioned in table 5.1.1. varies. Ox eyes, heart and lungs, uteri and intestines originate from slaughterhouses. Stillborn piglets, pigs and chickens originate from the campus farm (De Tolakker). Cats, dogs, reptiles and amphibians are donated. Sharks, salmonheads and ponies are purchased.

Live animals are used within the animal handling and clinical practical training components of the Bachelor programme. A key example of this is ‘The Veterinary Clinician’, a course which spans the length of the programme. This course focuses on attaining the essential clinical skills and scaffolds the students into engaging with live animals through the use of e-modules, models and plastinates presented in the Skills Lab. See Table 5.1.2. for the number of healthy live animals used for pre-clinical training. The animal caretakers overview the use of individual animals for education and monitor that the animals get sufficient time to rest and recover. The VEE acquires enough animals to prevent welfare problems because of overuse. In the Master programme, students engage with live animals as authentic clinical patients. Patient owners know that when they present their animal to the University Teaching Hospital, the animal will be examined (and potentially treated) by students. See Table 5.1.3. for total number of patients in the VTH.

Table 5.1.2 Healthy live animals used for pre-clinical training				
Species	**2022 - 2023**	**2021 - 2022**	**2020 - 2021**	**Mean**
Cattle (Tolakker)*	111	115	123	116
Small ruminants*	171	344	304	273
Pigs*	131	133	135	133
Dogs	34	38	31	34
Cats	11	11	11	11
Equine	12 - 15	12 - 15	12 - 15	12 - 15
Poultry	80	80	80	80
Aquatic animals	n/a	n/a	n/a	n/a
Exotic pets**	4	3	0	2
Rodents* / ***	151	182	266	250
Pigeons	72	40	67	60
Ferrets	6	10	8	8
Rabbits (pet)	21	18	36	6

** Average per calendar year*

*** Animals listed as 'exotic pets' are Corn snakes.*

**** Animals listed as 'rodents' are guinea pigs, mice, rats and hamsters.*

Table 5.1.3 Number of patients seen intramurally (in the VTH)*				
Species	2022 - 2023	2021 - 2022	2020 - 2021	Mean
Cattle	1759	712	360	944
Small ruminants	487	166	85	246
Pigs	1365	339	375	693
Companion animals	16,014	19,698	24,723	20,145
Equine	18,477	17,510	15,408	17,132
Poultry & rabbits	n/a	n/a	n/a	n/a
Aquatic animals	n/a	n/a	n/a	n/a
Caged birds	1558	1586	1839	1661
Caged mammals	1034	1009	1399	1147

** This Table contains numbers from our on campus equine clinic, our on-campus companion animal clinic and from the department of Farm Animal Health (also on campus). Please note that the bovine, small ruminants and porcine patients are diseased animals that are purchased by the faculty for educational purposes. The numbers pertaining to them differ a lot due to the introduction of the new Master's curriculum.*

Description of the specific strategy of the VEE ensuring that each student receives the relevant Core Clinical Training (CCT) before graduation, e.g. number of patients examined/treated by each student, balance between species, balance between clinical disciplines, balance between first opinion and referral cases, balance between acute and chronic cases, balance between consultations (day patients in the clinic) and hospitalisations, balance between individual medicine and population medicine

Core Clinical Training (CCT)

The core clinical training mainly takes place in the master programme. Master Year 1 consists of seven courses that are mandatory for all students to go through. These courses are designed to lay a solid foundation for students on their journey towards developing the Day One Competences. The year begins with courses *Master Introduction* and *Paraclinical Diagnostics* followed by four general clerkships, *Veterinary Public Health*, *Farm Animal Health*, *Equine Medicine* and *Companion Animal Health* and concludes with a *Junior Extramural Internship* in a selected first opinion clinic. The curriculum design ensures that students come into early and frequent contact with authentic veterinary patients in their first year. From Year 2, the students choose one specific differentiation/ track (Farm Animal Health, Equine Medicine or Companion Animal Health). This differentiation phase includes four in-depth courses and an extended *Senior Extramural Internship* in their chosen animal species. The last year of the Master program, Year 3, offers ample opportunities for further clinical deepening through the elective space depending on the ambitions and wishes of the student. See area 3 for a detailed description of the programme. The core clinical training takes place within the VTH. See Tables 5.1.3 for the number of patients seen in the VTH, 5.1.4 for the number of patients seen in the ambulatory clinics, 5.1.5. for the % of first opinion patients used for clinical training, 5.1.6. for the cadavers used in necropsy, 5.1.7. for the number of visits in animal production and herd health management, and 5.1.8. for the number of visits to slaughterhouses for training in VPH.

Table 5.1.4 Number of patients seen extramurally (in the ambulatory clinics)

Species	2022 - 2023	2021 - 2022	2020 - 2021	Mean
Cattle	44,650	57,342	31,958	44,650
Small ruminants	470	604	336	470
Pigs	12,200	14,880	9880	12320
Companion animals	n/a	n/a	n/a	n/a
Equine	3057	2794	2258	2703
Poultry & rabbits	n/a	n/a	n/a	n/a
Aquatic animals	n/a	n/a	n/a	n/a
Exotic pets	n/a	n/a	n/a	n/a
Others (specify)	72	18	10	33

This Table lists numbers from our own campus ambulatory equine clinic (equine and other) and from the ULP (cattle, pigs and caprine, (under 'small ruminants')). This table does not include the number of visits students make to our on-campus farm, 'De Tolakker'. These numbers are not included as obtaining exact data is very difficult.

Table 5.1.5 Percentage (%) of first opinion patients used for clinical training*				
Species	**2022 - 2023**	**2021 - 2022**	**2020 - 2021**	**Mean**
Cattle	100%	100%	100%	100%
Small ruminants	100%	100%	100%	100%
Pigs	100%	100%	100%	100%
Companion animals	100%	100%	100%	100%
Equine (Ambulatory Clinic for Horses)	100%	100%	100%	100%
Equine (University Equine Hospital)	100%	100%	100%	100%
Poultry & rabbits	n/a	n/a	n/a	n/a
Aquatic animals	n/a	n/a	n/a	n/a
Exotic pets	100%	100%	100%	100%

**Every patient offered for first opinion examination is always used for clinical training. Students are involved in history taking, the diagnostic process and patient care, whether the patient is referred or first opinion. In most cases students retrace the diagnostic steps of the referring veterinarian.*

Table 5.1.6 Cadavers used in necropsy				
Species	**2022 - 2023**	**2021 - 2022**	**2020 - 2021**	**Mean**
Cattle	94	98	81	91
Small ruminants	21	24	16	20
Pigs	132	83	125	113
Companion animals	334	376	440	383
Equine	92	81	119	97
Poultry & rabbits	46	83	119	83
Aquatic animals	17	9	7	11
Exotic pets	142	176	178	165
Wild birds	274	249	280	268
Wild mammals	148	265	293	235
Zoo animals	371	399	381	384

Table 5.1.7 Number of visits to herds/flocks/units for training in Animal Production and Herd Health Management*				
Species	**2022 - 2023**	**2021 - 2022**	**2020 - 2021**	**Mean**
Cattle	2233	2867	1598	2233
Small ruminants	118	151	84	118
Pigs	305	372	247	308
Poultry**	26	32	34	31
Rabbits	n/a	n/a	n/a	n/a
Aquatic animals	n/a	n/a	n/a	n/a
Equine	1153	1738	1509	1467
Others (specify)	32	23	1	19

**This Table lists numbers from the VEE's on campus ambulatory equine clinic (equine and other) and from the ULP (cattle, pigs and caprine (under 'small ruminants')).*
*** Number of visits is lower than expected due to Avian Influenza outbreak.*

Table 5.1.8 Number of visits to slaughterhouses and related premises for training in VPH (including FSQ)				
Species	**2022 - 2023**	**2021 - 2022**	**2020 - 2021**	**Mean**
Ruminant slaughterhouses	46 [1]	23	23	31
Pig slaughterhouses	8 [2]/ 8 [6]	8 [2]/ 4	8 [2]/ 1	4
Poultry slaughterhouses	3/1 [3]	3 [3]/0	3 [3]/0	1
Related premises	0	60 [4]	60 [4]	40
Others [5]	76	23	23	41

[1] In 2022/2023 extra visits to ruminant slaughterhouse, because of change in curriculum. In total 30 visits in renewed master compared to 16 in previous master.
[2] Visits to pig slaughterhouse were cancelled because of Covid pandemic, video's/emodules were used.
[3] In 2021- 2022 and 2020-2021 no visits to Poultry slaughterhouses were possible because of Covid pandemic and Avian Influenza outbreak. In 2022-2023 three Poultry slaughterhouse visits were planned. One was possible related to Avian Influenza outbreak. 3D video's/emodules of a poultry slaughterhouse were developed as alternative.
[4] Students join an official veterinarian for 1 day for export certification, visits were cancelled because of Covid pandemic. In 2021-2022 export certification was explained through video's and a seminar, in 2022 -2023 visits were replaced by an Export certification escape room. Export visits are organized for individual students. They receive one-on-one supervision. Petting zoos and slaughter houses are visited with groups with a maximum of 9 students.
[5] Others: In 2020-2021 and 2021-2022 these numbers included visits to petting farms to check risks for humans through contact with animals, in 2022-2023 it included visits to petting farms to check risks for humans through contact with animals (46) and visits to commercial farms to perform risk assessments for animal welfare (30).
[6] Extra visits were organized by student association Hygieia for students to join on a voluntary basis.

Veterinary Teaching Hospitals

Teaching Hospital for Companion Animals

The VEE owns a high-standard emergency care and referral clinic for companion animals. This teaching hospital provides all veterinary students with a wide range of opportunities for hands-on practice with authentic clinical cases from basic skills training up to more specialised clinical training for students who choose companion animals as their preferred track. Numbers of hospitalised patients and visits can be found in table 5.1.3.

Equine Teaching Hospital and Ambulatory Clinic for Horses
The VEE operates a dedicated equine teaching hospital and ambulatory clinic for horses which offers a practical, immersive learning experience for veterinary students. The numbers of patients seen in the teaching hospital and ambulatory clinic can be found in Table 5.1.3 and 5.1.4.

Teaching Hospital for Farm Animals (on campus)
The University Hospital for Farm Animals offer veterinary students' vital opportunities to engage in real-world animal care, skills training and more advanced clinical clerkships. The numbers of visits and hospitalised animals can be found in Table 5.1.3.

Teaching farm 'De Tolakker'
The VEE is also home to an on-campus teaching farm, 'De Tolakker'. A detailed description about the teaching farm can be found in area 3 and 4.

Pathology
Veterinary education at our VEE is also supported by a Pathology division which performs an average of 1,800 necropsies per year. The division takes in cadavers from a range of different sources, notably from clinical cases from the University Teaching Hospitals, the University Farm Animal Practice and private first opinion or referral practices, originating from clients, farms, zoos, etc. The high caseload offers both undergraduate and postgraduate students a direct insight into the pathophysiology of disease and how this relates to real-world clinical cases. Students are increasingly given responsibility over the years, ending with performing their own necropsies in the Master programme. The number of student-performed necropsies per year can be found in Table 5.1.6.

University Farm Animal Practice (ULP)
The number of farm calls made where students were involved, and the number of animals treated during these calls can be found in table 5.1.4. For more information about the ULP see area 4.

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

Culture of Care
When there is no full alternative to using animals in research and education, the VEE strives to reduce, refine and replace as much as possible and, beyond this, to ensure optimal welfare. This responsibility covers the animal's entire lifespan, touching on a multiplicity of facets that can affect its life. The VEE encourages a culture where all parties involved take responsibility for animal welfare, scientific integrity and respect for legal boundaries. With respect to this, the VEE maintains and updates internal policy guidelines[35] in consultation with the relevant animal facilities. A reference framework for the tasks and responsibilities of all persons and parties involved in the animal experimentation domain is described in the policy document Tasks and responsibilities in the animal-experiment chain[36].

Ethical considerations and oversight
An important component to ensuring optimal animal welfare is ethical consideration. At the VEE, the Central Committee on Animal Experiments (CCD) has oversight of the involvement of animals in research and education. Their role involves conducting formal ethical-scientific reviews, advised by the Animal Experiments Committee (DEC). In addition, the Animal Welfare Body (AWB) monitors the welfare of animals, the quality of research and education and compliance with the law. In doing so, it gives solicited and unsolicited advice on replacement, reduction and refinement.
The AWB also checks whether all due care requirements regarding quality and welfare have been

35 https://ivd-utrecht.nl/en/during-experiments/guidelines
36 https://ivd-utrecht.nl/en/infocentre/document/tasks-and-responsibilities-in-the-animal-experiment-chain

met when using animals other than in an animal experiment as defined by the law. Examples of this are the breeding of laboratory animals, and education or research using laboratory animals with less than minor discomfort, as defined by law.

Safeguarding animal welfare

The VEE places a high priority on meeting the physiological and ethological needs of animals under our care. The housing and care of laboratory animals at the facilities are regularly quality-assessed and benchmarked according to legal standards, internal policies and animal welfare guidelines. Animals are monitored daily by qualified and competent animal caretakers, with established procedures on how to act in case of (un)expected discomfort. The VEE is committed to using laboratory animals as efficiently as possible by encouraging re-use[37]. Animals not killed or reused for another experiment, and who are suitable for re-homing, are put up for adoption[38]. The VEE endorses national and international guidelines around the welfare of animals, e.g., the Royal Dutch Veterinary Association whitepaper[39] on equine welfare, aligning its commitment to advancing the wellbeing of horses in veterinary practice.

Professionalism

The VEE values integrity and professionalism in staff and students. This also relates to professional responsibility for animal welfare and scientific integrity of research and education involving animals. If staff, students or interns encounter situations which they feel do not meet these standards, and do not feel heard when they attempt to discuss their concerns with people immediately around them, they can turn to the Professional Behaviour and Animal Welfare Help Desk[40].

Some examples

The VEE is aware that the mere presence of laws and policy guidelines is not a guarantee for safeguarding animal welfare. We therefore promote a culture of care whereby those directly in charge of taking care of animals are equipped and supported. A few examples of these initiatives are:

- Training on alternatives: Skills Labs with advanced alternatives such as the haptic horse41 are an integral part of the curriculum. These alternatives ensure that students are better prepared and more confident when first practicing a technique on a live animal which in turn has a positive influence both on the animals and the students.
- Expertise Centre Genetics of Companion Animals: the centre is a research and education centre which focuses on hereditary diseases and congenital disorders of companion animals. It contributes to improving the health of purebred dogs and cats in the Netherlands through quantification of disease incidence within populations and the application of modern DNA diagnostics. The centres contributes both undergraduate and postgraduate veterinary education.
- Prevention of peak loads for animals: when planning practicals with animals the animal care takers are involved in choosing which animals are fit for education, taking into account the resting period since the last practical and any information on the well-being of the animal such as its behaviour in the last practical or the current health status of the animal.
- Golden rules: the VEE is currently preparing posters with Golden Rules for students and teachers on how to behave when interacting with animals in a practical. These posters help to safeguard the welfare of both the animals and the students during practicals.

37 https://ivd-utrecht.nl/en/infocentre/document/policy-on-surplus-laboratory-animals-reuse-and-re-homing
38 https://ivd-utrecht.nl/en/infocentre/adoption
39 https://www.knmvd.nl/app/uploads/2023/12/Whitepaper-equine-welfare_ENG-DEF.pdf
40 https://ivd-utrecht.nl/en/infocentre/professional-behaviour-help-desk
41 https://www.youtube.com/watch?v=hxDKIqm_9Rs

Predictability, controllability and reward: Animals used in teaching can be offered a degree of agency. For example, some species can recognise the difference between regular care and preparing for a practical. Rats and rabbits can be allowed to choose whether or not to engage in a practical by letting them walk into the transport cage voluntarily. Furthermore, the animals are rewarded during and after the practicals. These aspects ensure that animals experience the practicals as positive rather than stressful events.

Description of how the cadavers and material of animal origin for training in anatomy and pathology are obtained, stored and destroyed
With regard to the training in anatomy, the intention is to maintain a high level of educational excellence whilst minimising the amount of animal material used. If it is necessary for the learning objective, the material is obtained through the following ways:

- Dogs and cats: the animal donor codicil. This is a collaboration with the Proefdiervrij foundation, which obtains euthanised animals through veterinary practices
- Horse: material of animal origin is obtained through the Equine Teaching Hospital. The carcasses are donated to science by the owners
- Slaughterhouse material: material of animal origin from cattle, horses, sheep and pigs (e.g. uteri, gastrointestinal tracts and heart-lung packages) originates from the slaughterhouse
- Stillborn piglets: come from the on-site teaching Farm
- Depending on the type of material, they are stored in the following ways:
- In the refrigerator (4°C) until use
- In the freezer (-18°C), then defrosting in water, prior to use
- Fixation with a mixture containing 2% formalin: these materials are vacuum packed and stored in the refrigerator (4°C)
- Fixation, and then plastination: storage in dry room.

The disposal of material of animal origin for training in anatomy goes through the Pathology department.

Cadavers for training in pathology originate either from the VTH or from private clinics for domestic animals, Dutch zoos and wildlife centres for exotic animals and the general public for terrestrial and marine wildlife. Organs for training purposes originate from a slaughterhouse. In most cases, when necropsy is not done immediately, animals are stored at 4°C. Sometimes they are frozen at -18°C. This concerns usually only wildlife/marine mammals. Tissue samples are either stored in formalin (usually for 6 weeks after release of the final report), in paraffin blocks and glass slides or at -80°C for research purposes. Remnants are considered to be risk material (category 1) and are thus collected by RENDAC, the rendering organisation within the Netherlands.

Description of how (procedures) and by whom (description of the committee structure) the number and variety of animals and material of animal origin for pre-clinical and clinical training, and the clinical services provided by the VEE are decided, communicated to staff, students and stakeholders, implemented, assessed and revised
For preclinical training, procedures are in place regarding the acquisition of material of animal origin for anatomy education and for obtaining educational animals. The acquisition of material of animal origin is organised through the associate professor in Veterinary Anatomy, who oversees all anatomy education offered within the curriculum and determines the necessary resources. She collaborates closely with the educational directors of both the Bachelor and Master programmes.

The purchase of healthy animals required for preclinical training is managed by the educational directors in close collaboration with the Institute for Animal Welfare[42] and the local Animal Welfare

42 Link: https://ivd-utrecht.nl/en

Coordinator. Course coordinators can submit requests to the responsible educational director, including an analysis of the educational necessity and a well-founded argumentation for why the use of live animals is essential and cannot be replaced by animal-free educational innovations. During pathology education and clinical training, authentic patients are utilised.

The directors of education of the Bachelor and Master programme, together with the course coordinators and in consultation with the associate professor in Veterinary Anatomy, oversee the implementation, assessment, and revision of the number and variety of animals and material of animal origin used in training, including the communication to staff, students and stakeholders. See for an extensive overview of the organisation and committee structure area 1.

Standard 5.2: ***In addition to the training provided in the VEE, experience can include practical training at external sites, provided this training is organised under the supervision of teaching staff and follows the same standards as those applied in the VEE.***

Description of the organisation and management of the external sites (teaching farms, ...) and the involvement of students in their running (e.g. births, milking, feeding, ...)

Elective Practical Training (EPT)

In total, approximately 100-120 privately and corporately owned veterinary clinics are involved in EPT. Of these, 20 provide services to equines, 90 to companion animals and 50 to farm animals. Each year, these clinics, which are located throughout the whole country, provide students the possibility to further develop relevant clinical skills and application of knowledge. EPT takes place during the Master programme both in the uniform (junior extramural internship (JECo) – 5 weeks – 240 students per year) and differentiation phase (senior extramural internship (SECo) – 10 weeks – max 175 students in companion animal clinics, max 50 students in equine clinics and max 54 students in farm animal clinics).

The main goal of this EPT is to bridge the gap between the safe learning environment of the VEE veterinary teaching hospitals and the real-world, unpredictable nature of actual veterinary practice. It also provides ample opportunities for students to be engaged with primary veterinary care. Veterinary practitioners are specially selected and trained to supervise students as qualified personnel during the entire EPT. Training involves a grounding in contemporary pedagogical theories, with a focus on the VEE’s teaching philosophy, and competence in feedback and assessment procedures. The EPT is incorporated in the regular quality assurance system. Standardized agreements between the clinics and the VEE are used to secure the standards for training in the clinics. Clinics receive a fee for each supervised student. The case load requirements for clinics involved in EPT and the characteristics of our EPT can be found in Table 5.2.1.

Table 5.2.1 Requirements of EPT-clinics											
Requirements							**Caseload**				
Type											
Companion animal	Req.	Not req.	Req., on or off site	Req.	Not req.	Not req.	Req.	Req.	Opt.	Opt.	Opt.
Equine	Req.	Not req.	Req., on or off site	Req.*	Not req.	Not req.	Opt.	Opt.	Req.	Opt.	Opt.
Farm animal	Req., on or off site	Not req.	Req., on or off site	Not req.	Not req.	Not req.	Opt.	Opt.	Opt.	Req.	Opt.

Req. = required / Not reg. = not required / Opt. = optional
** Only required for senior extramural internship*

Unfortunately, it is not possible to give any figures regarding the number of animals treated, the types of procedures or the number of procedures performed in off-campus facilities during EPT. The participating veterinary practices are generally not willing to share this information, as it is regarded as business sensitive. As our extensive CCT programme ensures that students have gained enough practical experience in clinical skills this is not considered a problem. Furthermore, our system of competency-based education, including an assessment system based upon the principles of programmatic assessment, ensures that students attain the programme outcomes before graduation. To put the numbers in perspective, we have related the number of clinics to the number of animals in the Netherlands (see Table 5.2.2). See area 3 for detailed information about the EPT.

Table 5.2.2 Number of animals per clinic in the Netherlands			
Type	**Approx. # clinics**	**Approx. # of animals**	**# Animals per clinic**
Companion animal*	1440	4.7 M *	~ 3250
Equine	120	450k	~ 3750
Farm animal**	840	117 M **	~ 140.000

** Cats, dogs and rabbits only*
*** Poultry, porcine, cattle, goats and sheep*

The Companion Animal and Equine University Clinic Student Brigade

During their Bachelor programme Year 2 and 3 students can volunteer to participate in emergency care services (evening and night shifts) at the VTH. These experiences provide students with opportunities to consolidate and improve their clinical skills and clinical reasoning. Students are fully supervised in this role by a team led by experienced clinical staff members and Master students.

On-site teaching farm ‘De Tolakker’

Students are also involved in the running of our on-site teaching farm ‘De Tolakker’. See area 4 for detailed information.

Standard 5.3: ***The VTH must provide nursing care skills and instruction in nursing procedures. Under all situations students must be active participants in the clinical workup of patients, including problem-oriented diagnostic approach together with diagnostic decision-making.***

Description of how and by whom the nursing care skills are implemented and taught to undergraduate students

In the Bachelor programme, nursing skills are taught in the longitudinal course 'The Veterinary Clinician'(LVC). From Year 1 onwards, this includes skills such as bandaging and dressing techniques, as well as lab diagnostics. The training makes full use of the VEE's Skills Lab as well as live animals for non-invasive procedures. In the Master programme, students learn to apply their skills on live animals offered in the VTH and EPT. After extensive training on Skills Lab models, invasive techniques are first practiced on teaching animals, before applying hands-on nursing in the hospital setting on live patients. The educational directors of the bachelor and master programme oversee the implementation and quality of the nursing care skills education within both programmes.

Description of the group size for the different types of clinical training (both intramurally and extramurally) to guarantee hands-on training of all students

In the bachelor programme, from Year 1 onwards, students in animal-related practicals work in groups of 15. In clinical training, students work in groups of 1-5 per animal or patient, depending on the animal species. In the master programme, group sizes depend on the type of course and the species.

- During the basic rotations, group size is 5-6 students, except for emergency service in Companion Animal Medicine (1-2 students per group) and Equine Medicine (2-4 students per group)
- During the differentiation phase group sizes vary by species. In Companion Animal Medicine the group size is 3-4 students, in Farm Animal Health it is 8-10 students, and in Equine Medicine group size is 4-6 students per discipline. The JECo and SECo are performed by students individually.
- In the Elective phase (Years 2 and 3) group sizes tend to vary between 1-10 students depending on the type of clerkship/course.

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

In the bachelor programme, students learn clinical procedures in practicals and the Skills Lab as part of the organ-based courses. Invasive techniques are practiced on models in the bachelor and master programs, as well as on teaching animals or patients in the latter case. The Bachelor's longitudinal course LVC brings together clinical diagnostics, complementary research and clinical reasoning. The clinical skills and procedures taught in the bachelor are assessed via an OSCE (objective structured clinical examination) in Years 2 and 3.

In the master programme, students continue to have access to the Skills Lab to practice their clinical skills before applying them on a live animal. In the Paraclinical Diagnostics course the focus is on clinical diagnostics. In the clinical rotations, both in the uniform and differentiated parts of the programme, students train in patient-related clinical procedures (see the courses' learning objectives for additional information). Specific focus is placed on day-to-day procedures that veterinary students will encounter such as vaccination and euthanasia taught as explicit assignments during the JECo and SECo (see area 3 for additional information).

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

In the bachelor programme, students are supported to engage in dialogue to deepen their understanding around clinical cases. Such discussions are fostered during working groups and used to engage students in role-play activities in the longitudinal course LVC. In this course, Year 1 starts with explaining how clinical reasoning is structured. The emphasis is on the interpretation of simple cases, identifying a main problem and setting up a problem definition. In Years 2 and 3, students learn to go through the step-by-step process in relation to more complicated cases. Clinical reasoning is embedded longitudinally within the programme and utilises a range of teaching strategies including tutorials, role-playing and working with real veterinary patients and clients.

In the master programme, there is a gradual build-up from participating in patient care, to leading a workup and presenting cases. Students engage in real-world clinical reasoning within the VTH through:

1. taking part in case presentations and small group reflections, led by a clinical staff member
2. carrying out self-directed study with access to up-to-date scientific literature and engagement in peer-to-peer conversations
3. taking lead roles in the care of patients in outpatient clinics and nursing wards. Here, students are connected to individual patients to organise the entire workup (responsible for content, organisation of complementary diagnostics and often communication with owner, obviously under supervision by a supervising staff member). Individually or in groups, students prepare patients and discuss them with their peers and teacher. In general, there is a gradual build-up in the master from participating to lead in patient workup and presentation.

During the entire six-year programme the tutoring system allow all students to individually reflect on their development together with an experienced staff member (see area 3 and 8 for detailed information).

Standard 5.4: ***Medical records for patients seen intra- and extra-murally under Core Clinical Training (CCT) must be comprehensive and maintained in an effective retrieval system to efficiently support the teaching and learning, research, and service programmes of the VEE.***

Description of the patient record system, its completion, its availability to staff and students and how it is used to efficiently support the teaching, learning, research, and service programmes of the VEE.

Medical records systems on campus

The medical record system used by all three clinics is Provet Cloud (release 1.110) and was implemented in February 2022. Provet Cloud is a medical record system specifically designed for the veterinary market and has over 50.000 users in over 30, mostly European, countries including some university clinics. It is designed by the Finnish company Provet Cloud (owned by Nordhealth). Provet is a SaaS (Software as a Service) designed for the use in primary care veterinary practice. The application is used for scheduling and appointment making, generating and storing patient records. It includes the import of internal and external data (e.g. laboratory results) for both regular consultations and hospitalisations, registering diagnoses, billing, generating invoices, generating and documenting communication with animal owners, direct colleagues, and referring veterinarian, generating reports (e.g. inventory) and management data.

Records are comprehensively and safely stored (2FA authorisation). Retrieval takes place mainly for educational and patient care purposes but is also useful for research purposes.

All master students have on- and off-site access to Provet Cloud through an individualised account that allows them to generate (read and write) patient entries for both consultations and hospitalisations, generate laboratory and diagnostic imaging requests, prescriptions and feedback letters to patient owners and referring veterinarians. All entries are verified and (if indicated) signed by the responsible veterinarian. The system allows for individualised feedback to the student that has generated patient entries. For students involved in their research internship, read-only access can be provided.
There are integrations between Provet Cloud and the laboratory system GLIMS (MIPS), the Imaging application Enterprise Imaging (Agfa) and partly with the financial programme SAP (the current integrations will be extended and improved in 2024). There are daily data backups from Provet Cloud to our BI (Business Intelligence) environment that enables the VEE to use reports from Provet Cloud and also to generate reports in the BI programme. For analysis of technical data of herds, the Farm Animal Health division also uses commercial record keeping systems (Agrovision, Farm Uniform-Agri, Agis, RUMA, Pir-DAP-cf. PigChamp and InsemAn-Analysis of fertility parameters). Besides Provet Cloud, other systems are used as well, all connecting or almost ready to connect with Provet Cloud. The pharmacy uses the ‘Viva’ program. PACS manages distribution and storage of digital images. GLIMS is the system for diagnostic labs, microbiological labs, and the pathology labs.

Medical records systems at the University Farm Animal Practice

The ULP uses different databases for handling farm data and laboratory results which are accessible by students. Technical farm data can be accessed and analysed with different Farm Management Systems (Cowvision, Uniform, RUMA, Pir-DAP) and farm health data can be retrieved through the central database of the Animal Health Service (Royal GD). Farm visit records and patient records are stored digitally in VIVA. Recently, the ULP also started working with VETWERK, a specially designed veterinary management system to be used in Veterinary Herd Health Management. Students have to prepare Veterinary Herd Health visits using information retrieved from all these databases. Students also need to work on an animal health casus on one of the farms serviced by the ULP using the data from the different databases and additionally collected field observations or measurements.

Medical records systems in private practices during externships as part of the CCT.

As all students see patients extramurally (e.g., during the JECO and SECO) they will also work with other medical record system (MRS) than those that are used intramurally (mainly Provet Cloud). The practices selected for the extramural training of our students represent a variety of ownership and management (ranging from smaller practices owned by the practicing vets to clinics belonging to corporates). Therefore, students will encounter a variety of MRS during their training. Students are trained to use the specific system as part of the introduction during the externship by the qualified and supervising veterinarian. Students gain experience in the myriad ways MRS support the functions of a busy veterinary clinic e.g., scheduling and appointment making, generating, and storing patient records, import of internal and external data (e.g. laboratory results), registering diagnoses, billing, generating invoices, generating and documenting communication with animal owners, direct colleagues, generating reports (e.g. inventory) and management data. It should be noted, however, that due to legislatory restrictions students are not allowed to communicate client and patient information to parties outside of the practice in question.

Comments on Area 5

- The VEE explicitly adheres to the principle 'never on a live animal the first time' in its longitudinal curriculum design. Starting in the Bachelor programme from the longitudinal course LVC and practicing on 3D and simulation models in the Skills lab, to live animals in practicals and authentic patients in the VTH and EPT.
- The VEE attaches significant importance to its strategy on reducing the use of living animals in the veterinary curricula yet maintaining high standards regarding the educational experience for both undergraduate and postgraduate students. Consequently, there is a professorship specifically focused on reducing the use of live animals in education and catalyzing the transition to animal-free innovations.

Suggestions for improvement in Area 5

- Within the VTH there are currently students participating in their clinical rotations from the previous and new Master programme. This puts a pressure on the group sizes. It is expected that group sizes will start to decrease from academic year 2024-2025 onwards (as students from the previous programme will graduate and phase out), however it is important to closely monitor and intervene when necessary.
- Extracting data from the VEE's IT-systems over the different departments and subgroups (e.g., for accreditation purposes) proved to be complicated. Optimizing these systems to align with the required data will be addressed by the VEE's Business Intelligence (BI) team in the upcoming years.

Area 6 Learning resources

Standard 6.1: ***State-of-the-art learning resources must be adequate and available to support veterinary education, research, services and continuing education. Learning resources must be suitable to implement teaching facilities to secure the 'never the first time on a live animal' concept.***

Description of the general strategy of the VEE on learning resources

The VEE's strategy on learning resources is driven by a commitment to innovation and the facilitation of students to become self-regulated and lifelong learners. As a result, the VEE has invested in learning resources that support students' development at all stages of their education. Students have access to state-of-the-art learning technologies, both in-person (e.g., harnessing simulation-based learning in the Skills Lab securing the 'never the first time on a live animal' concept) and online (e.g., digital learning resources). With regards to the latter, students have access to a modern virtual learning environment, and are encouraged to develop self-regulated learning skills when engaging with a wide range of videos, online lectures and emodules.

Teaching staff is empowered to develop and improve the quality of their learning resources based upon educational best practices. Specific support includes advice and guidance from technical and educationalist staff at the university's Centre for Academic Teaching (CAT)[43], as well as the appointment of a dedicated educational innovator at the VEE. Furthermore, the VEE engages in diverse international collaborations with other veterinary education institutions, e.g., Veterinary School Council, EAEVE and the AVMA (American Veterinary Medical Association), with the overall aim of sharing best practices and contributing to the advancement of the veterinary education knowledge base.

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

Students are provided with a comprehensive induction for the access to and use of learning resources relevant to their programme. For example, first-year students receive detailed guidance on the Student Information System (SIS; Osiris[44]) and Learning Management System (LMS; Blackboard[45]), as well as the mobile my-UU app[46], which is a digital student card and provides up-to-date access to the timetable, grades etcetera.

With respect to engaging with scientific information, students begin with mandatory training via Utrecht University Library's Compass course[47] which supports learning around searching for scientific evidence, citing and referencing, and other aspects of information literacy. From here, students develop their information literacy skills further during the longitudinal course 'The Veterinary Professional' (LVP) offered during their first three years of studies. Under the guidance of qualified library services and IT staff, students engage in active learning projects on working effectively with scientific information. Students also have access to 'just-in-time-training' through the library LibGuides[48], as well as library staff with dedicated expertise in scholarly material. Furthermore, students and staff are provided with information about Utrecht University's rules on the use of copyright materials via the Copyright Information Office[49].

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43 https://www.uu.nl/en/education/centre-for-academic-teaching
44 https://students.uu.nl/en/osiris
45 https://students.uu.nl/en/blackboard
46 my-UU app
47 https://www.uu.nl/en/university-library/advice-support-to/students/information-literacy-skills/online-training-courses/compass
48 https://www.uu.nl/en/university-library/advice-support-to/students/information-literacy-skills/libguides-library-guides
49 https://www.uu.nl/en/organisation/copyright-information-office

Teaching staff, especially new and junior staff, are provided with training on how to use learning and teaching resources (see Area 9). Staff have access to a librarian dedicated to the VEE who can assist in research endeavours (e.g., structured search strategies and working with online databases).

Description of how (procedures) and by whom (description of the committee structure) the learning resources (books, periodicals, databases, e-learning, new technologies, …) provided by the VEE are decided, communicated to staff, students and stakeholders, implemented, assessed and revised
Educational software (e.g., the UU broad Student Information System (SIS) and the Learning Management System (LMS)) are governed centrally on the university level by the IT department[50]. Furthermore, the Centre for Academic Teaching (CAT) governs software regarding educational innovation. If necessary, public tenders are held to decide on what software will be used, project teams are created to communicate, implement, assess and revise the implementation of the UU broad software application.
At the VEE, decisions around learning resources are made by course coordinators, in close collaboration with each program's teachers, student representatives, and the Directors of Education. Selected learning resources are communicated to students through the Learning Management System (Blackboard), and the monitoring of how these are used falls under the remit of the VEE's quality assurance process (see Area 1, Standard 1.4). Regularly, approximately once every year, the VEE puts out a call and provide funds for supporting teachers and coordinators to update and innovate specific teaching and learning resources.

Standard 6.2: ***Staff and students must have full access on site to an academic library, an e-learning platform, and the relevant human and physical resources necessary for the development of instructional materials by the staff and their use by the students.***
The relevant electronic information, database and other intranet resources must be easily available for students and staff.

Main library: Utrecht University library
Staff and students have full access to an internationally acclaimed library, Utrecht University (UU) Library. This library provides access to a large collection of physical and online information resources including databases and health professions journals across the world. Furthermore, the library uses a catalogue[51] offering the VEE's staff and students to search scholarly resources on worldwide, national, and local (Utrecht) levels in one system. UU students and staff can obtain access to subscribed journals and databases by authentication with their Solis ID, either via a pop-up screen through one of the Library's webpages or using a library-made browser plugin ('Get access'). UU maintains high-standards for digital security, by increasingly using 2FA (two-factor authentication) which is supported by qualified IT staff, both central (UU) and local (VEE).

Staff (FTE) and qualifications
The central university library has 8.8 FTE staff dedicated to the support of education. This staff is predominantly trained to postgraduate level and contribute to specific disciplines[52]. The VEE has a dedicated Veterinary Medicine Subject Librarian[53] who has specific expertise in veterinary resources and special interests in accessibility, open science, open access, and online presence.

50 https://www.uu.nl/en/organisation/information-and-technology-services-its/services
51 Frequently asked questions WorldCat - Utrecht University Library - Utrecht University (uu.nl)
52 https://www.uu.nl/en/university-library/help-in-searching/by-discipline
53 https://www.uu.nl/staff/FPWeijdema

Opening hours and days

Staff and students can access online resources through UU library 24 hours a day, 365 days a year. Physical access to the on-site library is, during term time, from 08:00-22:30 on weekdays and from 10:00-22:30 on Saturdays and Sundays. Library hours are extended during exam periods and reduced outside of term time.

Annual budget

The annual budget of the central UU Library is approx. 30 million euro (30.2 million euro in 2022, 33.5 million euro in 2023, 33.9 million euro in 2024, with a similar indexed budget for future years).

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

The UU library has two locations: one in the city centre and one in the Utrecht Science Park. Overall, the library consists of 21,047 m2 of physical space with 240 educational rooms and offices, and 1,721 seats.

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

UU has a BYOD (bring your own device) policy and supports this with high-quality and high-bandwidth WiFi networks (i.e. university network, Eduroam) and electrical connections at virtually every seat for students and staff.

Software for bibliographical search

Staff and students have access to a wide range of software including global literature databases (e.g. Scopus, Web of Science) and more specific veterinary databases (e.g., CAB Abstracts, VetLexicon) and referencing platforms (e.g., EndNote, RefWorks) which can be accessed via their UU accounts. The library also supports Zotero and Mendeley users.

Brief description of the subsidiary libraries

Within the VEE in the Androclus Building, the ‘study hall’ (Studielandschap) (also see Area 4, Standard 4.1) is a two-story study area with student-centred facilities that facilitate self-directed, peer and active learning. This area, with individual and small group spaces, provides students with an environment aimed at studying, collaborating and learning from and with each other. The facilities include up-to-date IT access, and a wide range of physical learning resources from textbooks, through to a collection of specimens such as skeletons, plastinated body parts, and fixed wet materials (organ and animal preparations). Students have easy access to the study area and, subject to appropriate health and safety measures, can borrow learning resources for private study. The choice of learning resources here is decided by the students, course coordinators, and the Directors of Education.

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

The VEE is supported by a robust IT infrastructure and team of professionals who enable staff and students to access the internet across campus. With respect to e-learning platforms, Blackboard is the Learning Management System (LMS) of choice for all curricular activities, whereas Moodle is used for Continuing Professional Education (OvP). The LMS provides an online learning environment that gives students access to learning materials, offers a secure area to upload assignments, and provides them with up-to-date information about their programme.

Within the LMS, each course has a dedicated online space that is maintained by the course coordinator, with technical support from IT staff. Course coordinators have access to a variety of dedicated Software as a Service (SaaS) packages that augment the Learning Management System

(LMS; Blackboard). These include a tool for peer review (FeedbackFruits[54]) and plagiarism detection (Ouriginal[55]). The latter software, a plagiarism detection service, supports academic integrity, which is increasingly important with the ascendance of generative AI software such as ChatGPT. The choice of educational innovation tools is coordinated by CAT and a full portfolio of tools available can be found at the Teaching and Learning Collection[56].

All instructional materials are referenced through the course module on the LMS, which is updated yearly preventing access to outdated materials. The actual content can be hosted separately and be accessible through a link, where possible following the sign-in-once procedure. An example is the Veterinary Education Portal (DOP), with an increasing number of emodules, either in-house produced by expert teaching staff members, or modules from international colleagues. It was recognized that e-learning content has a limited shelf time, especially when it comes to rapidly evolving technologies. Therefore, a dedicated programme was initiated in 2023 to update and upgrade 11 modules for the bachelor and master programmes.
Selected educational resources are shared between the VEE and veterinary faculties at Kopenhagen, and Helsinki[57]. Resources are securely stored and accessible through the Edusources content management system[58]. Partners currently have a selection of 49 shared veterinary modules available.

Support
Technical support for the LMS is provided by a qualified IT support team at central university level. In addition, the VEE has access to a local IT support team including a dedicated key user (supported by colleagues) for the LMS who organises access rights, provides information and helps staff and students to trouble-shooting issues. Similarly, support in maintaining and innovating the learning resources is provided both at university (Information and Technology service (IT), CAT and VEE (Department of Communication and Multimedia) levels. Through CAT, UU provides educationalist support and managed access to services, hardware (e.g. virtual reality devices) and software (e.g. polling, quizzes). In addition, CAT provides access to innovative learning spaces[59] and offers advice and guidance around technological advances such as the use of generative AI.

Students also have access to centralised IT resources including Solis Workspace[60], providing routes for accessing and managing software packages ranging from software for statistical analysis (e.g., SPSS) to physiology simulation software.

Description of the accessibility for staff and students to electronic learning resources both on and off campus (Wi-Fi coverage in the VEE and access to resources through a hosted secured connection, e.g. Virtual Private Network (VPN))
On campus, staff can access internet through wired connections and via WiFi coverage, which is extensive and includes access to local managed networks, like the UU network, and international networks such as Eduroam[61]. Off campus, staff and students have access to the internet through their Solis log-in (which includes two-factor authentication), in combination with a VPN connection to facilitate secure network connection.
In addition, students and staff can access their personal files and educational resources when working or studying at home using secured online resources such as OneDrive or Sharepoint. Staff and students also have access to SURFspot[62], a platform that provides software licences and hardware at subsidised rates. Finally, staff have access to VEE-hosted intranet services to help them locate

54 https://teaching-and-learning-collection.sites.uu.nl/tool/peer-review-feedbackfruits/
55 https://plagiaatcontrole.sites.uu.nl/en/
56 https://teaching-and-learning-collection.sites.uu.nl/nl/tools/
57 https://veterinary-online-collection.eu/
58 https://www.surf.nl/en/services/edusources
59 https://www.uu.nl/en/education/centre-for-academic-teaching-and-learning/educational-innovation/future-learning-spaces
60 https://students.uu.nl/en/myworkplace
61 https://eduroam.org/
62 https://www.surfspot.nl/

relevant information from research and education issues, through to human resources advice and guidance.

Standard 6.3: ***The VEE must provide students with unimpeded access to learning resources, internet and internal study resources, as well as facilities and equipment for the development of procedural skills (e.g. clinical skills laboratory). The use of these resources must be aligned with the pedagogical environment and learning outcomes within the programme and have mechanisms in place to evaluate the teaching value of changes in learning resources.***

Brief description of the number of veterinary (e)books, (e)periodicals and number of other (e)books and (e)periodicals.

The library collection has access to approx. 8,000 current and frequently used monographs which are available to staff and students on loan. This collection also holds a significant proportion of physical journals (approx. 200), current and up to five years old, that are not available in electronic format. The veterinary collection also includes a comprehensive range of veterinary eBooks, digital platforms, and instruction modules. Students and staff have access to over 18,000 peer-reviewed journals (approx. 3,000 medical titles which include veterinary medicine) and more than 115,000 electronic books (1,000 veterinary titles).

The available learning resources to students, including electronic information and e-learning courses (and their role in supporting student learning and teaching in the core curriculum)

The VEE commits to providing students with seamless access to learning resources throughout their studies. Physical and online access to learning resources (through the library and LMS) are described above in Standard 6.2. Access to, and updating of, learning resources is consistently monitored and subject to evaluation by students, course coordinators and the relevant Directors of Education. This process of evaluation ensures that learning resources support students' learning effectively and are tightly aligned with Programme Learning Outcomes (PLOs).

Veterinary Education Portal (DOP)

The VEE has invested in the development of a number of emodules which are accessible for students and teachers through the Veterinary Education Portal (DOP)[63]. eModules are usually accessed by students during their (self-study) preparation for integrated clinical and advanced classes. In addition, they support an easily accessible reference for re-study activities. These resources have been developed and are maintained through a faculty granting system (FSO) and the support of an in-house technical team (multimedia service, MMS) which supports design and production. In addition, MMS supports the development of educational podcasts, websites, e-simulations, images and instructional videos, resources which enrich the blended learning experience for students.

A further way that the VEE reduces barriers to learning is through the recording of lectures. Teaching staff and students are provided a video platform[64] whereby lectures can be recorded through desktop and mobile devices. This platform offers features such as automatic upload to the server, an online editor, the ability to organise content according to meta data in a secure learning environment, as well as interactivities such as Q&As and polls. Students have access to a large database of recorded lectures through the Veterinary Education Portal providing an authoritative reference, as well as means for self-testing and exam preparation.

In addition, the VEE has put significant effort in the digitalisation of educational resources, catalysed

63 https://media.vet.uu.nl/dop/ *(in Dutch)*
64 Teaching and learning collection | Videoplatform UU

in recent years by the Covid-19 pandemic. Since 2021, the VEE's digitalisation efforts have been boosted in three ways. Firstly, by the appointment of a staff member dedicated to the digitalisation of veterinary education materials. Secondly, by a substantial financial injection made possible by the 'Quality agreements'-funding[65], a type of state funding. Thirdly, by collaborating with other veterinary education institutions.

The VEE is determined to offer a state-of-the-art learning environment with innovative learning resources for its students. An example of this is extended reality (i.e., virtual and augmented reality), which is currently gaining momentum with respect to animal models and simulation-based learning in veterinary training. At the VEE, dedicated staff are working on the development of an Extended Reality (XR) platform for veterinary education and engaging in scientific research to investigate the added value of such technologies. Currently, pilot tests are running with an augmented reality platform called 'AvatarZOO', which aims to support animal-free learning of spatial anatomy with digital 3D models of an increasing number of animal species. In addition, an augmented reality simulation platform for drawing blood from cattle and a virtual reality simulation platform for ovariectomy in dogs are being developed. Once research to validate these technologies is complete, it is anticipated that they will be embedded within the VEE Skills Lab.

The organisation and supervision of the Skills Labs

For many years, Skills Labs at the VEE have played a central role in creating a safe learning environment, whilst upholding animal welfare. The VEE has a commitment to decreasing the number of laboratory and teaching animals, supporting the principle of 'never the first time on live animals'. Due to recent funding opportunities, it has been possible to improve and better embed Skills Labs within the veterinary programmes. The Labs have a central coordinator and dedicated paravet technician who make sure that skills training is integrated effectively into courses, and ensure that equipment is maintained, and protocols are made available for students. At specific times, students can practice relevant skills under the supervision of the technician and/or the respective teaching staff member.

Comments on Area 6

- Many software tools used at the VEE are centrally (by Utrecht University) offered, and maintained (e.g., Blackboard (LMS), Osiris (SIS), Remindo). This enables that the VEE can make use of a well-established chain of service from Service Level Agreements to privacy and security checks.
- The main library of the VEE is centrally governed by Utrecht University, enabling the VEE to make use of its services.
- Recently, a central UU public tender has been held for a new Learning Management System (LMS). The outcome of this tender is the software tool Brightspace[66]. In the academic year 2024-2025 a partial implementation will take place, to gain experience with Brightspace in several courses. From September 2025, all courses will use Brightspace.

Suggestions for improvement in Area 6

- Currently, the Skillslabs are housed in multiple locations, with a plan in place to centralise these facilities in one location and provide students with a dedicated space to engage with models and simulators, at their convenience. Furthermore, even though the Skillslabs have a significant role in our programmes, we aim to further integrate the Skillslabs into the programmes on course level.

65 *https://www.uu.nl/en/education/quality-and-innovation/quality-agreements-2019-2024*
66 *https://students.uu.nl/en/news/brightspace-to-become-uus-new-lms*

Area 7. Student admission, progression and welfare

Standard 7.1: ***The VEE must consistently apply pre-defined and published regulations covering all phases of the student "life cycle". In relation to enrolment, the VEE must provide accurate and complete information regarding the educational programme in all advertisements for prospective national and international students. Formal cooperation with other VEEs must also be clearly advertised.***

Description of how the educational programmes, learning outcomes, admission procedures and requirements for national and foreign students, progression and certification, tuition fees, academic calendar, collaborations with other VEEs, etc. are advertised to prospective students

The VEE has specific internet pages where information can be found for prospective students including admission procedures and requirements for national and foreign students, the programme, the opportunity for an honours programme, the labour market, information for open days and experiences of current students[67]. For international students, the UU website of the international office[68] and the VEE's website[69] offer information about all aspects of studying, including how to orientate and prepare, and possibilities regarding financial support. Prospective students can find information about formal corporation with other VEE's and the possibilities to study abroad[70]. Prospective students can also find elaborate detailed information about the Bachelor and Master programme on the VEE's website[71]; including a description of course content, teaching (and assessment) methods and group sizes. Next to that, the Programme Learning Outcomes (PLOs) are explained and shared on the VEE's website[72] and information is published concerning practical matters such as enrolment on both course and programme level (including an academic calendar), and certification[73]. UU offers prospective students general information on studying at a university, how to choose the right programme, and general information on enrolment, including tuition fees and finance possibilities[74].

Furthermore, the VEE provides outreach communication activities for prospective students to the Bachelor programme, including information sessions for high-school counsellors, open days (both online and on-site), as well as informational publications such as brochures.

As a final note, as the programme is offered in Dutch, with all of the attendant language requirements (as required by the Education and Examination Regulations (OER)), information provided to prospective students, national and international, is mainly in Dutch.

67 *https://www.uu.nl/bachelors/diergeneeskunde (Bachelor) and https://www.uu.nl/masters/diergeneeskunde (Master) (both in Dutch)*
68 *https://students.uu.nl/en/academics/study-abroad/contact-international-office*
69 *https://www.uu.nl/en/organisation/faculty-of-veterinary-medicine/education/international-office*
70 *Studeren in het buitenland - Diergeneeskunde (BA) - Students UU (in Dutch, an overview of the VEE's formal partners is illustrated in the map)*
71 *Studieprogramma - Diergeneeskunde - Universiteit Utrecht (uu.nl) (Bachelor) and Studieprogramma - Diergeneeskunde - Universiteit Utrecht (uu.nl) (Master) (both in Dutch)*
72 *Program Outcomes - Faculty of Veterinary Medicine - Utrecht University (uu.nl)*
73 *Praktische zaken - Diergeneeskunde (BA) - Students UU (Bachelor) and Praktische zaken - Diergeneeskunde (MA) - Students UU (Master) (both in Dutch)*
74 *https://www.uu.nl/bachelors/informatie-voor-nederlandse-studenten and https://www.uu.nl/masters/algemene-informatie/informatie-voor-nederlandse-studenten (both in Dutch)*

Standard 7.2: *The number of students admitted must be consistent with the resources available at the VEE for staff, buildings, equipment, healthy and diseased animals, and materials of animal origin.*

Table 7.2.1 Number of new veterinary students admitted by the VEE				
	2022 - 2023	**2021 - 2022**	**2020 - 2021**	**Mean**
Standard students	224	226	223	224
Full fee students	0	0	0	0
Total	224	226	223	224

Table 7.2.2 Number of veterinary undergraduate students registered at the VEE				
	2022 - 2023	**2021 - 2022**	**2020 - 2021**	**Mean**
First year	224	226	223	224
Second year	212	212	212	212
Third year	209	208	210	209
Fourth year	250	100	234	195
Fifth year	93	227	170	163
Sixth year	229	169	170	189
Total	1217	1142	1219	1193

Students may take longer than the set 3 years to complete their study programme. Under fourth to sixth year, the figures represent the number of students who have completed their Bachelor's programme and are now enrolled in the Master's programme. Please note that many students who had completed their Bachelor's programme and were able to enrol in the Master's programme in 2021-2022 opted not do so. Instead, they waited for the start of the new Master's curriculum in 2022-2023.

Table 7.2.3 Number of veterinary students graduating annually (Bachelor and Master)				
Bachelor	**2022 - 2023**	**2021 - 2022**	**2020 - 2021**	**Mean**
Standard students	191	189	182	187
Full fee students	0	0	0	0
Total	191	189	182	187
Master	**2022 - 2023***	**2021 - 2022**	**2020 - 2021**	**Mean**
Standard students	176	158	201	178
Full fee students	0	0	0	0
Total	176	158	201	178

Table 7.2.4 Average duration of veterinary studies (Bachelor and Master)	
Bachelor	**% of the students who graduated in 2022 - 2023**
+ 0 year	62.6
+ 1 year	27.6
+ 2 year	6.4
+ 3 years or more	3.3
Master	**% of the students who graduated in 2022 - 2023**
+ 0 year	12.8
+ 1 year	65.7
+ 2 year	16.3
+ 3 years or more	5.2

Table 7.2.5 Number of postgraduate students registered at the VEE				
	2022 - 2023	**2021 - 2022**	**2020 - 2021**	**Mean**
Interns*	n/a	n/a	n/a	n/a
Residents	50	58	56	55
PhD students	125	112	122	120
PhD students External financing **	55	14	11	27

** At the VEE both interns and residents are registered as residents.*

*** Since 2022-2023 registration data is derived from two different systems.*

Standard 7.3: ***The selection and progression criteria must be clearly defined, consistent, and defensible, be free of discrimination or bias, and take into account the fact that students are admitted with a view to their entry to the veterinary profession in due course. The VEE must regularly review and reflect on the selection processes to ensure they are appropriate for students to complete the programme successfully.***

Description of the admission procedures and selection criteria for standard students

Admission to the Bachelor's programme

The VEE is the sole institution in the Netherlands to provide veterinary medicine education, a factor that contributes to the extreme popularity of our Bachelor's programme. On average, we receive over 1,000 applications a year for a fixed number of seats (225 per annum). A comprehensive selection procedure is in place to make sure that all applicants are treated fairly and equitably. From the >1,000 applicants, more than 800 of them take part in the selection process.

Utrecht University strongly supports diversity in their programmes, with an active, overarching equality, diversity and inclusion programme[75]. The VEE recognises the importance of a diverse cohort of veterinary graduates in meeting the needs of pet owners, farmers and society at-large, and thus strives to support the admission of applicants from a wide range of backgrounds. The programme welcomes any prospective student who has the prerequisite knowledge and skills and demonstrates a realistic perspective on what the studies and the profession entail.

75 https://www.uu.nl/en/organisation/equality-diversity-inclusion

All applicants must meet the pre-admission criteria as described in the Education and Examination Regulations (OER). Admissions follow an established process, clearly communicated through the VEE's Education and Examination Regulations (OER) 2023-2024 (describing the pre-admission criteria) (see Appendix 7.3.1) and Selection Regulations 2023-2024 (admissions process, Appendix 7.3.2).

Since 2017, the VEE has implemented an admission procedure, as mandated by Dutch legislation, that facilitates the enrolment of applicants into our Bachelor's programme. To be eligible, prospective students must register before mid-January in the National study enrolment institute 'Studielink'[76]. Once registered, they are required to complete a matching questionnaire before gaining access to study material that prepares them for the VEE's admission procedure. Prospective students will then be invited to attend an on-site selection day at the VEE where they take three tests. Students are scored according to their performance on knowledge and reasoning tests, as well to their responses to dimensions of openness and conscientiousness on standardised personality tests for higher education. Statistical analysis of student scores results in a ranking of candidates. Studielink offers the top 225 scoring students a place on the programme. Offers are sent out on April 15th each year, with candidates given two weeks to accept or decline. If an applicant declines an offer, the next ranked candidate will be notified of a place. This process continues until September 15th.

Admission to the Master's programme

Each year the VEE welcomes 240 students to our Master's programme. Whilst the majority of these seats are reserved for the Bachelor's programme graduates, we also offer a maximum of 25 further seats to the following candidates:

- Candidates with a minimum of 180 ECTS credits (126 weeks) from an AVMA- or EAEVE-accredited programme and who have completed the four-week summer course 'Prep Course Master Veterinary Medicine' offered by the VEE (maximum of 10 seats)[77]
- Graduates of the Bachelor's programme Animal Sciences at Wageningen University and Research (WUR), the Netherlands (maximum of 15 seats). These students must have successfully completed the 30 ECTS- credits programme 'Basics in Veterinary Medicine' offered by the VEE[78].

The Master's programme requirements and admissions process are communicated through the Education and Examination Regulations (OER) 2022-2023 (requirements) (Appendix 7.3.3.) with the Selection Regulations 2023-2024 (admissions process) available at Appendix 7.3.4. The admissions process for the master's programme is executed by the admissions committee, of which the Director of Education of the Master's programme is the chairperson. The committee is assisted by an admissions officer.

For admission to the Master's programme students must have obtained one of the following Bachelor's degrees:

- Bachelor's degree in veterinary medicine from the VEE
- Bachelor's degree in veterinary medicine (or at least 180 ECs) on any EAEVE- or AVMA-accredited institute, combined with the VEE's 'Prep Course Master Veterinary Science'
- Bachelor's degree in animal sciences from Wageningen University, combined with the minor 'Basics in Veterinary Medicine'

In addition to this certification, applicants must also meet the following criteria:

- Applicant is able to successfully complete the Master's degree within a nominal time with normal effort. If the applicant has completed the previous education within 4,5 years, this criterion is met.

76 https://www.studielink.nl/
77 https://utrechtsummerschool.nl/courses/life-sciences/prep-course-master-veterinary-medicine
78 https://students.uu.nl/en/academics/minors/basics-in-veterinary-medicine *(in Dutch)*

Examples of grounds for exceptions include delays due to disabilities, illness, caring duties, or involvement in high performance sport.
- Applicant has an adequate motivation for the Master's degree in Veterinary Medicine.

Policy for disabled and ill students
The admissions procedure facilitates applications from individuals who may not be able to attend in-person. For example, a proctored online selection procedure is available to applicants with disabilities that prevent them from participating on-site.
Whether online or in-person, candidates with disabilities or additional learning needs can request accommodations during the admission, e.g., extra time or special facilities. It should be noted that candidates who meet unexpected circumstances, e.g., illness, on the day of selection do not have an opportunity to retest on a different day. Candidates can, however, ask to cancel their selection attempt for the Bachelor's admission under these circumstances to avoid losing one of three potential attempts at selection.

Composition and training of the selection committee
The Bachelor's admissions process is coordinated by the Bachelor's Selection Committee. This committee comprises of several senior staff members and is chaired by the Bachelor's Director of Education. The chair participates in a UU-broad committee with other Directors of Education from programmes with numerus fixus. Via this UU committee, regular feedback is given to both the UU and the Dutch Ministry of Education (i.e., the regulatory body for legislation on admission). The members of this committee engage in regular professional development, i.e. meetings, workshops and conferences, to ensure that they are up to date with academic research on admission and selection in higher education.

Appeal process
Applicants to the programme have access to an appeals process. Appeals can be made through an online process, which is managed by the university's Department of Legal Affairs. Once the VEE's selection committee receives notification of an appeal, the candidate will be contacted by the committee chair or secretary to discuss their appeal. From here, should the candidate choose to pursue the appeal further, the selection committee writes a formal response to the candidate, and a hearing is organised by UU whereby both the candidate and programme representatives can state their case. A decision is made by the objection committee (on behalf of the Executive Board) and communicated to all parties within six weeks.

Each year a maximum of ten candidates make an appeal, with two to four candidates appearing at a hearing, in almost all cases, it is found the selection procedures were applied correctly and fairly for such candidates, resulting in selection decisions that are upheld.

Advertisement of the criteria and transparency of the procedures
Annually, the admission criteria and procedures for selection are discussed under scrutiny of the bachelor Education Committee (OC), are endorsed on a yearly basis by the Faculty Council and finally approved by the UU Executive Board (CvB). Subsequently, the information about the selection procedures, including details of steps and timelines, is published on the UU website[79].

The webpage regarding admission for the bachelor programme contains a detailed explanation and timeline of all steps and deadlines. The website is regularly updated, and the application cycle opens on October 1st each year. Additionally, throughout the year, candidates can submit any questions they may have about the selection procedures to a dedicated mailbox: selectie.dgk@uu.nl.

79 https://www.uu.nl/bachelors/diergeneeskunde/toelating-en-inschrijven/selectie *(in Dutch)*

For students admitting to the Master's programme, the procedure and criteria, along with other practical information, are posted on the student website[80].

Description of the admission procedures for full fee students (if different from standard students)
This is not applicable as the admission procedure is the same for all applicants.

Description of how the VEE adapts the number of admitted students to the available educational resources (facilities and equipment, staff, healthy and diseased animals, material of animal origin) and the biosecurity and welfare requirements
The Bachelor programme admits a fixed number of students every year (225), meaning that educational resources are put in place to safely support this number of students. This number is determined by the Minister of Education, based on the advice of the Ministry of Agriculture, Nature and Food Quality (LNV) on labour market research.

Description of the prospective number of new students admitted by the VEE for the next 3 academic years
For the next three academic years, the VEE will continue to admit 225 students in the Bachelor programme and 240 students in the Master programme yearly.

Standard 7.4: ***There must be clear policies and procedures on how applicants with disabilities or illnesses are considered and, if appropriate, accommodated in the programme, taking into account the requirement that all students must be capable of meeting the ESEVT Day One Competences by the time they graduate.***

Description of the policies and procedures dedicated to applicants with disabilities
In the admission procedure, applicants with a disability can apply for adjustments and accommodations during the selection day. The deadline for these requests is February 1st, and this is communicated on the VEE's website and in several emails the applicants received after their application. The applicants are treated the same way as students with disabilities already enrolled in the Bachelor programme. Therefore, the same rules regarding extra time during the tests and other accommodations (e.g. text-to-speech software for applicants with dyslexia) apply. Requests for accommodations are assessed by a student counsellor, in consultation with the secretary of the Board of Examiners (EC) if necessary. Provided adjustments are held only for the admission procedure.

Standard 7.5: ***The basis for decisions on progression must be explicit and readily available to the students. The VEE must provide evidence that it has mechanisms in place to identify and provide remediation and appropriate support for students who are not performing adequately. The VEE must have mechanisms in place to monitor attrition and progression and be able to respond and amend admission selection criteria and student support if required.***

Description of:
The progression criteria and procedures for all students
Student progression at the VEE is strictly monitored and a key stakeholder in this process are both Boards of Examiners (EC). Currently, according to Dutch law, students in the Bachelor programme receive a Binding Study Advice (BSA) regarding their academic progression at the end of the first academic year. With respect to progression, first year students must obtain at least 45 of the annual

80 https://students.uu.nl/dgk/diergeneeskunde-ma/aanmelden-master-dgk-22 (in Dutch)

60 credits (ECTS) at the end of their first year. At midterm (February 1st), all students receive preliminary advice (pre-study advice) from the Board of Examiners (EC), recommending that they continue, pause or terminate their studies on the basis of their progress within the courses they have undertaken in their first term.

The remediation and support for students who do not perform adequately

Students who receive a preliminary BSA to pause or terminate their studies are invited to discuss their progress, including appropriate support and remediation measure, with a student counsellor. At the end of the first year, students receive the final BSA by the Board of Examiners (EC). As this advice is binding, students who receive a 'negative' advice must end their studies. In special circumstances (e.g., where students experience illness, injury or other exceptional circumstances), the Board of Examiners (EC) can retain the BSA for a further year. In such cases, the student must obtain the minimum of 45 ECTS in the next academic year. Further information on the BSA is available online[81] in Dutch and attached in Appendix 7.5.1 in English.

The advertisement to students and transparency of these criteria/procedures

Each year the EC publishes a set of regulations that address the VEE's approach to assessments and examinations. The regulations for the Bachelor programme (in Dutch) can be found online. The English version is added in Appendix 7.5.2. The regulations for the Master programme can be found in Appendix 7.5.3. Rules governing progress are included in the VEE's OER (Education and Examination Regulations). Both OER's are discussed in the meetings of the Education Advisory Committee (OAC) with both staff and students involved. The regulations are also formally discussed in the Faculty Council in which consent is required. The OER of each programme is published on the students' website (see Appendices 7.3.1 and 7.3.3).

Description of the rate and main causes of attrition

Attrition in the Bachelor programme varied the previous three years from 4% to 7% (2020-2021 6%, 2021-2022 7%, and 2022-2023 4%) and in the Master programme from 1% to 6% (2020-2021 1%, 2021-2022 6%, and 2022-2023 1%). Main causes of attrition are academic reasons (due to a negative BSA) or personal reasons. Please note that the numbers are rounded off.

Description of how (procedures) and by whom (description of the committee structure) the admission procedures, the admission criteria, the number of admitted students and the services to students are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

The selection regulations and the OER are annually reviewed and discussed in the Education Committee (OC), between staff, students and Director of Education. The Bachelor admission committee, both Boards of Examiners and the Master admission committee review the current procedures and criteria and contribute to amending these when necessary. Thereafter, the adjusted OER and selection regulations are presented to the Faculty Council for consent. Following the consent, the Dean signs the OER and these are published on the relevant student websites. The admission and selection regulations for the Bachelor programme are presented to the UU Executive Board (CvB) for final approval.

81 https://students.uu.nl/dgk/diergeneeskunde-ba/praktische-zaken/regelingen-en-procedures#Professioneel%20gedrag%20en%20aansprakelijkheid *(in Dutch, translation in Appendix 7.5.1)*

Standard 7.6: ***Mechanisms for the exclusion of students from the programme for any reason must be explicit. The VEE's policies for managing appeals against decisions, including admissions, academic and progression decisions and exclusion, must be transparent and publicly available.***

Description of the mechanisms for the exclusion of students

The only (formal) mechanism for excluding students is the procedure of BSA for first year students, as described above. Once students have enrolled in the programme and completed their first year, it is, due to Dutch legislation, very rare to exclude students from the programme. Only, severe and structural unprofessional behaviour that reasonably hampers the student to function as a professional in the field could be a reason (so-called Iudicium Abeundi) to exclude students. This process is carefully coordinated by the VEE's personal and professional behaviour coordinator. Exclusion of students for this reason has not occurred in the last three years.

Description of the appeal processes

Students are provided with an opportunity to appeal a decision from the Board of Examiners (EC). Instructions on how to make an appeal are provided to students alongside formal assessment decisions. Students can initially lodge an appeal through an online process with, as the next stage, the Board of Examiners scheduling a 'discussion for an amicable settlement' with the student. If a settlement is not reached at this meeting, the student can escalate their objection to the UU Examination Appeals Board. At this stage, the Director of Education will write an official response to the appeal and an official hearing is organised, after which the board will rule.

Standard 7.7: ***Provisions must be made by the VEE to support the physical, emotional and welfare needs of students. This shall include provision for disabled students, consistent with all relevant equality, diversity and/or human rights legislation.***
There must be effective mechanisms for the resolution of student grievances (e.g. interpersonal conflict or harassment).

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

The VEE has several services designed for students to support physical, emotional and welfare needs of students.

Welfare

The VEE recognises the challenges associated with studying veterinary medicine. The first months of acclimating to academic education, particularly for international and first-generation university students, can be overwhelming. The VEE established a dedicated taskforce consisting of both students and staff members (Taskforce 'Studentenwelzijn') to determine how students' well-being can be monitored and improved.

Physical health and fitness are also promoted within the VEE. UU offers a reduced subscription at the Olympos sports centre and students are encouraged to join one of the 31 student sports clubs or work out in the fitness room and join group classes or sports courses.

Sharing hobbies, interests and experiences with peers can be a good way to improve a student's well-being. Student organisations help students to connect with peers based on shared interests in sports or cultural activities. Utrecht has more than 150 student organisations. Specifically the VEE has the Veterinary Students Association (DSK), of which most students are member, and other students associations and committees, such as the student horse riding association 'De Solleysel', the student association for birds and exotic species ‘Archeoptryx’, the society on cattle breeding ‘Veefokkers’, and the Dutch student division of ‘Vétérinaires sans Frontières’. A full list of the VEE’s student associations and committees is on the VEE student’s website[82].

Twice a year UU organises a Well-being Week, aiming to emphasize the importance of well-being. The activities of the Well-being Week touch upon mental, physical, spiritual, but also financial, sustainable, occupational, and social well-being. Specifically for students at the VEE, the second edition of VET Fit will be organised this year. VET Fit is an afternoon for both Bachelor and Master students with workshops about well-being (e.g., stress, loneliness, resilience).

When a student is experiencing issues with serious implications for their well-being that go beyond the expertise of the tutor or study counsellor, they can be referred to a UU student psychologist by the student counsellor. The use of the UU student psychologist is free for a few sessions, after which it can be reimbursed through the individual’s (mandatory, national) health insurance.

Safety

The VEE also has a wide variety of measures and regulations in place to ensure physical and social safety for staff and students. An overview of these is provided on the student safety website[83].
The VEE has access to a company emergency response team, a health and safety coordinator, an emergency contact service for assistance in acute and non-acute circumstances, a system of notification of security incidents, and a wide range of safety protocols and procedures.

Student counsellors

The VEE student counsellors who work at the Students & Education office (OSZ) provide information on admission, possible alternatives when not admitted, rules and regulations on assessments and exams, exceptions, exemptions, etcetera. They act as trusted intermediaries that can support students who face learning difficulties, barriers to progression, or study delays due to personal circumstances. Importantly, student counsellors are support staff and are never involved in assessment of students. Students also have access to UU student counsellors who provide more general advice on subjects such as housing, financial problems, or disabilities.

Career advice

Veterinary students at the VEE are also supported in their career trajectories through a variety of supports and resources. In Area 3, Standard 3.2 ‘Preparation for the labour market’ further information can be found on career advice.

Description of the mechanisms for resolution of student grievances

Should issues of undesirable or unprofessional behaviour arise, students can discuss these with their student counsellors or the confidants of UU. From October 2022, a junior and senior teacher from each teaching hospital is selected by the students to act as an easily accessible point of contact for issues related to social safety. If needed, issues can be escalated to the Directors of Education or the policy officer for social safety.

82 *Vrije tijd en studentenleven - Diergeneeskunde (BA) - Students UU (in Dutch)*
83 *https://students.uu.nl/dgk/diergeneeskunde/praktische-zaken/gezondheid-veiligheid-en-milieu/veiligheid (in Dutch)*

Standard 7.8: ***Mechanisms must be in place by which students can convey their needs and wants to the VEE. The VEE must provide students with a mechanism, anonymously if they wish, to offer suggestions, comments and complaints regarding the compliance of the VEE with national and international legislation and the ESEVT Standards.***

Description of the mechanisms allowing students to provide their needs, complaints, comments and suggestions to the VEE.

The VEE provides students with multiple, diverse ways to express their needs and preferences. There are several mechanisms in place for students to provide input. For example, students are invited to apply for a seat in a wide range of educational committees, including the Faculty Council, Educational Committee, Faculty Board and Board of Studies. Representatives from most of these committees form the Student Council. In addition, students can apply to participate in the student representative panel. Each year of the Bachelor programme and each differentiation (Companion Animal Health, Equine Medicine and Farm Animal Health) of the Master programme has a student representative panel. In Area 1, Standard 1.2 the educational committees are further explained.

Students are also invited to provide feedback on the programme through an elaborate Quality Assurance process (see Area 1, Standard 1.4). Additionally, students are actively involved in educational projects, feeding opinions and advice into many of the educational committees with respect to educational innovation. For suggestions, comments or complaints that are not addressed in the structural evaluation, a ‘complaints’ coordinator has been appointed. Students have the opportunity to address their suggestions, comments or complaints anonymously if they wish to do so (by delivering them in a mailbox on the ground floor of the Androclus Building). The complaints coordinator handles this information confidentially and files reports with the relevant Directors of Education.

Comments on Area 7

- The VEE acknowledges the significance of student well-being, therefore various initiatives have been implemented to improve student’s well-being.
- From the academic year 2025-2026 onwards, besides students from the AVMA- or EAEVE accredited programmes and Bachelor’s programme Animal Sciences, students from the Bachelor’s programme Clinical Sciences Utrecht University[84] will be admitted to the VEE’s Master’s programme. By admitting students from different backgrounds, the VEE aims to increase diversity of admission in the Master’s programme.

Suggestions for improvement in Area 7

- A consideration is that under Dutch law the VEE is required to use at least two qualitative criteria and rank all candidates, offering a place to the first 225 candidates according to their scores. This may provide a barrier to a fully diverse student population admitted to the Bachelor’s programme. Recent changes in Dutch legislation, however, will enable the VEE to redesign the admission procedure of the Bachelor’s programme and further address issues of diversity and inclusion from the academic year 2026-2027 onwards.

84 https://www.uu.nl/bachelors/zorg-gezondheid-en-samenleving (in Dutch)

Area 8. Student assessment

Standard 8.1: ***The VEE must ensure that there is a clearly identified structure within the VEE showing lines of responsibility for the assessment strategy to ensure coherence of the overall assessment regime and to allow the demonstration of progressive development across the programme towards entry-level competence.***

Description of the general student's assessment strategy of the VEE
The VEE has in place an assessment strategy that prioritises the progression of students, through a supported system of assessment and feedback. It harnesses both formative and summative assessment methods to ensure that students' academic progress aligns with Programme Learning Outcomes (PLO) (see Standard 8.3).

A core aim of the assessment strategy is to facilitate student autonomy and encourage students to take ownership of their learning journey and stimulate self-regulated learning. To this end, the VEE utilises a structured approach to assessment and strive for a balance between methods that are teacher-driven and those that are student-driven. As for any educational component, assessment should be of high quality, efficient and evidence-based. In addition, methods must be reliable, valid, representative and transparent. To ensure that these demands are met, the VEE has several mechanisms in place. These include regular Quality Assurance procedures, the Boards of Examiners (EC), and an Assessment Quality Committee (TCD) (see Area 1, Standard 1.2 & 1.4, and below). The VEE also commits to ongoing faculty development and teacher professionalisation with respect to assessment strategies (see Area 9 'Teaching and Learning Community').

The VEE assessment strategy covers both the Bachelor and Master programmes, ensuring coherence of the overall assessment regime. With respect to the Bachelor programme, the main focus lies on the acquisition of theoretical knowledge, pre-clinical practical and soft skills. With respect to the Master programme the main focus is on the development and assessment of clinical practical skills and soft skills as described in the programme's PLO.

Description of the specific methodologies for assessing the acquisition of theoretical knowledge, pre-clinical practical skills, clinical practical skills and soft skills
Bachelor programme
The Bachelor programme harnesses the educational principles of constructive alignment, with teaching activities and assessment methods designed to facilitate students to achieve course learning objectives. Several assessment methods are used, as outlined below.

Written assessment
Written assessments that focus on the acquisition of theoretical knowledge are the predominate method of assessment. A variety of written assignments are employed including multiple choice questions, open questions and other question types (see 'Technological innovation' below). These assignments can be individual and group-based, and can be used for both formative and summative purposes. Effective instructional design methods are applied to written assignments, including test blueprinting and use of educational rubrics.

OSCE
The Objective Structured Clinical Examination (OSCE) method is used for assessment of clinical skills and some soft skills. In the longitudinal course Veterinary Clinician (LVC) students engage

with an OSCE used for formative purposes in their second year and one for summative purposes in their third year. During the OSCE, students meet diverse skill domains (e.g., communication, clinical, laboratory) across fourteen separate stations. To guide the assessment of the OSCE, rubrics are designed. In Appendix 8.1.1 the rubric of the station 'respiration and pulse horse' can be found.

Portfolio
In the longitudinal course Veterinary Professional (LVP) students are also assessed through the use of a portfolio, a method which focuses on their personal development and the development of non-technical, generic competencies. In the second year, the portfolio assignments address personal development and well-being. Students are asked to reflect on their qualities and challenges related to collaboration, study, performance pressure, planning and organisation, as well as to develop their own goals for success. In addition, they devise a development plan for professional client communication, which is added to the portfolio. The students meet regularly with their tutor throughout the year to discuss their portfolio and their progress towards their goals. In the third year, the portfolio assignments address competency-based development, self-evaluation and structured reflection. Students are asked to reflect on their progress with respect to various Programme Learning Outcomes (i.e., 'what is already going well?', 'what could be improved?', 'how can I develop myself in that area?', 'what am I going to do?'). Again, students meet regularly to discuss their portfolio with their tutor in one of the individual meetings.

Thesis
In the third year of the programme, students engage in an individual, 5-week fulltime or 10-week part-time academic skills assignment, supervised by a senior teaching staff member. The assignment results in a Bachelor thesis which is assessed by both the supervisor and an independent examiner, the rubric of the thesis can be found in Appendix 8.1.2. More information about the thesis can be found in Area 3 and 10.

Anatomy knowledge test
Some courses within the Bachelor programme incorporate an anatomy knowledge test as part of the final grade. This test requires students to engage with anatomical models and/or imagery in order to assess their theoretical knowledge of anatomy.

All compulsory courses are concluded with a final numeric or alphanumeric grade. This final grade is derived from the results of a mix of assessments, usually two. This results in a final grading on a scale from 1 to 10 (numeric) or pass/fail (alphanumeric). To pass, a grade of 5.5 or higher is required. A student who fails (grade <5.5) has once within the academic year the opportunity for a re-sit by an additional or substitute test. This is only possible with a minimum initial grade of 4.0.

Master programme
The Master programme is a competency-based curriculum and aims to prepare students for clinical practice through the gradual development of knowledge, skills and attitudes. To ensure that students develop the appropriate competencies over the duration of the programme, a coherent system of assessment has been developed based on the principles of programmatic assessment[85]. Programmatic assessment aims to enhance the student's learning process (assessment *for* learning), whilst also offering sufficient information to make reliable and valid decisions about their progress (assessment *of* learning). Through this system, students receive detailed performance-relevant information (scores and narrative feedback), as well as guidance on how to improve. Performance-relevant information is collected and aggregated over time, resulting in a robust and holistic judgment.

85 *Van der Vleuten, C., Schuwirth, L.W.T., Driessen, E.W. et al. A model for programmatic assessment fit for purpose. Med Teach, 34,3, 205-214 (2012). doi: 10.3109/0142159X.2012.652239.*

Programmatic assessment is a topic of special expertise for the VEE, with the 'Educational Scholarship in Veterinary Medicine' research group contributing to the academic knowledge base[86], and offering guidance for future improvements[87]. These continuous improvements have been applied at the VEE and, from the academic year 2022-2023 onwards, the system of assessment has been updated, leading to a modified system of assessment at the course and programme levels. Elaborate information about the Master's assessment programme can be found in Appendix 8.1.3.

Assessment at course level

Students on the Master's programme meet a variety of assessments, these include written assessments (e.g., multiple choice exams, assignments), presentations and workplace-based assessments (i.e., mini-Clinical Evaluation Exercises, Multisource feedback). This ensures that students receive regular and ongoing performance-relevant information (scores and narrative feedback) throughout each course. Meaningful narrative feedback is not only relevant for learning (assessment *for* learning), but also for decision-making (assessment *of* learning). It provides rich information to ensure a robust and holistic decision. With respect to summative assessment, students are required to demonstrate that they have met the learning objectives of each course and are awarded with an alphanumeric score (pass/fail, excellent pass).
Student collects all performance-relevant information in an e-portfolio (i.e., student logbook). The student is expected to take ownership of their learning process and, as part of that, to actively seek feedback. At the end of each course, an examiner (appointed by the Board of Examiners) reviews the performance-relevant information, aggregated and visualised in a course dashboard, and decides whether the student meets the course learning objectives resulting in a pass, fail or excellent pass.

The longitudinal course Personal and Professional Development is dedicated to the development and assessment of soft skills. In this course, students engage with the development of professional identity through peer-group meetings and topic-specific workshops. These sessions are assessed through various assignments.
Finally, students are required to perform a 15-week- research thesis project, specifically focusing on the assessment of scholarship. The thesis is always assessed by two independent examiners. More information can be found in Area 3 and 10.

Assessment at a programme level

A key component of a competency is that it develops over time. To monitor this development and optimise the transition from vet school to clinical practice, the VEE's assessment strategy employs Entrustable Professional Activities (EPAs). Therefore, all performance-relevant information from workplace-based assessments (mini-Clinical Evaluation Exercise (Mini-CEX), and Multisource feedback (MSF)) within individual courses is aggregated and visualised on an e-portfolio dashboard. This dashboard presents detailed information about a student's progression for each EPA and competency, including a performance score and narrative feedback. To enable this, the mini-CEX and MSF are developed to align tightly with the EPAs and/or competencies. For example, in the mini-CEX form, the assessor (teacher, peer, patient owner, etcetera) can provide an indication of the milestone level for the competency domain 'clinical reasoning and decision-making', namely: 'beginner, slightly advanced, advanced and competent', together with narrative feedback. A full example of the mini-CEX teacher can be found in Appendix 8.1.4. Mini-CEX's are mainly used for short observations (e.g., history taking, clinical examination) to full-week assessments by one assessor, whereas MSF's are used to capture a multitude of perspectives (patient owner, para-veterinary worker, teacher, peer).

86 *E.g.: Bok, H.G.J., de Jong, L.H., O'Neil, T. et al. Validity evidence for programmatic assessment in competency-based education. 7, 6, 362-372 (2018). doi: 10.1007/s40037-018-0481-2.*
87 *Bok, H.G.J., van der Vleuten, C.P.M., de Jong, L.H. "Prevention Is Better Than Cure": A Plea to Emphasize the Learning Function of Competence Committees in Programmatic Assessment. 8, 1-5 (2021). https://doi.org/10.3389/fvets.2021.638455*

The student uses the received feedback on the workplace-based assessments to reflect on their development on the competencies and/or EPAs. This development is supported by the tutor (in most cases the same person as the tutor in the Bachelor programme). The student meets the tutor minimal three (first year Master) or two (second- and third-year Master) times a year and they discuss the student's reflection on its professional development and identify SMART (Specific, Measurable, Attainable, Relevant and Time-bound) learning goals. Once a year the tutor provides the student with formal written feedback about the student's development.
The assessment of the longitudinal development of the competencies and EPAs (assessment at programme level) is performed by a Portfolio Assessment Committee (PAC). In total, the PAC assesses each student three times across the duration of the Master programme (twice for progress assessment, after Years one and two, and once as a final assessment, after Year three). The aim of the progress assessments is to provide the student with feedback on their development and performance. When applicable, the student develops a plan on how to improve in the upcoming period. The final assessment aims to validate whether or not the student meets the required level of the competencies and EPAs, associated with the provision of credit points (ECTS). A more elaborate explanation (published for students) of the procedures of the PAC can be found in Appendix 8.1.5.

Technological innovation

To enhance the efficiency of assessment, the VEE provides examiners and feedback providers with high-tech assessment software.

Digital assessment: 'Remindo'[88] facilitates students to take written tests digitally. This software provides multiple formats for question types (e.g., multiple-choice, open and matching) and equips the examiner with a suite of psychometric tools.

E-portfolio: 'Scorion'[89] is the programmatic assessment e-portfolio tool used in the Master programme, creating a student logbook. This e-portfolio is able to organise large amounts of different types of data, through a user-friendly analytic dashboard. This tool enables the monitoring of the longitudinal development of students. Currently, the Bachelor programme is also investigating the application of e-portfolio software, however no decision has yet been made.

A look at the future: progress testing

The VEE has a commitment to enhance the quality of its assessment strategy, according to evidence-based teaching and learning. As a result, the institution is collaborating with five other European veterinary schools to develop a progress test strategy (which includes both linear and adaptive types), that facilitate the longitudinal assessment of knowledge, skills and competencies linked to the EAEVE day-one competencies[90]. This progress test has been comprehensively tested using advanced statistical methods[91], and is ready for use within the programmes. In the academic year 2024-2025 the progress test will be pilot tested in situ within both the Bachelor and the Master programmes. The aim of this pilot is to evaluate if and how the progress test can be implemented within both programmes in an effective way.

88 https://remindo-support.sites.uu.nl/?lang=en
89 https://scorion.com/en/
90 https://www.vetrepos.eu/project-summary /
91 Schaper, E., van Haeften, T., Wandal, J., Livanainen, A. et al. Development of a shared item repository for progress testing in veterinary education. Front Vet Sci, 10, 1-15 (2023). https://doi.org/10.3389/fvets.2023.1296514

Standard 8.2: ***The assessment tasks and grading criteria for each unit of study in the programme must be published, applied consistently, clearly identified and available to students in a timely manner well in advance of the assessment. Requirements to pass must be explicit.***

The VEE must properly document the results of assessment and provide the students with timely feedback on their assessments. Mechanisms for students to appeal against assessment outcomes must be explicit.

Description of the processes for ensuring the advertising and transparency of the assessment criteria/ procedures

At the VEE, students have ongoing access to assessment criteria and procedures through a diverse range of channels. The main source of this information is the Student Information System (SIS; Osiris). This system provides structured information about each course, including the course catalogue. Students & Education office (OSZ) maintains the information in the SIS, under the responsibility of the course coordinator. With regard to assessment, the SIS provides information about the assessment methods, the characteristics of the assessment, minimum passing grades, and, if applicable, details such as weightings. For the Bachelor programme an overview of practical assessment matters (a year planning, information on the location of the assessments and other frequent asked questions) are published on the VEE's student's website[92]. The above-mentioned information is publicly available and is published in advance of the commencement of the course. An example of a course description (course Veterinary Professional level 1 Bachelor Veterinary Medicine) can be found in Appendix 8.2.1.

Further information about assessment procedures and criteria can be found in course study guides. These study guides are published on the Learning Management System (LMS) before the start of the course. A study guide template used by teachers on the Master programme can be found in Appendix 8.2.2. A similar course guide is being implemented in the Bachelor's programme.

Furthermore, students can access assessment information at a programme level in the Education and Examination Regulations (OER). This high-level documentation provides information about assessment methods, provision of grades, and the procedures for a resit etc. The relevant Director of Education oversees the implementation of the OER (see Appendix 7.3.1 and 7.3.3).

Description of the processes for awarding grades, including explicit requirements for barrier assessments

In each course, examiners are responsible for composing and administering the test, including the quality of the test and test items. The examiner composes the test, determines and awards the results of the test with an opportunity for the student to inspect their test results post-assessment. The role of examiner is defined by the Dutch law (Dutch Higher Education and Research Act). UU policy states that students have one opportunity to re-sit the test. If the student fails the re-sit, the student needs to redo the course, possibly resulting in a delay of their studies. Due to Dutch legislation, only through the Binding Study Advice (for more information see Area 7, Standard 7.5) in the first year (or the Iudicium Abeundi), the student can be excluded from the programme.

Once grades have been decided, these are released to students through the Student Information System (SIS; Osiris). In accordance with the OER all results are communicated to students within 10 working days after the day the test has been administered.

Description of the processes for providing to students a feedback post-assessment and guidance for requested improvement

In accordance with the OER, students have the right to inspect their assessments within a maximum of 20 working days after publishing the results. This enables the student to receive feedback post-

92 Tentamens - Diergeneeskunde (BA) - Students UU *(in Dutch)*

assessment and ask the examiner questions about the assessment. Furthermore, students engaged in clinical learning, are provided by assessors with ongoing, meaningful feedback through workplace-based assessment processes. Students' engagement with feedback is facilitated through their relationship with their tutor. For example, tutors work with students through reflection and SMART learning goal-setting allowing them to identify and close performance gaps.

Description of the appeal processes against assessment outcomes

At the VEE, students have the right to pursue an appeal with respect to assessments. In this situation, the first informal point of contact for the student is the examiner responsible for determining the result of the test. The examiner will discuss this with the student and aim to reach to a solution through informal means. Should the student want to escalate the issue further, they can formally appeal to the UU Examination Appeals Board. This is a central university board which, in accordance with Dutch law, acts as an independent appeals board. To appeal to the Examination Appeals Board, it is necessary for the student to submit notice of the appeal within six weeks of the day on which assessment result was released. The Examination Appeals Board will make a decision on the case. Should the student disagree with the decision of the Examination Appeals Board, the next (and final) step is to appeal this to the Administrative Law Division of the Council of State in The Hague. Students can find information about the appeals process within the regulations of the Board of Examiners (see Area 7) and on the student website[93].

Standard 8.3: ***The VEE must have a process in place to review assessment outcomes, to change assessment strategies and to ensure the accuracy of the procedures when required. Programme learning outcomes covering the full range of professional knowledge, skills, competences and attributes must form the basis for assessment design and underpin decisions on progression.***

Description of how (procedures) and by whom (description of the committee structure) the students' assessment strategy is decided, communicated to staff, students and stakeholders, implemented, assessed and revised

The VEE has a structured approach to assessment with the capacity to review and update procedures. Under Dutch law (the Dutch Higher Education and Research Act), the overall responsibility for maintaining the quality standards of assessment and assuring that programme outcomes lie with the Board of Examiners. At the VEE there are two Boards of Examiners (ECs), one for the Bachelor programme and one for the Master programme. Each board is staffed by three senior faculty members and one external expert on education and assessment. Two administrative secretaries support and advise the boards. Working under the direction of the Board of Examiners, the Assessment Quality Committee (TCD) carries out evaluations of course assessments, offering guidance and advice to course coordinators/examiners in preparing and analysing their assessments. The TCD consists of senior faculty members from all departments. Course coordinators are, in turn, responsible for applying the advice of the TCD. Every year the TCD publishes a report (which is an attachment of the year reports of the Bachelor's and Master's EC, the year reports of the ECs can be provided upon request) describing its activities (see Appendix 8.3.1 for the TCD report from the academic year 2022-2023 and Appendix 8.3.2 for an example of a course assessment analysis by the TCD). The Director of Education is primarily responsible for the quality of the assessment within the program (within and across courses).

93 https://students.uu.nl/en/practical-information/policies-and-procedures/complaints-objections-and-appeals/examination-appeals-board

Description of the link between learning outcomes and assessment design

At the VEE, a veterinary graduate profile has been developed for the Master programme. This profile aligns with several competency domains (for a full description of the Programme Learning Outcomes or PLOs, please see Appendix II.B). These are:

1. Clinical reasoning and decision-making
2. Individual animal care and management
3. Animal population care and management
4. Veterinary public health/One health
5. Communication
6. Collaboration
7. Professionalism and professional identity
8. Entrepreneurship, financial and practice management
9. Scholarship

These competency domains form the foundation for the assessment strategy, which harnesses a programmatic approach to assessment (see Standard 8.1). The competency domains (PLOs) and course learning objectives are mapped via a curriculum blueprint (see Appendix II.B). A key example of this is the tight alignment of competency domains to assessments such as mini-Clinical Evaluation Exercises (mini-CEX) and multisource feedback (MSF) forms.

In synergy with the Master's programme, the Bachelor's programme has defined four key areas of competence. These are:

1. Veterinary knowledge, understanding and skills
2. Animal, veterinarian & society
3. Academic conduct and thinking
4. Personal and professional development

Again, assessment activities are designed to address these specific areas of competence and implemented during (longitudinal) courses (e.g., thesis, OSCE, written assessment), the curriculum blueprint of the Bachelor programme can be found in Appendix II.A. For a full description of the PLOs, please also see Appendix II.A)

Standard 8.4: *Assessment strategies must allow the VEE to certify student achievement of learning objectives at the level of the programme and individual units of study.*

Description of the system to certify student achievement of learning outcomes in the different subjects, years of study, etc.

As mentioned under Standard 8.3 each course defines learning outcomes. In the curriculum blueprint they are mapped against the Programme Learning Outcomes. The course coordinator is responsible for designing assessments covering the learning outcomes through constructive alignment. In designing their course, course coordinators are supported by educationalists and receive training (see Area 9). The Director of Education oversees the coherence of the programme.

The VEE's Board of Examiners (EC) is mandated by Dutch law to ensure that candidates achieve the Programme Learning Outcomes, as measured through assessment methods. Ultimately, the EC makes decisions about when the student has met the programme outcomes and qualifies for graduation and certification.

Description of the strategy to encourage students to take an active part in the learning process

As discussed in the VEE's assessment strategy (see Standard 8.1), there is an emphasis on facilitating student autonomy and encouraging self-regulated learning. To accomplish this, the assessment strategy ensures that the students receive meaningful performance-relevant information (i.e., feedback), that motivates them to reflect on, and further improve, their practice. Students are supported in this process by regular interaction with their tutors who assist them to formulate and achieve SMART learning goals.

In the Master programme, students are expected to take initiative in collecting performance-relevant information, i.e., they are tasked with actively seeking feedback. Furthermore, they are required to engage with self-assessment and peer-assessment on a regular and ongoing basis. This requires students to consider what high-quality performance looks like, learning the skills to identify and close any performance gaps. The visualisations generated by the e-portfolio system Scorion supports students in monitoring their progress, supporting self-regulated learning.

Standard 8.5: ***Methods of formative and summative assessment must be valid and reliable and comprise a variety of approaches. Direct assessment of the acquisition of clinical skills and Day One Competences must form a significant component of the overall process of assessment. It must also include the regular quality control of the student logbooks, with a clear distinction between what is completed under the supervision of teaching staff (Core Clinical Training (CCT)) or under the supervision of a qualified person (EPT). The provided training and the global assessment strategy must provide evidence that only students who are Day One Competent are able to graduate.***

Description of the assessment methodology to ensure that every graduate has achieved the minimum level of competence, as described in the ESEVT Day One Competences (see Annex 2)

In the Master programme, the ESEVT Day One Competences are covered by the Programme Learning Outcomes (PLOs), see Appendix II.B, sheet 'PLO_Day one competences' for the matrix. The Programme Learning Outcomes are assessed through multiple assessment methods. Each course prescribes what assessment methods and how many (work-place based) assessments are necessary to fulfill the requirements of the course. All assessment data (i.e., in Standard 8.1 mentioned as performance-relevant information) are collected in an electronical portfolio system (Scorion), functioning as a student logbook (see Figure 8.5.1. for an example; login details of this demo portfolio can be provided upon request).

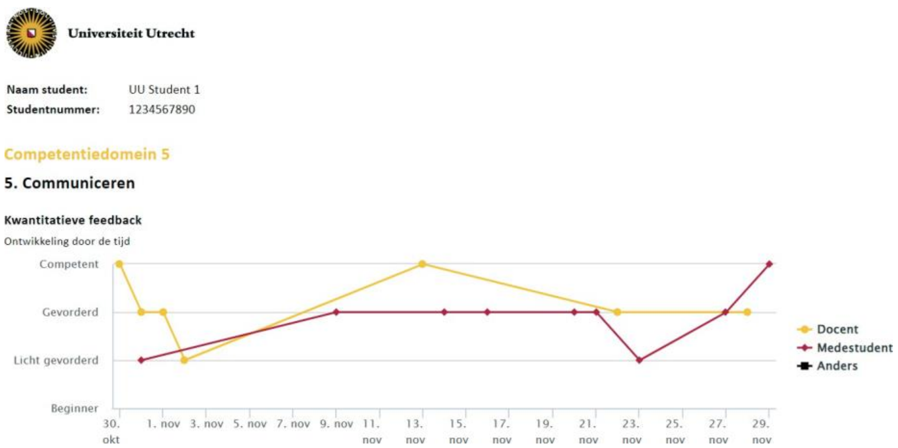

Figure 8.5.1. Screen shot of a mock demo portfolio. This figure illustrates the longitudinal development of the PLO competency 'Communication' from Beginner to Competent. The yellow line is teacher feedback; the red line is peer feedback.

In the portfolio a clear distinction can be made between various contexts, such as CCT and EPT through separate course environments.

By adhering a system of assessment consisting of both course-level assessment and programme-level assessment it is ensured that students encounter all relevant subjects and contexts as described in the ESEVT Day One Competences, and simultaneously monitor the development and achievement over time.

The assessment on programme level is especially useful in monitoring the minimum level of competence, since competencies develop over time. The Portfolio Assessment Committee (PAC) assesses across courses whether the student has achieved the minimum level of competence during the Master programme. No compensation is possible between competencies and EPAs. Every student must show that all competencies and EPAs are achieved at the minimal level before they qualify for graduation.

Comments on Area 8

- The VEE's system of assessment is designed evidence-based and is a research theme within the research group 'Educational Scholarship in Veterinary Medicine'.
- There is a clear line of responsibilities regarding assessment, embedded within a robust system of national legislation and UU policy.

Suggestions for improvement in Area 8

- Currently, assessment within the Bachelor's programme still consists of many end-of-course summative assessments (bearing the risk of enhancing a 'cram and purge' strategy by students). The VEE is aiming to incorporate design principles of programmatic assessment in the Bachelor's programme to optimize the learning and assessment function.
- Both scientific literature and experiences from the VEE emphasize the importance of providing meaningful feedback on the clinical workplace, but also acknowledge how difficult it can be to provide meaningful feedback. Even though training has been provided to teaching staff, it is important to create a sustainable way of offering teacher professionalism opportunities. Currently we are investigating how this can be achieved through the Teaching and Learning Community (TLC).
- The Entrustable Professional Activities (EPAs) are not always perceived as being specific enough to apply in the clinical workplace assessment. Therefore, we are currently investigating how EPAs can be applied more meaningfully in the clinical workplace.

Area 9. Teaching and support staff

Standard 9.1: ***The VEE must ensure that all staff are appropriately qualified and prepared for their roles, in agreement with national and EU regulations and must apply fair and transparent processes for the recruitment and development of staff. A formal quality-assured programme of teacher training1 must be in place for all staff involved with teaching.***

Most teaching staff (calculated as FTE) involved in core veterinary training must be veterinarians. It is expected that more than 2/3 of the instruction that the students receive, as determined by student teaching hours, is delivered by qualified veterinarians.

General guidelines on the minimum training to teach and to assess for each category of teachers (to be used as a general guiding reference and amended as necessary for the writing of the SER, taking into account the local characteristics and peculiarities of the VEE):

Table 9.1.1 Minimum training to teach and to assess for each category of teachers at the VEE Utrecht

	Basic level		**Intermediate level**	**Advanced level**
Persons concerned	**EPT providers involved with teaching (op-maat programma)**	**Support staff and non-academic staff involved with Teaching (start-to-teach)**	**Non-academic and academic teaching staff (BKO-leergang)**	**Academic staff (SKO-traject)**
Code of conduct	√	√	√	√
ESEVT Day One Competences (D1C)	√	√	√	√
GCP (good clinical practice)	√	√	√	√
Practical & clinical teaching (basic)	√	√	√	√
Practical & clinical teaching (advanced)			√	√
Teaching methodologies			√	√
Teaching tools	√	√	√	√
Assessment methodologies	√		√	√
Assessment tools	√		√	√
QA loops in teaching and assessment	√	√	√	√
Duration of the initial training	8 h	16 h	120 h	120 h
Annual update			√	√
Format	physical, and/or e- learning	physical, and/or e-learning	physical, and/or e- learning	physical, and/or e- learning

The VEE places a strong emphasis on ensuring that all staff involved in teaching are appropriately qualified and prepared for their roles. All teaching staff have access to a wide range of formal and informal teacher training programmes, as well as personal and professional development opportunities (see below) which assist them to meet the required competences and nurture a positive learning environment.

Support staff and both academic and non-academic teaching staff contribute to the teaching on the Bachelor and Master programme and are appointed to one of the VEE's three departments (see Area 1 for more information about the organisation). With respect to all teaching staff, the minimum academic qualification is a Master degree, although most will have obtained a PhD as well. This includes a cohort of interns and resident within the VEE VTH, pathology labs and microbiology labs who also have an important role in teaching. Academic teaching staff often hold a PhD degree and are board-certified specialists. A further cohort with a teaching role includes PhD candidates who are involved in the daily supervision of students' research projects within the Master programme.

Teaching staff at the VEE are aided by support staff in administrative and policy functions as well as animal caretakers and veterinary technicians. Support staff work under the supervision of teaching staff. The vast majority of support staff have obtained a vocational college degree, with many also holding Bachelor and/or Master degrees.
All staff members at the VEE are required to submit documentary evidence of their qualifications before starting. New staff members receive an employment agreement which links to the UU Code of Conduct[94], a framework for behaviour and reflection for employees and students at the university.

Pedagogical training

For academic staff

Academic staff are provided with several formal teaching training opportunities. The first of these is the 'Start to teach' programme[95] which builds foundational pedagogical skills. From here, academic staff can participate in a University Teaching Qualification[96] (BKO, before progressing to a Senior Teaching Qualification (SKO). It is mandatory for assistant professors, associate professors and full professors to obtain a BKO and they may pursue a SKO. Both of these courses are time-intensive and nationally recognised. Formal content includes evidence-based teaching and assessment practices, educational theories, instructional design, and digital technologies in education. To succeed in each, staff must complete comprehensive teaching portfolios which demonstrate their capacities to apply evidence-based teaching and learning methods within their teaching contexts. Participants on, and graduates of, these courses are also nurtured by the VEE's teaching and learning community of practice (see below), and are supported to connect with each other and share best teaching practices through events such as lunch lectures, workshops and meetings.

For non-academic staff

Non-academic staff, e.g., interns, residents, PhD candidates, are also given foundational teacher training through the aforementioned 'Start to teach' programme. Further to this, PhD candidates are provided with specific training by the VEE on coaching and supervising Master thesis. Some non-academic staff members also participate in the BKO.

For support staff

Support staff are also provided access to the 'Start to teach' programme.

For qualified persons

The VEE has developed a tailored teacher training course for qualified persons who contribute to teaching. This course consists of four modules that focuses on clinical teaching and learning i.e., how to best guide, teach, and assess students during extramural placements.

Beyond teaching and learning qualifications, the VEE, and the university as a whole, has committed to developing the managerial and leadership capacities of its teaching and support staff. UU has a mission to give every (potential) leader, from academic staff to non-academic and support staff, the

94 https://www.uu.nl/sites/default/files/en_code_of_conduct_uu.pdf
95 https://www.uu.nl/en/education/centre-for-academic-teaching-and-learning/teacher-development/start-to-teach-programme
96 https://www.uu.nl/en/education/centre-for-academic-teaching-and-learning/teacher-development/utq-and-stq

opportunity to follow a UU Leadership Track[97]. Accordingly, staff can avail of a multitude of courses and leadership programmes provided by the UU.

Teaching and Learning Community

The VEE has established a Teaching and Learning community (TLC)[98] in order to professionalise teaching staff by learning with, from and about each other. To this end, a comprehensive program is offered on three main themes: teacher development, teaching innovation and educational research:

1. Teacher development: Besides the qualifications relating to their (academic) field of work, teaching staff are required, and supported, to continuously build their knowledge and skills in the field of pedagogy. As mentioned previously, teaching staff are provided with many formal opportunities to develop their teaching practice (i.e. 'Start to teach' course followed by the BKO and the SKO). From here, teaching staff can engage with continuing professional development in education through Utrecht University's Centre for Academic Teaching (CAT)[99]. CAT offers a wide selection of courses and training programmes which support teaching staff to improve their teaching skills at every level and in every phase of their careers. A noteworthy example of this is the one-year Educational Leadership programme, which has facilitated several senior VEE-staff members to secure and succeed in management positions.
2. Teaching innovation: teaching staff members are also supported to innovate their teaching and further professionalise their academic practice through seeking funding and accessing tools and resources. Such support stems from a wide range of bodies at UU, including Educate-it[100], the Centre for Educational Development & Training[101], the Teaching Academy UU[102], and Professional Development[103].
3. Educational research: The VEE is dedicated to providing an exceptional learning environment and sees its role in supporting teaching staff to engage with educational scholarship and contribute to the evidence base on teaching and learning. As a result, VEE staff are provided with the opportunity to advance through the UU Scholarship of Teaching and Learning programme[104]. This programme supports teachers to develop and implement high quality education research projects. Furthermore, the VEE has recently appointed an inaugural Chair for Educational Scholarship in Veterinary Medicine. The key mission for this new appointment is to bridge the gap between educational theory and practice within the curricula at the VEE and beyond, pushing forward the frontiers of evidence-based veterinary education.

The TLC represents a new community of practice within the VEE and has a vital role in bringing together teaching staff through a wide variety of in-person and online events. These include monthly lunch meetings, regular educational training events as well as an annual whole-school Education Day where teaching staff are empowered to discuss developments in teaching, assessment and quality, and share experiences and best practice.

Biosecurity

In case a student or staff member works or studies in an environment in which biosecurity is an issue, there is a procedure in place, conform the Dutch Genetically Modified Organisms (GMO) legislation. This legislation also defines the necessary levels of skills and knowledge to work in a such a workplace. The VEE's biosecurity officer checks the level of knowledge and skills of a student or staff member. When this is determined to be sufficient, the person is registered in the GMO database of the VEE. An experienced employee on the workplace supervises the student and new employee. Additionally, Bachelor and Master students receive additional training and assessment in biosecurity

97 https://www.uu.nl/en/organisation/working-at-utrecht-university/uu-leadership-track-its-about-a-culture-of-openness-diversity-and-appreciation
98 https://intranet.uu.nl/teaching-and-learning-community-diergeneeskunde (in Dutch)
99 https://www.uu.nl/en/education/centre-for-academic-teaching-and-learning/teacher-development
100 https://www.uu.nl/en/education/educate-it
101 https://www.uu.nl/en/education/educational-development-training
102 https://tauu.uu.nl/en/
103 https://www.uu.nl/en/organisation/working-at-utrecht-university/professional-development
104 https://www.uu.nl/en/education/centre-for-academic-teaching-and-learning/educational-scholarship/scholarship-of-teaching-and-learning

necessary for performing a dissection or rotation at the subdepartment of Pathology. In case of changes in legislation or any unforeseen circumstances, the VEE's biosecurity officer informs the research coordinators in the various workplaces.

Standard 9.2: ***The total number, qualifications and skills of all staff involved with the study programme, including teaching, technical, administrative and support staff, must be sufficient and appropriate to deliver the study programme and fulfil the VEE's mission.***
A procedure must be in place to assess if the staff involved with teaching display competence and effective teaching skills in all relevant aspects of the curriculum that they teach.

Table 9.2.1 Teaching staff involved with the core veterinary programme				
Staff	**2022 - 2023**	**2021 - 2022**	**2020 - 2021**	**Mean**
Academic staff (FTE)	159	151	148	153
Interns (FTE)	n/a	n/a	n/a	n/a
Residents (FTE)	48	55	50	51
PhD students (FTE)	122	109	118	116
Certified specialists (FTE)	84	73	65	74
Practitioners (FTE)	n/a	n/a	n/a	n/a
Others (specify)* (FTE)	50	56	34	47
Total (FTE)	395	377	357	376

** Non-academic teaching staff, e.g., junior teachers*

Table 9.2.2 Percentage (%) of veterinarians in teaching staff				
Type of contract	**2022 - 2023***	**2021 - 2022***	**2020 - 2021***	**Mean**
Permanent (FTE)	22%	20%	16%	19%
Temporary (FTE)	18%	19%	16%	18%
Total (FTE)	40%	39%	32%	37%

** Based on reference date 01-02-2024*

Table 9.2.3 Support staff of the veterinary programme				
Type of contract	**2022 - 2023**	**2021 - 2022**	**2020 - 2021**	**Mean**
Faculty Support Organisation				
Permanent (FTE)	110	101	101	104
Temporary (FTE)	19	18	23	20
Departments				
Permanent (FTE)	223	205	189	206
Temporary (FTE)	40	62	54	52
Total (FTE)	392	386	367	382

Table 9.2.4 Research staff of the VEE				
Type of contract	**2022 - 2023**	**2021 - 2022**	**2020 - 2021**	**Mean**
Permanent (FTE)	185	184	171	180
Temporary (FTE)	242	245	249	245
Total (FTE)	427	429	420	425

Veterinarians in teaching staff

The VEE has appointed 262,9 FTE of core teaching staff. 154,5 FTE are veterinarians and 108,4 FTE are other scientific teachers. This amounts to 59% and 41%.

In the core Bachelor's program a single student receives on average 795 hours of teaching from veterinarians and 467,5 from other scientific staff. This equates to 63% and 37%. The teaching hours for all students in the core Master's program provided by veterinarians and non-veterinarians are respectively 117971 and 3134 hours. This boils down to 97% teaching by veterinarians and 3% by other scientific staff.

Prospected number of FTE teaching and support staff

The number of students will remain the same for the next three years. Hence, the VEE expects that the number of FTE in teaching and support staff required for the veterinary programme will also remain the same.

Selection and recruitment of the teaching staff and their training

Selection and recruitment of teaching staff at the VEE follows the standard UU recruitment procedure. This involves the placement of advertisements on recruitment websites and social media, nationally and internationally before short-listing suitable candidates and inviting them to engage with an interview process. Selection and recruitment also involve the checking of candidates' qualifications and references before proceeding with a formal offer of a position.

All universities in the Netherlands work with the job classification system (UFO)[105], which aims to standardise the roles of teaching and support staff. This system was jointly developed by all the universities in collaboration with a consultancy group and organises positions according to a number of job 'classifications' and titles. The system outlines descriptions of all roles and job levels as well as the relationships between them, and – at a practical level – provides a structured framework for recruitment at UU.
In addition to the UFO-system, UU uses the Development and Careers Framework (FLOW) (see Appendix 9.2.1) to address the preconditions for the development of all its employees. This framework forms the foundation for UU's human resources policy and covers topics such as: What do we at UU consider to be good employment practices? Which preconditions apply to the (faculty) career policies? How do we see recognition and rewards reflected in development and careers at UU? This framework is operationalised by the VEE to develop its specific career policies.

Selection, recruitment and training of the support staff

The above-mentioned programme for the selection and recruitment of teaching staff also applies to support staff.

Outside work

Outside work, consultations and other ancillary activities at the VEE fall under university governance and, specifically, Section 1.14 of the Collective Labour Agreement of Dutch Universities[106], and the Sectoral regulations governing ancillary activities[107]. These regulations provide further definitions around ancillary activities as well as guidance around best practice. VEE staff are required to discuss ancillary activities with their line manager, before registering these in the University registration system. Submitted activities are reviewed by the supervisor of the staff member and can only be carried out once approved. These measures aim to ensure that staff's university work is not compromised and to avoid issues of competition or conflict of interest. Academic staff must publish their approved ancillary activities publicly on their UU profile page and are responsible for updating this profile regularly.

105 *https://www.universiteitenvannederland.nl/en/job-classification-system-ufo*
106 *https://www.universiteitenvannederland.nl/en/collective-labour-agreement-of-dutch-universities*
107 *https://www.universiteitenvannederland.nl/files/publications/Sector%20regeling%20nevenwerkzaamheden%202024%20inclusief%20FAQ%20-%20ENGELS_0.pdf*

Standard 9.3: ***Staff must be given opportunities to develop and extend their teaching and assessment knowledge and must be encouraged to improve their skills. Opportunities for didactic and pedagogic training and specialisation must be available. The VEE must clearly define systems of reward for teaching excellence in operation.***

Teaching positions must offer the security and benefits necessary to maintain the stability, continuity, and competence of the teaching staff. Teaching staff must have a balanced workload of teaching, research and service depending on their role. They must have reasonable opportunities and resources for participation in scholarly activities.

All work contracts for teaching staff are conform the Collective Labour Agreement of Dutch Universities, with different rules applying to different types of staff. As a general rule, a temporary contract for both academic staff and support staff is assigned for one year. However, there are additional rules for different types of staff. Newly appointed academic staff, usually assistant professors, receive a temporary four-year contract, for a minimum of 0.7 FTE. During this period, they are required to achieve their BKO. All academic staff with a permanent contract are engaged in at least two out of the three VEE's core areas, i.e., teaching, research, patient care. Also, all non-academic staff with a temporary contract is engaged in at least two out of the three VEE's core areas, i.e., teaching, research, patient care. For temporary contracts for non-academic teaching staff, the length of the contract has a direct relation to the length of their education:

- Residents and interns have a temporary contract up to a maximum of six years for 1.0 FTE.
- PhD candidates begin with a one-year contract which, subject to approval of their research, can be extended for a further three years for 1.0 FTE.

Certified specialists who have achieved the appropriate qualifications and continue in a practice-based or clinical role or take up a role as assistant professor are offered a permanent contract. Continuing professional education is considered one of the core educational activities of UU, as part of public engagement. All teaching staff can be involved in continuing education. The VEE has a Director of Education for Continuing Professional Education, who oversees and coordinates the VEE's programme and quality assurance for continuing education.

Standard 9.4: ***The VEE must provide evidence that it utilises a well-defined, comprehensive and publicised programme for the professional growth and development of teaching and support staff, including formal appraisal and informal mentoring procedures.***
Staff must have the opportunity to contribute to the VEE's direction and decision-making processes. Promotion criteria for teaching and support staff must be clear and explicit. Promotions for teaching staff must recognise excellence in and (if permitted by the national or university law) place equal emphasis on all aspects of teaching (including clinical teaching), research, service and other scholarly activities.

Description of the programmes dedicated to teaching and support staff for:
Their professional growth and development
All employees of UU (both teaching and support staff) can benefit from a wide range of professional development support programmes. A key example of this is UU's 'Development Guide' which offers staff the choice from over a hundred courses, online tests and e-modules, from personal skills, to improving English, to didactics in the international classroom. Both employees and their managers are actively informed about the opportunities to participate in these courses. Teaching and support staff are also provided with a number of formal and informal ways to develop their teaching practice and leadership skills (see Pedagogical Training, above).

The appraisal and promotion procedures

UU has recently updated and developed its appraisal and promotion procedures with an overall aim of increasing transparency in criteria for promotion purposes for academic staff (from 2024, the promotion procedures for non-academic staff and support staff will be similarly updated). The new programme, 'Recognition and Rewards' (R&R)[108], outlines clear pathways for promotion from assistant professor to associate professor. Candidates for promotion can submit a portfolio documenting how they meet the criteria to the VEE's R&R Assessment Committee. This committee will assess the candidate's portfolio according to the criteria and advise the Dean on promotion decisions.

The mentoring and supporting procedures:

Both UU and the VEE organise structured introduction programmes that assist new employees in orientating them to their new teams and work environments. In addition, there are tailored introductions for specific groups such as employees who come from abroad, those with management responsibilities, talented women in science and those with disabilities. The VEE also has the capacity to support employees through individual and group or peer coaching interventions, as required.

Currently, the VEE recruit around 30 international employees per year. In addition to the administrative guidance that is given during the onboarding by a dedicated contact, the VEE aims to give a warm welcome to those new international employees. In 2024 a the twice-yearly 'At home in the Netherlands' event is established. The VEE also plans to launch a buddy system and to continue building a community for international and local colleagues through a calendar of planned social events.

Their implication in the decision-making processes

As described in area 1 teaching and support staff can feed back on decision-making processes and their employment conditions in several ways. The most important one is through the Faculty Council in which both teaching and support staff as well as students are seated (see area 1 for a detailed description).

Standard 9.5: ***A system for assessment of teaching and teaching staff must be implemented on a cyclical basis and must formally include student participation. Results must be communicated to the relevant staff and commented upon in reports. Evidence must be provided that this system contributes to correcting deficiencies and to enhancing the quality and efficiency of education.***

System for assessing the teachers

The assessment of teachers by the students is included in the VEE's quality assurance procedures (see standard 1.4 for a detailed description).

Strategy for allocating, recruiting, promoting, supporting and assessing teaching and support staff

The responsibility for allocating FTEs and making decisions around recruitment lies with the VEE, with recruitment and promotion of teaching and support staff managed locally within the departments and their subsequent divisions. As mentioned previously, selection and recruitment of staff at the VEE follows the standard UU recruitment procedure, operationalised through the departments. (see also area 1, for a detailed description of the VEE's organisation). With respect to allocating teaching staff to programmes, the departmental Teaching Managers have oversight of linking teachers and their specific expertise to relevant courses. These allocations are consistently monitored by the respective Director of Education, who – in collaboration with the Teaching Managers – aims to ensure a high-quality learning experience for students.

108 https://www.uu.nl/en/research/open-science/tracks/recognition-and-rewards

Comments on Area 9

- Shortages and competition in the labour market make it challenging to recruit new colleagues.
- In addition to the VEE's offerings, extensive use is made of the offerings of Utrecht University in the field of teacher development, through the Centre of Academic Teaching (CAT).

Suggestions for improvement in Area 9

- Staff wellbeing is an important priority to the VEE. For that reason, the Faculty Board has appointed fiduciaries specifically for PhD-students and for Residents/Interns. In the upcoming year it will be monitored if additional measures are required to be taken.
- The VEE also wants to expand the Reward & Recognition programme to support staff and other non-academic staff.

Area 10. Research programmes, continuing and postgraduate education

Standard 10.1: ***The VEE must demonstrate significant and broad research activities of teaching staff that integrate with and strengthen the study programme through research-based teaching. The research activities must include veterinary basic and clinical sciences. Evidence must be provided that most teaching staff are actively involved with research programmes.***

Description of how the research activities of the VEE and the implication of most teaching staff in it contribute to research-based education

The VEE engages in a broad range of research activities related to animal health, diseases, and welfare, as well as relevant aspects of public health and environmental concerns. These activities are organised through the Institute for Veterinary Research[109] (IVR), a leading institute in its field. The institute embodies two thematic interdisciplinary research programmes: One Health and Veterinary Medicine. In the latter, One Medicine and Veterinary Biomedicine are major research themes. Under the Veterinary Medicine theme, researchers advance existing knowledge around critically important clinical research topics whilst also support the professional development of veterinary residents engaged in European specialty training programmes.

The key objectives of the IVR are to:
- advance veterinary sciences and related public health through discovery of biological principles of animal health, animal disease and related biomedicine and with the goal to develop novel prevention and intervention strategies.
- serve society by creating a premier research environment with cutting-edge multidisciplinary expertise and research facilities that benefit a variety of stakeholders.
- offer a broad spectrum of training for MSc and PhD students in collaboration with the Utrecht University Graduate School of Life Sciences.

In addition to thematic interdisciplinary research programmes, the VEE has a dedicated research group in veterinary education, i.e., Educational Scholarship in Veterinary Medicine. The mission of this research group is to optimise the learning environment for both students and academic teachers and to bridge the important gap between ‘evidence-based education’ and the daily educational practices at the VEE. Over the last 15 years, this research group has played a crucial role in the design, implementation and evaluation of a modern competency-based curriculum which features programmatic assessment at the VEE. Teaching staff are active and engaged contributors to the VEE’s research endeavours. For a full list of publications of this research group, see the document Research in Education in the Additional Information folder.

Grants and Publications

The VEE has been successful in securing a large number of research grants (for total number see table 10.1.1). These include prestigious individual grants from the Dutch Research Council (Vici grants for Prof. Marianna Tryfonidou and Prof. Esther Nolte ‘t Hoen) and European Research Council (ERC Starting and Proof of Concept grants for Prof. Karin Strijbis; ERC; Advanced grant for Prof. Frank van Kuppeveld). In addition, VEE researchers also lead national and international research consortia, such as the national EXPOSOME-NL and VHP4Safety projects, as well as number of EU and H2020 projects and public-private partnerships. In the period 2015-2023, the

109 https://www.uu.nl/en/organisation/faculty-of-veterinary-medicine/veterinary-research

Institute of Veterinary Research has produced 350 publications on average per year in peer-reviewed journals and 29 dissertations[110] on average per year.

Other research activities

In addition to its core activities (research, teaching, patient care), the VEE actively engages with its many stakeholders. The VEE has substantial societal impact, for example, through advising government and industry, through contributions to the development of drugs and therapies, and through help in the management of outbreaks of infectious diseases. Multiple research groups within the IVR collaborate with industry partners and receive funding from this domain. Approximately 15% of all publications are the result of effective collaboration with industry partners. These publications, on average, receive a higher number of citations, indicative of a higher impact. Scientific publications from the VEE are also regularly cited by organisations like the World Health Organisation, the European Union, and the World Bank.

Table 10.1.1 List of the major funded research programmes in the VEE which were ongoing during the last complete academic year prior the Visitation (AY*)

Department	Research programme	Total Grant (€)	Grant/Year (€)
Biomolecular Health Sciences	Cell Biology, Metabolism & Cancer	2,400,867	558,695
	Infectious Diseases and Immunology	22,399,494	5,203,343
	Pathology	4,826,561	1,105,921
Population Health Sciences	IRAS	44,268,690	10,903,333
	Farm Animal Health	6,209,541	1,334,114
	Animals in Science & Society	5,756,263	1,242,981
Clinical Sciences	Locomotion	9,143,354	1,909,799
	Fertility & Reproduction	371,237	92,809
	STEAM	3,210,387	945,817
	OnGO	1,545,242	255,984
	Genetics	1,779,746	425,392
	Welfare & Emerging Clinical Topics	534,036	169,046

** The last complete academic year prior to the visitation.*
*** >€200.000*

Standard 10.2: ***All students must be trained in scientific methods and research techniques relevant to evidence-based veterinary medicine and must have opportunities to participate in research programmes.***

Description of how (undergraduate) students:

- *Are made aware of the importance of evidence-based medicine, scientific research and lifelong learning;*

The importance of evidence-based medicine is highlighted early and often within the veterinary curricula. From Year 1, students are taught what is meant by evidence-based medicine, how to find high-quality information, and how this relates to their eventual day-to-day work as a veterinarian (the

110 *Based on the number of theses by PhD's in Pure*

longitudinal course 'The Veterinary Professional' is taught throughout the bachelor programme, see area 3). Teaching staff members ensure that students are made aware that information comes from evidence-based medicine, and support students to locate up-to-date, peer-reviewed information.

- *Are initiated into bibliographic search, scientific methods and research techniques, and the writing of scientific papers.*

Students are provided with training on how to engage with literature searches, evaluate literature and apply their reasoning to real-world activities. For example, in the Bachelor programme, students demonstrate these skills through developing a thesis, incorporating a literature review, on a relevant veterinary topic. During this five-week course students benefit from individualised supervision from PhD-qualified staff members. In the Master programme, students further develop their information literacy through journal clubs, evidence-case afternoons, and writing a scientific thesis (based on empirical research) and presenting their findings. See Area 3 for detailed information.

Description of how undergraduate students are offered to participate in research programmes on a non-compulsory or compulsory basis.

All Master students engage in a rigorous, 15-week (22.5 EC) internship (i.e., the master thesis) in a research group at the VEE, or another university/ research institute in the Netherlands or abroad. The topic is provided by the supervisor (a PhD-qualified VEE staff member), who works with the student on developing a research proposal. After the practical work is complete, the project culminates with the student devising a written report/thesis, in English in the style of a scientific paper. In addition, the student gives an oral presentation of the work (in English) to the research group.

Description of the minimum requirements for the graduation thesis (Master dissertation), its supervision and its assessment.

The overall supervisor of Master internships is a staff-member holding a PhD. This support is complemented with daily supervision from PhD students and/or research technicians. The student receives feedback and is assessed, on the quality of their practical work, written report and oral presentation. Besides the supervisor, the written thesis is also assessed by an independent staff member.

Standard 10.3: *The VEE must provide advanced postgraduate degree programmes, e.g. PhD, internships, residencies and continuing education programmes that complement and strengthen the study programme and are relevant to the needs of the profession and society.*

10.3.1 Number of students registered at postgraduate clinical training				
	2022 – 2023*	**2021 – 2022**	**2020 – 2021**	**Mean**
Residents				
Companion animals	19	22	24	22
Equine	11	13	8	11
Production animals	1	0	2	1
Others (specify)	19	23	22	21
Total	50	58	56	
Interns**				
EBVS disciplines (specify)	N/a	N/a	N/a	
Total				
Others (non-EBVS programmes) (specify)				

* The last complete academic year prior to the visitation.
*** At the VEE both interns and residents are registered as residents.*

Companion animals	*Department: Emergency and Critical Care Comp. Animals, Internal Medicine of Companion Animals en Surgery of Companion Animals*
Equine	*Department: Equine sciences*
Production animals	*Department: Farm Animal Health*
Others (specify)	*Department: Cell Biology, Infectious Diseases and Immunology. Pathology, Integrating Disciplines, Institute for Risk Assessment Sciences*

Table 10.3.2 Number of students registered at postgraduate research training				
PhD:	**2022 – 2023***	**2021 – 2022**	**2020 – 2021**	**Mean**
Dep. Biomolecular Health Sciences	40	35	38	38
Dep. Clinical Sciences	23	25	27	25
Dep. Population Health Sciences	62	52	57	57
Others (specify)	n/a	n/a	n/a	n/a
Total	125	112	122	
PhD students external financing**	55	N/a	N/a	N/a

* Reference date is October 23/22/21
** Only since 2022-2023 registered

Table 10.3.3. Number of students registered at other postgraduate programmes in the VEE but not related to either clinical or research work (including any external/distance learning courses)

Not applicable

Table 10.3.4 Number of attendees to continuing education courses provided by the VEE

	2022 - 2023*	2021 - 2022	2020 - 2021	Mean**
Accreditation Salmonella	9	26	4	13
Interpreting lab results	20	32	22	24.7
Faculty development EPT	137	30	46	71
Peer group meetings Anicura	32	11		21.5
Critical emergency care		9	4	6.5
Accreditation bovine vets	2			
Reporting obligations bovine diseases	9			
E-module pharmacy management	11			
Sustainable ruminant health	25			
Alpaca health	20	42		31
Laboratory animal science (ruminants)	23			
Poultry health science	217			
Antibiotics in abdominal bovine surgery		4		
Wound treatment in companion animals		6		
Blood and urine analyses		9		
Certificate laboratory animals		16		
Dermal flaps, tips and tricks		18		
From paper to practice		23		
Vets follow up session 10th EEHNC		25		
DALLAS		54		
Herpetology			25	
Diagnostics of gynaecological patients			10	
Systematic review SYRCLE			39	

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

Table 10.3.5 Prospected number of students post-graduate programmes			
	2023-2024	**2024-2025**	**2025-2026**
Clinical training	55	55	55
Research training	120	120	120
PhD students external financing* **	55	55	55
Total	230	230	230

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

The VEE trains interns and residents in its postgraduate clinical programme. To become an EBVS-certified veterinary specialist, a large caseload is necessary. The interns and residents work in the VTH as role models in the presence of students. Furthermore, they supervise students and provide feedback during the clinical rotation. For example, a resident supervises a student while performing a rectal examination in a cow. For both the resident and the student this is a valuable learning opportunity. The VEE is fortunate to have a large caseload, so there is almost no competition related to learning opportunities between our graduate and postgraduate programmes.

The VEE also trains PhD students within their research programmes. These trajectories in general have a duration of four years and are paid positions. This creates opportunities for students to get involved in research practices. During research internships, students can join the wider research eco-system, and collaborate in projects with PhD students. PhD students also help with supervising students, under the supervision of a staff member.

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

The VEE ensures in various ways that the continuing education programme matches the needs of the profession and the community. Several programmes are designed and conducted with strategic partners who are at the heart of (the veterinary) society. Key examples are the Netherlands Food and Consumer Product Safety Authority, the Ministry of Defence, corporate groups, and Royal GD Animal Health. The staff members involved in these programmes notably include specialists who are in daily contact with animal owners, farmers and/or veterinarians. Therefore, they are well aware of the development needs of the profession. Furthermore, the Director of Education of the continuing education programme is a veterinarian who has focused much of his career on providing learning opportunities and supporting career development in clinical practice. Market research and marketing are also part of the UU's strategy concerning continuing education. Furthermore, continuing education programmes provided by the VEE are evaluated for quality improvement purposes.

Standard 10.4: ***The VEE must have a system of QA to evaluate how research activities provide opportunities for student training and staff promotion, and how research approaches, methods and results are integrated into the study programme.***

Description of the mechanism used by the VEE to ensure that its research activities contribute to research-based education

Research-related topics, such as scientific literacy, literature acquisition skills, academic writing, statistics, and ethics are part of the regular Bachelor programme. These skills are taught and assessed in the longitudinal course 'The Veterinary Professional'. In the Bachelor and Master programme, all students need to join one of the research groups of the VEE as part of their thesis project. As described previously, every Master student have to write a graduation thesis based on an individual research project and is therefore involved in research. Students who are motivated are encouraged to present their findings, if possible, at conferences (including international conferences) and/or to publish their work, authoring/co-authoring a manuscript in a peer-reviewed scientific journal. Grants for travel to conferences abroad are available.

Description of how (procedures) and by whom (description of the committee structure) research, continuing and postgraduate education programmes organised by the VEE are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

In Area 1, under Governance, the organisational structure regarding the VEE is explained. Postgraduate programmes are organised by the Graduate School of Life Sciences, that covers 16 Master programmes and 15 PhD programmes. More information on the organisational structure of the GSLS can be found on their website[111].

Comments on Area 10

- In 2022 the VEE has increased the maximum number of students in the Master's programme from 225 to 240 students. Consequently, additional research topics and supervisors are required for the Master's thesis.

Suggestions for improvement in Area 10

- Within its programmes the VEE implemented several components (e.g. Bachelor and Master thesis, course LVC) that provide attention to the students' development of academic skills. However, the relationship and gradual build-up of these skills within and between the different courses need to be improved.

111 https://www.uu.nl/en/education/graduate-school-of-life-sciences

Indicators

Name of the VEE: Faculty of Veterinary Medicine					
Date of the form filling: 26th of April 2024					
Calculated Indicators from raw data		**VEE values**	**Median values[113]**	**Minimal values[114]**	**Balance[112]**
I1	n° of FTE teaching staff involved in veterinary training / n° of undergraduate students	0.316	0.15	0.13	0.190
I2	n° of FTE veterinarians involved in veterinary training / n° of students graduating annually	0.783	0.84	0.63	0.153
I3	n° of FTE support staff involved in veterinary training / n° of students graduating annually	2.140	0.88	0.54	1.600
I4	n° of hours of practical (non-clinical) training	1154.000	953.50	700.59	453.410
I5	n° of hours of Core Clinical Training (CCT)	1595.000	941.58	704.80	890.200
I6	n° of hours of VPH (including FSQ) training	193.000	293.50	191.80	1.200
I7	n° of hours of extra-mural practical training in VPH (incl FSQ)	33.000	75.00	31.80	1.200
I8	n° of companion animal patients seen intra-murally and extra-murally / n° of students graduating annually	112.963	67.37	44.01	68.953
I9	n° of individual ruminants and pig patients seen intra-murally and extra-murally / n° of students graduating annually	76.985	18.75	9.74	67.245
I10	n° of equine patients seen intra-murally and extra-murally / n° of students graduating annually	111.222	5.96	2.15	109.072
I11	n° of rabbit, rodent, bird and exotic seen intra-murally and extra-murally/ n° of students graduating annually	9.822	3.11	1.16	8.662
I12	n° of visits to ruminant and pig herds / n° of students graduating annually	2.387	1.29	0.54	1.847
I13	n° of visits of poultry and farmed rabbit units / n° of students graduating annually	0.172	0.11	0.04	0.127
I14	n° of companion animal necropsies / n° of students graduating annually	2.150	2.11	1.40	0.750
I15	n° of ruminant and pig necropsies / n° of students graduating annually	1.260	1.36	0.90	0.360
I16	n° of equine necropsies / n° of students graduating annually	0.546	0.18	0.10	0.446
I17	n° of rabbit, rodent, bird and exotic pet necropsies / n° of students graduating annually	3.138	2.65	0.88	2.258
I18	n° of FTE specialised veterinarians involved in veterinary training / n° of students graduating annually	0.415	0.27	0.06	0.355
I19	n° of PhD graduating annually / n° of students graduating annually	0.161	0.15	0.07	0.091

** Indicators used only for statistical purpose*

112 *A negative balance indicates that the Indicator is below the recommended minimal value*
113 *Median values defined by data from VEEs with Accreditation/Approval status in May 2019*
114 *Recommended minimal values calculated as the 20th percentile of data from VEEs with Accreditation/Approval status in May 2019*

Appendices

I. Current teaching staff

Course coordinators Bachelor year 1

Course name	Name teaching staff	FTE	DPT
DB1-OW From Organism to Tissue	dr. A.B. (Abbey) Arp and dr. B.A.J. (Bernard) Roelen	1 1	BHS CS
DB1-CM From cell to molecule	dr. M. (Martin) Houweling	1	BHS
DB1-CW From cell to Tissue	prof. dr. W. (Willem) Stoorvogel	1	BHS
DB1-GP From genome to population	dr. S. (Susanne) Kirchhoff	0.9	PHS
DB1-FF Physiology & Pharmacology	prof. dr. R. (Ronette) Gehring	1	PHS
DB1-IA Infection & Immunity	dr. M. (Marc) Wösten	1	BHS
DB1-CR Circulation & respiration	dr. G. (Giorgia) Santarelli and dr. M. (Maarten) van Emst	1	CS CS
DB1-BB Blood & blood-forming organs	drs. M. (Marja) de Jong	1	CS
DB1-LVP Veterinary Professional	dr. J. (Joachim) Nieuwland	0.8	PHS
DB1-LVC Veterinary Clinician	dr. B. (Bas) Swildens and S.N. (Sanne) van Zalen MSc	1 1	PHS CS

Course coordinators Bachelor year 2

Course name	Name teaching staff	FTE	DPT
DB2-DI1 Digestion 1 DB2-DI2 Digestion 2	dr. C. (Claudia) Wolschrijn	0.9	CS
DB2-NU Kidneys & Urinary tracts	P.M.J.A. (Paul) Heijnen MSc	1	CS
DB2-SE Metabolism & Endocrinology	dr. A. (Bas) Vaandrager	1	BHS
DB2-VOE Nutrition	dr. J.T. (Thomas) Schonewille	1	PHS
DB2-HH Skin & Skin derivatives	dr. C. (Carla) Zijlstra and dr. E.A.W.S. (Erik) Weerts	0.6 1	BHS1 BHS
DB2-NZA Neurology, the senses & anaesthesiology	dr. M. (Maarten) van Emst	1	CS
DB2-AW Adaptation & Welfare	dr. H. (Hetty) Boleij	1	PHS
DB2-LVP Veterinary Professional	dr. J. (Joachim) Nieuwland	0.8	PHS
DB2-LVC Veterinary Clinician	dr. B. (Bas) Swildens and S.N. (Sanne) van Zalen MSc	1 1	PHS CS

Course coordinators Bachelor year 3

Course name	Name teaching staff	FTE	DPT
DB3-B-VP Reproduction	dr. J. (Jeffrey) de Gier	1	CS
DB3-B-EE Epidemiology & Economics	dr. ir. W. (Wilma) Steeneveld	0.9	BHS
DB3-B-VV Veterinary Public Health	D. (Damay) Asjee, Msc	0.8	PHS
DB3-B-LO Locomotion	dr. C. (Claudia) Wolschrijn	0.9	CS
DB3-B-OA Integration and multi- organ-diseases	dr. M. (Maurice) Zandvliet	1	CS
DB3-L-WDH Thesis	prof. dr. W. (Willem) Stoorvogel	1	BHS

DB3-L-DHV Surgery	S.N. (Sanne) van Zalen MSc and dr. E.R. (Rolf) Nijsse	1 1	CS BHS
DB3-DDS21 Veterinary Professional	dr. J. (Joachim) Nieuwland	0.8	PHS
DB3-L-VKR Veterinary Clinical Reasoning	dr. B. (Bas) Swildens	1	PHS

Course coordinators Bachelor elective courses

Course name	Name teaching staff	FTE	DPT
DB-K-BIJ Biology of the honey bee	dr. ir. T (Theo) van Haeften	1	BHS
DB-K-DMA Animals and humans in the Antropocene	dr. A.F. (Floor) Haalboom	0.2	PHS
DB-K-DV Didactic skills in veterinary medicine	dr. L.H. (Lubberta) de Jong	1	PHS
DB-K-ED Economic principles of veterinary medicine	dr. ir. W. (Wilma) Steeneveld	0.9	PHS
DB-K-EVO Evolutionary Medicine	dr. B.A.J. (Bernard) Roelen	1	CS
DB-K-GG Genes and health	dr. P.A.J. (Peter) Leegwater	1	CS
DB-K-GMD Human health risks regarding animals and the environment	A. (Aniek) Lotterman MSc	1	PHS
DB-K-GRF Integrated reproductive Physiology	dr. H. (Hilde) Aardema	1	PHS
DB-K-HP Herpetology	prof. dr. D. (Daniela) Salvatori	1	CS
DB-K-IZ Emerging Infectious diseases	dr. E.J.A.M. (Alice) Sijts	1	BHS
DB-K-KPI Clinical Pathophysiology	M.M.C. (Marleen) van Esch MSc and S.N. (Sanne) van Zalen MSc	0.8 1	PHS CS
DB-K-OH One Health	dr. L.J.A. (Len) Lipman	1	PHS
DB-K-PVL Passion for Farm Animals	A.J. (Anna) Schaafsma and W.A.M. (Wieke) Poppe	0.21 0.7	PHS PHS
DB-K-PT Paediatrics	dr. E. (Ellen) Meijer	0.8	PHS
DB-K-RG Regenerative Medicine	dr. B. (Bart) Spee	1	CS
DB-K-UKP Equine University Clinic Brigade	N.M.M. (Nicky) d'Fonseca MSc	0.6	CS
DB-K-VE Comparative Ethology	dr. E.M.A. (Esther) Langen	1	PHS
DB-K-VIC Equine (Foal) neonatal intensive care	drs. E.W. (Esther) Siegers and dr. M.J.P. (Mathijs) Theelen	1 1	CS CS
DB-K-VIS Fish	dr. C.N.T. (Niels) Dekker	1	BHS
DB-K-VT Veterinary toxicology	dr. M.W.H.C. (Marianne) Bol-Schoenmakers	0.7	BHS
DB-K-WD Wildlife Health	dr. J. (Jooske) IJzer	1	BHS

Examinators Bachelor's programme

Course name	Name teaching staff	Role	FTE	DPT
AW, Adaptation & Welfare	dr. H. (Hetty) Boleij	Chair	1	PHS
AW, Adaptation & Welfare	dr. Vinke, C.M. (Claudia)	Member	1	PHS
BB, Blood & bloodforming organs	drs. M. (Marja) de Jong	Chair	1	CS

Course name	Name teaching staff	Role	FTE	DPT
BB, Blood & bloodforming organs	dr. C.J. Piek	Member	0.8	CS
CM, From cell to molecule	dr. M. (Martin) Houweling	Chair	1	BHS
CM, From cell to molecule	dr. C.H.A. (Chris) Lest, van	Member	1	BHS
CR, Circulation & respiration	dr. M. (Maarten) van Emst	Chair	1	CS
CR, Circulation & respiration	dr. G. (Giorgia) Santarelli	Chair	1	CS
CW, From cell to Tissue	prof. dr. W. (Willem) Stoorvogel	Chair	1	BHS
CW, From cell to Tissue	dr. J.E. (Jaime) Rofina	Member	0.8	BHS
DI, Digestion	dr. C.F. (Claudia) Wolschrijn	Chair	0.9	CS
DI, Digestion	Noorman, L. (Lonneke), Msc	Member	1	PHS
DI, Digestion	dr. D.C.K. (Deborah) van Doorn	Member	0.525	PHS
DI 1. Digestion 1	dr. C.F. (Claudia) Wolschrijn.	Chair	0.9	CS
DI 1. Digestion 1	dr. J. (Jooske) IJzer	Member	1	PHS
DI 2. Digestion 2	dr. C.F. (Claudia) Wolschrijn	Chair	0.9	CS
DI 2. Digestion 2	dr. E. (Ellen) Roelfsema	Member	0.8	CS
EE, Epidemiologie en Economie	dr. ir. W. (Wilma) Steeneveld	Chair	0.9	BHS
EE, Epidemiologie en Economie	dr.ir. E.A.J. (Egil) Fischer	Member	0.84	PHS
FF, Physiology & Pharmacology	prof. dr. R. (Ronette) Gehring	Chair	1	PHS
FF, Physiology & Pharmacology	dr. M. (Maarten) van Emst	Member	1	CS
GP, From genome to population	dr. S. (Susanne) Kirchhoff	Chair	0.9	PHS
GP, From genome to population	dr. A. (Bas) Vaandrager	Member	1	BHS
HBS, Hepatobiliair Systeem	dr. E. (Ellen) Roelfsema	Chair	0.8	CS
HBS, Hepatobiliair Systeem	dr. G.C.M. (Guy) Grinwis	Member	1	BHS
HH, Skin & Skinderivatives	dr. E.A.W.S. (Erik) Weerts	Chair	1	BHS
HH, Skin & Skinderivatives	dr. C. (Carla) Zijlstra	Chair	0.6	BHS
IA, Infection & Immunity	dr. M. (Marc) Wösten	Chair	1	BHS
IA, Infection & Immunity	dr. L. (Lindert) Benediktus	Member	1	PHS
IA, Infection & Immunity	Prof. dr. F. (Femke) Broere	Member	1	BHS
LO, Locomotion	dr. C.F. (Claudia) Wolschrijn	Chair	0.9	CS
LO, Locomotion	Prof. dr. H. (Harold) Brommer	Member	1	CS
NU, Kidneys & Urinary tracts	P.M.J.A. (Paul) Heijnen MSc	Chair	1	CS
NU, Kidneys & Urinary tracts	A.M. (Astrid) van Dongen, Msc	Member	0	CS
NZA, Neurology, the senses & anaesthesiology	dr. M. (Maarten) van Emst	Chair	1	CS
NZA, Neurology, the senses & anaesthesiology	dr. J.C. (Dax) Vendrig	Member	1	PHS
NZA, Neurology, the senses & aneasthesiology	Q.E.M. (Quirine) Stassen, Msc	Member	0.8	CS
OA, Integration and multi- organ-diseases	dr. M. (Maurice) Zandvliet	Chair	1	CS

Course name	Name teaching staff	Role	FTE	DPT
OA, Integration and multi- organ-diseases	dr. J.M. (Jos) Ensink	Member	1	CS
OA, Integration and multi- organ-diseases	dr. E.R. (Rolf) Nijsse	Member	1	BHS
OW, From Organism to Tissue	dr. C. (Carla) Zijlstra	Chair	0.6	BHS
OW, From Organism to TissueVan	dr. B.A.J. (Bernard) Roelen	Chair	1	CS
SE, Metabolism & Endocrinology	dr. A. (Bas) Vaandrager	Chair	1	BHS
SE, Metabolism & Endocrinology	Prof. dr. H.S. (Hans) Kooistra	Member	1	CS
VOE, Nutrition	dr. J.T. (Thomas) Schonewille	Chair	1	PHS
VOE, Nutrition	Noorman, L. (Lonneke), Msc	member	1	PHS
VP, Reproduction	dr. J. (Jeffrey) de Gier	Chair	1	CS
VP, Reproduction	dr. ir. T (Theo) van Haeften	member	1	BHS
VP, Reproduction	dr. H. (Hilde) Aardema	member	1	PHS
VV, Veterinary Public Health	D. (Damay) Asjee, Msc	Chair	0.8	PHS
VV, Veterinary Public Health	dr. A. (Arie) van Nes	Member	1	PHS
LVC, Lijn Veterinary Clinician	S.N. (Sanne) van Zalen MSc	Chair	1	CS
LVC, Lijn Veterinary Clinician	dr. B. (Bas) Swildens	Chair	1	PHS
LVC, Lijn Veterinary Clinician	dr. E.R. (Rolf) Nijsse	Member	1	BHS
LVC, Lijn Veterinary Clinician	dr. C.N.T. (Niels) Dekker	Member	1	BHS
LVC, Lijn Veterinary Clinician	A.C.R. (Anniek) Hofman, Msc	Member	0.8	CS
LVC, Lijn Veterinary Clinician	L.C. (Lieuwke) Kranenburg, Msc	Member	0.7	CS
LVC, Lijn Veterinary Clinician	dr. Y.R.A. van Zeeland	Member	1	CS
LVP, Lijn Veterinary Professional	dr. J. (Joachim) Nieuwland	Chair	0.8	PHS
LVP, Lijn Veterinary Professional	prof. dr. W. (Willem) Stoorvogel	Member	1	BHS
LVP, Lijn Veterinary Professional	dr. N.J.J.M (Nicole) Mastenbroek	Member	1	PHS
WDH, Thesis	prof. dr. W. (Willem) Stoorvogel.	Chair	1	BHS
WDH, Thesis	J.C.M. (Hans) Vernooij	Member	1	PHS
WDH, Thesis	Prof. dr. M. (Mirjam) Nielen	Member	1	PHS
WDH, Thesis	Prof. dr. G.J. (Harold) Bok	thesiscoördinator	1	PHS
WDH, Thesis	Prof. dr. H. (Harold) Brommer	thesiscoördinator	1	CS
WDH, Thesis	dr. D.C.K. (Deborah) van Doorn	thesiscoördinator	0.525	PHS
WDH, Thesis	dr. W. (Wilhelmina) Bergmann	thesiscoördinator	1	BHS
WDH, Thesis	dr. S. (Susanne) Kirchhoff	thesiscoördinator	0.9	PHS
WDH, Thesis	dr. L.J.A. (Len) Lipman	thesiscoördinator	1	PHS
WDH, Thesis	dr. L.C. Penning	thesiscoördinator	1	CS
WDH, Thesis	prof. dr. D. (Daniela) Salvatori	thesiscoördinator	1	CS
WDH, Thesis	prof. dr. W. (Willem) Stoorvogel	thesiscoördinator	1	BHS
WDH, Thesis	dr. ir. W. (Wilma) Steeneveld	thesiscoördinator	0.9	BHS
DB-K-BIJ Biology of the honey bee	dr. ir. T (Theo) van Haeften	Chair-e	1	BHS

Course name	Name teaching staff	Role	FTE	DPT
DB-K-DMA Animals and humans in the Antropocene	dr. A.F. (Floor) Haalboom	Chair-e	0.2	PHS
DB-K-DV Didactic skills in veterinary medicine	dr. L.H. (Lubberta) de Jong	Chair-e	1	PHS
DB-K-ED Economic principles of veterinary medicine	dr. ir. W. (Wilma) Steeneveld	Chair-e	0.9	BHS
DB-K-EVO Evolutionary Medicine	dr. B.A.J. (Bernard) Roelen	Chair-e	1	CS
DB-K-GG Genes and health	dr. P.A.J. (Peter) Leegwater	Chair-e	1	CS
DB-K-GMD Human health risks regarding animals and the environment	A. (Aniek) Lotterman MSc	Chair-e	1	PHS
DB-K-GMD Human health risks regarding animals and the environment	dr. L.J.A. (Len) Lipman	Member-e	1	PHS
DB-K-GRF Integrated reproductive Physiology	dr. H. (Hilde) Aardema	Chair-e	1	PHS
DB-K-HP Herpetology	prof. dr. D. (Daniela) Salvatori	Chair-e	1	CS
DB-K-IZ Emerging Infectious diseases	dr. E.J.A.M. (Alice) Sijts	Chair-e	1	BHS
DB-K-IZ Emerging Infectious diseases	dr. C.A.M. (Xander) de Haan	Member-e	1	BHS
DB-K-KPI Clinical Pathophysiology	M.M.C. (Marleen) van Esch MSc	Chair-e	0.8	PHS
DB-K-KPI Clinical Pathophysiology	S.N. (Sanne) van Zalen MSc	Chair-e	1	CS
DB-K-OH One Health	dr. L.J.A. (Len) Lipman	Chair-e	1	PHS
DB-K-PT Pediatrics	dr. E. (Ellen) Meijer	Chair-e	0.8	PHS
DB-K-PVL Passion for Farm Animals	W.A.M. (Wieke) Poppe	Chair-e	0.7	PHS
DB-K-PVL Passion for Farm Animals	A.J. (Anna) Schaafsma	Chair-e	0.21	PHS
DB-K-RG Regenerative Medicine	dr. B. (Bart) Spee	Chair-e	1	CS
DB-K-UKP Equine University Clinic Brigade	N.M.M. (Nicky) d'Fonseca MSc	Chair-e	0.6	CS
DB-K-UKP Equine University Clinic Brigade	S.N. (Sanne) van Zalen MSc	member-e	1	CS
DB-K-VE Comparative Ethology	dr. E.M.A. (Esther) Langen	Chair-e	1	PHS
DB-K-VE Comparative Ethology	dr. H. (Hetty) Boleij	Member-e	1	PHS
DB-K-VE Comparative Ethology	prof. dr. S.S. (Saskia) Arndt	Member-e	1	PHS
DB-K-VE Comparative Ethology	dr. Vinke, C.M. (Claudia)	Member-e	1	PHS
DB-K-VIC Equine (Foal) neonatal intensive care	drs. E.W. (Esther) Siegers	Chair-e	1	CS
DB-K-VIC Equine (Foal) neonatal intensive care	dr. M.J.P. (Mathijs) Theelen	Chair-e	1	CS
DB-K-VIS Fish	dr. C.N.T. (Niels) Dekker	Chair-e	1	BHS
DB-K-VIS Fish	Prof. dr.A. (Andrea) Gröne	Member-e	1	BHS
DB-K-VT Veterinary toxicology	dr. M.W.H.C. (Marianne) Bol-Schoenmakers	Chair-e	0.7	BHS
DB-K-VT Veterinary toxicology	dr. R.H.S. (Remco) Westerink	Member-e	1	PHS

Course name	Name teaching staff	Role	FTE	DPT
DB-K-WD Wildlife Health	dr. J. (Jooske) IJzer	Chair-e	1	PHS
DB-K-WD Wildlife Health	dr. J.M.A. (Judith) van den Brand	Member-e	0.8	BHS
BVM, Minor BVM cursus 1 t/m 4	dr. C.F. (Claudia) Wolschrijn	Chair	0.9	CS
BVM, Minor BVM cursus 1 t/m 4	dr. H. (Hilde) Aardema	lid	1	PHS
BVM, Minor BVM cursus 5	dr. C.F. (Claudia) Wolschrijn	Chair	0.9	CS
BVM, Minor BVM cursus 5	S.N. (Sanne) van Zalen MSc	lid	1	CS
PREP Course	dr. G. (Gerrit) Koop	Chair	1	PHS

Examinators & course coordinators Master's Programme[1]

Course code	Course name	Name teaching staff	FTE	DPT
DM-U-MI	Master Introduction Course	dr. I.M. (Inge) van Geijlswijk	1	PHS
DM-U-MI	Master Introduction Course	Drs. Y. (Yteke) Elte	1	CS
DM-U-PD	Paraclinical and cross species education	dr. E.R. (Rolf) Nijsse	1	BHS
DM-U-PD	Paraclinical and cross species education	Prof. dr.A. (Andrea) Gröne	1	BHS
DM-U-VV	Basic rotation VPH	dr. L.J.A. (Len) Lipman	1	PHS
DM-U-BLH	Basic rotation Farm Animal Health	dr. G. (Gerrit) Koop	1	PHS
DM-U-BGD	Basis rotation Companion animal medicine	dr. A.M.W.Y. (Annemarie) Voorbij	0.8	CS
DM-U-BP	Basic rotation Equine Medicine	S.N. (Sanne) van Zalen MSc	1	CS
DM-U-JECO	Extramural Clerkship (in private vet. Practice)	dr. A. (Annemarie) Spruijt	1	CS
DM-U-JECO	Extramural Clerkship (in private vet. Practice)	A.J. Revet, Msc	1	FOO
DM-L-PPO	Personal and Professional Development	dr. N.J.J.M (Nicole) Mastenbroek	1	PHS
DM-D-PKGD	Pre-clinic Companion Animals	Prof. dr. H.S. (Hans) Kooistra	1	CS
DM-D-IG1	Internal medicine 1	dr. M.M. (Montse) Diaz Espineira	0.9	CS
DM-D-CH1	Surgery 1	dr. S.J. (Sarah) van Rijn	0.8	CS
DM-D-SIZVK	Emergency and intensive care, bird and small mammal medicine	dr. J.H. (Joris) Robben	1	CS
DM-D-SIZVK	Emergency and intensive care, bird and small mammal medicine	dr. N.J. (Nico) Schoemaker	1	CS
DM-D-SIZVK	Emergency and intensive care, bird and small mammal medicine	dr. Y.R.A. van Zeeland	1	CS
DM-D-SIZVK	Emergency and intensive care, bird and small mammal medicine	dr. C. (Chiara) Valtolina	1	CS
DM-D-SIZVK	Emergency and intensive care, bird and small mammal medicine	dr. H.K. (Heidi) Saarenkari	1	CS
DM-D-PKP	Pre-clinic horse	L.C. (Lieuwke) Kranenburg, Msc	0.7	CS
DM-D-PKP	Pre-clinic horse	drs. T. (Tsjester) Huppes	1	CS

1 *A course coordinator is always an examiner*

Course code	Course name	Name teaching staff	FTE	DPT
DM-D-AMBVP	Ambulatory care and reproduction	drs. Y. (Yteke) Elte	1	CS
DM-D-AMBVP	Ambulatory care and reproduction	dr. A.N.J. (Anthony) Claes	1	CS
DM-D-HK	Surgery	dr. J.M. (Jos) Ensink	1	CS
DM-D-IZ	Internal disease	dr. R. (Robin) van den Boom	1	CS
DM-D-SAPC	Sustainable animal production chains	drs. S. (Sylvia) Bannier-Strik	0	PHS
DM-D-SAPC	Sustainable animal production chains	dr. J.T. (Thomas) Schonewille	1	PHS
DM-D-PHM	Poultry health management	dr. M.G.R. (Mieke) Matthijs	1	PHS
DM-D-PHM	Poultry health management	drs. T.T.M. (Thijs) Manders	1	PHS
DM-D-SHM	Swine health management	dr. A. (Arie) van Nes	1	PHS
DM-D-SHM	Swine health management	dr. B. (Bas) Swildens	1	PHS
DM-D-SHM	Swine health management	dr. T.J. (Tijs) Tobias	0	PHS
DM-D-DHM	Dairy health management	dr. ing. M. (Miel) Hostens	0	PHS
DM-D-SECO	Senior Extramural clerkship	dr. A. (Annemarie) Spruijt	1	CS
DM-D-SECO	Senior Extramural clerkship	A.J. Revet, Msc	1	FOO
DM-PK-ADV	The advising companion animal veterinarian	dr. J. (Jeffrey) de Gier	1	CS
DM-PK-AMS	Animal Movement Sciences	dr. F.M. (Filipe) Serra Braganca	0.4	CS
DM-PK-BA	Farm Analysis	dr. B. (Bas) Swildens	1	PHS
DM-P-BSLAE	Better Science with less Animal animal experimentation	prof. dr. D. (Daniela) Salvatori	1	CS
DM-P-CM	Communication and marketing	drs. Y.M. (IJmert) de Vries	1	PHS
DM-P-CW	Communication week	drs. Y.M. (IJmert) de Vries	1	PHS
DM-PK-DKV	Diagnostic and clinical skills	dr. C.N.T. (Niels) Dekker	1	BHS
DM-P-DER	Animal and law	Iaira Boissevain	0.3	
DM-P-DD	Animal and Data	dr. ing. M. (Miel) Hostens	0	PHS
DM-P-DGM	Veterinarian, health and society	Prof. dr. Merel Langelaar	1	PHS
DM-P-DH	Donkey Health	dr. Doorn, D.C.K. van	0.525	PHS
DM-P-DH	Donkey Health	dr. J.C. (Dax) Vendrig	1	PHS
DM-P-ETH	Ethics for veterinarians	dr. J. (Joachim) Nieuwland	0.8	
DM-P-EVD	Euthanasia of animals	dr. J. (Joachim) Nieuwland	0.8	
DM-P-EVD	Euthanasia of animals	Ellen Deelen	0.6	
DM-P-FQS	Food Quality & Safety	dr. L.J.A. (Len) Lipman	1	PHS
DM-P-FD	Forensic Veterinary Medicine	Nienke Endenburg	0.8	
DM-PK-CH2	Companion animal surgery 2	dr. S.J. (Sarah) van Rijn	0.8	CS
DM-PK-IG2	Companion animal internal disease 2	dr. M.M. (Montse) Diaz Espineira	0.9	CS
DM-PK-IG3	Companion animal internal disease 3	dr. M.M. (Montse) Diaz Espineira	0.9	CS
DM-PK-CHON	Companion animal orthopedics/ neurosurgery	dr. S.J. (Sarah) van Rijn	0.8	CS

Course code	Course name	Name teaching staff	FTE	DPT
DM-PK-CHWD	Companion animal soft tissue surgery	dr. S.J. (Sarah) van Rijn	0.8	CS
DM-P-HPT	Herpetology	dr. C. (Claudia) Wolschrijn	0.9	CS
DM-P-BAAS	Master your boss	drs. Y.M. (IJmert) de Vries	1	PHS
DM-PK-KLHK	Farm animal clinic + elective weeks	dr. R. (Ruurd) Jorritsma	1	PHS
DM-PK-KLH	Farm animal clinic	dr. R. (Ruurd) Jorritsma	1	PHS
DM-P-KLETH	Clinical Ethology	dr. Vinke, C.M. (Claudia)	1	PHS
DM-P-KLETH	Clinical Ethology	dr. ir. I.R. (Ineke) van Herwijnen	0.8	PHS
DM-P-KFT	Clinical pharmacology and toxicology	prof. dr. R. (Ronette) Gehring	1	PHS
DM-PK-NLF	Natural Livestock Farming	dr. D.C. (David) Speksnijder	0.3	PHS
DM-P-NBG	Neurobiology of Behaviour	dr. E.J.M. (Marijke) Achterberg	1	PHS
DM-PK-HK2	Equine surgery 2	dr. R. (Robin) van den Boom	1	CS
DM-PK-HK3	Equine surgery 3	dr. R. (Robin) van den Boom	1	CS
DM-PK-IZ2	Equine internal medicine 2	dr. R. (Robin) van den Boom	1	CS
DM-PK-IZ3	Equine internal medicine 3	dr. R. (Robin) van den Boom	1	CS
DM-PK-KRA	Equine clinical rotation general	dr. J.M. (Jos) Ensink	1	CS
DM-PK-KRV	Equine clinical rotation advanced	dr. J.M. (Jos) Ensink	1	CS
DM-PK-HK2	Equine surgery 2	dr. J.M. (Jos) Ensink	1	CS
DM-PK-HK3	Equine surgery 3	dr. J.M. (Jos) Ensink	1	CS
DM-PK-IZ2	Equine internal medicine 2	dr. J.M. (Jos) Ensink	1	CS
DM-PK-IZ3	Equine internal medicine 3	dr. J.M. (Jos) Ensink	1	CS
DM-PK-KRA	Equine clinical rotation general	dr. R. (Robin) van den Boom	1	CS
DM-PK-KRV	Equine clinical rotation advanced	dr. R. (Robin) van den Boom	1	CS
DM-D-PKGD	Pre-clinic Companion Animals	Prof. dr. H.S. (Hans) Kooistra	1	CS
DM-D-PKP	Pre-clinic horse	L.C. (Lieuwke) Kranenburg, Msc	0.7	CS
DM-D-PKP	Pre-clinic horse	drs. T. (Tsjester) Huppes	1	CS
DM-P-SLM	Shelter medicine	drs. W.J.R. (Ruth) van der Leij	0.6	CS
DM-PK-TZH	Supervisory Veterinarian	drs. S. (Sylvia) Bannier-Strik	0	PHS
DM-P-TAH	Tropical animal health	Prof. dr. J.A. (Jaap) Wagenaar	1	BHS
DM-PK-ULPA	ULP General	dr. D.C. (David) Speksnijder	0.3	PHS
DM-PK-ULPV	ULP Advanced	dr. D.C. (David) Speksnijder	0.3	PHS
DM-P-VIB	Equine interclinic	drs. T. (Tsjester) Huppes	1	CS
DM-P-VIB	Equine interclinic	L.C. (Lieuwke) Kranenburg, Msc	0.7	CS
DM-P-VO	Veterinary education	Prof. dr. G.J. (Harold) Bok	1	PHS
DM-P-VPH	Advanced Veterinary Public Health	dr. L. (Lapo) Mughini Gras	0.4	PHS

Committees
BoS: Board of Studies
Commission Selection Bachelor
Board of Examiners Bachelor DGK
Board of Examiners Master
Faculty Assessment Committee for Teaching Qualifications
Faculty Election Committee for members of Faculty Council
Faculty Council: consultative body for staff and students
Faculty Education Committee
Assessment Quality Committee
Admissions Committee
OSCE- Committee
Portfolio Assessment Committee
Course coordinators meeting bachelor
Course coordinators meeting master

Project groups
Taskforce Studentenwelfare
Curriculumcommission Bachelor
Curriculumcommission Master
EDI- committee
SIO- council
PhD-council
Library committee
Project group Housing
Committee Additional Admission Master’s programme
Committee New Selection Procedure Bachelor Programme

II Curriculum digests

A1. Bachelor programme

Programme outcomes: The Bachelor programme primarily prepares students for the Master programme in Veterinary Medicine. Additionally, the programme prepares students for a career, or further study, in the domains of life sciences, biomedical sciences, or animal sciences. The Bachelor is a full-time programme in the Dutch-language. The programme consists of both mandatory and elective courses.

The programme learning outcomes for the Bachelor programme were updated in 2017 in order to align better with the Master programme outcomes. Four key areas of competence were identified: 1) veterinary knowledge, understanding and skills; 2) animals, vets, and society; 3) scientific thinking and practice; and 4) personal and professional development (see appendix 3.1.2 for the Bachelor programme learning outcomes).

Optimisation of the Bachelor Degree Programme in Veterinary Medicine: In September 2022, the first cohort enrolled in the optimised Bachelor programme. In academic year 2023/ 2024 year, the new Bachelor programme was introduced in Year 2, and in September 2024, Year 3 will start. The optimised Bachelor programme is built upon the programme outcomes as updated in 2017. Important reasons for the optimisation of the Bachelor programme were to improve study load for the students, increase elective space for students by 7.5 ECTS, and to tailor planning and scheduling to the overall Utrecht University system. This allows students to broaden their horizons, or deepen knowledge in specific veterinary subjects, and engage in interdisciplinary collaborations by taking courses outside the VEE.

Veterinary knowledge, understanding and skills: graduates demonstrate knowledge and understanding of pathobiological and population biology systems and processes relating to the health, welfare, and disease of veterinary species. The student has the (practical) skills that are necessary in order to (responsibly) commence a Master programme in Veterinary Medicine
Animals, vets, and society: graduates are aware of the social and societal context in which professional veterinarians will be employed and are able to apply ethical principles and personal values to their work.
Scientific thinking and practice: graduates have received scientific training and are able to effectively communicate information, ideas, and solutions to diverse audiences. They understand the relationship between animal health and public health and can intervene, if necessary, according to current scientific opinions and the social climate.
Personal and professional development: graduates display flexibility in the face of changing circumstances and can reflect on and assess their own professional performance and that of others. They possess the skills necessary to evaluate, maintain and explain their own expertise and professionalism. They understand the concepts of life-long learning and development. Furthermore, they are aware of their own ambitions, strengths and limitations and are therefore able to make a thoughtful considered decision regarding subsequent studies.

Box 3.1.1. The four key areas of competency applied as programme outcomes Bachelor Programme, stated in 2017

Curriculum structure: The Bachelor programme aims to provide a cross-species understanding of health and disease in animals relevant to the veterinary profession. Theoretical knowledge, in-depth insight and understanding, and relevant academic, practical and communication skills are taught in sequentially scheduled courses and in complementary longitudinal courses. The knowledge, skills and attitudes acquired during the Bachelor programme are foundational to the clinical and extramural courses experienced during the Master programme.

The Bachelor programme establishes a general foundation in veterinary science with the first semester beginning with a "*building plan*" which covers molecular, cellular, tissue and organism topics, as well as devoting attention at the population level. From semester two onwards, teaching moves into more multidisciplinary, thematic courses (e.g., Circulation and Respiration, Skin and Skin Derivatives) that are organised around both healthy and diseased cases (see Figure 3.1.1.). The longitudinal development of the more generic competencies (e.g., academic skills and communication skills) is a mandatory part of the programme. Such skills are mainly addressed within the longitudinal courses The Veterinary Clinician (LVC) and The Veterinary Professional (LVP), but also receive attention during the other courses. The elective component of the Bachelor programme consists of two parts: the thesis (five weeks), and three elective courses (total fifteen weeks).

Figure 3.1.1. provides a schematic representation of the Bachelor programme, including the course abbreviations (which are based on the Dutch course titles), the course titles, and the ECTS per course.

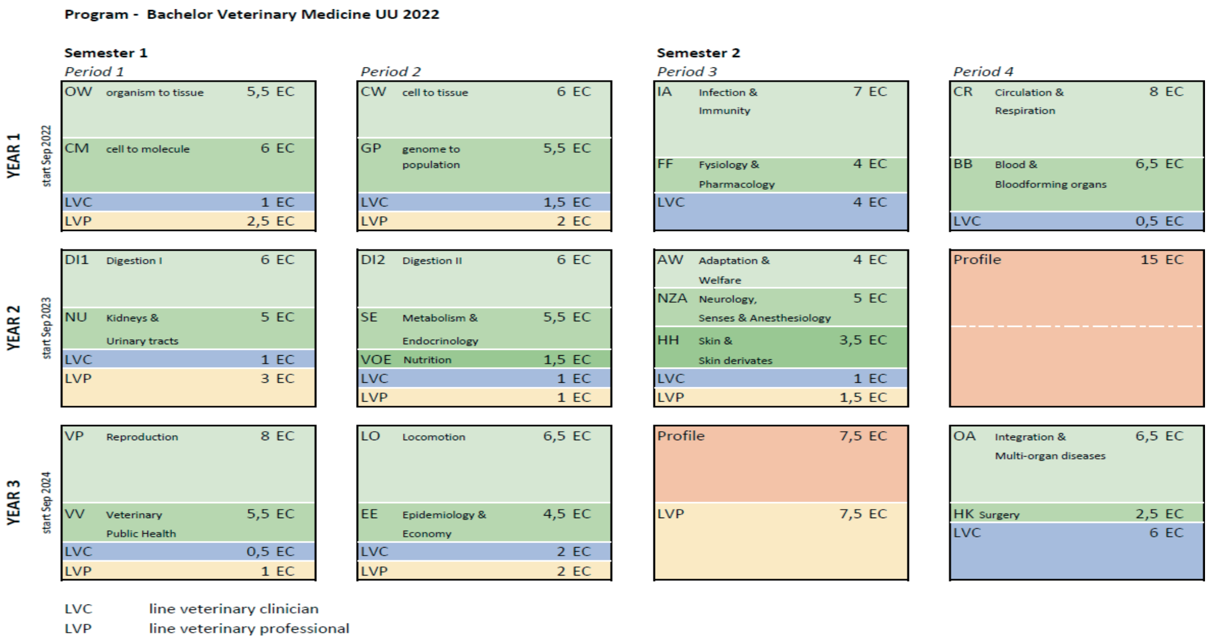

Figure 3.1.1. Schematic representation of Bachelor programme

<u>Honours programmes</u>

Honours programmes are available at the VEE as a selective opportunity. At the Bachelor level, the honours programme is designed for students who want a broader orientation and seek additional challenges during their studies. In addition to regular courses, honours students follow education - within and outside the veterinary curriculum - at a more advanced level, joining an interdisciplinary 'community'. The students participating in the honours programme are offered additional study material during their longitudinal and regular courses. The honours Bachelor thesis extends the regular thesis as a further individual project. The project can be lab-based biomedical or clinical-epidemiological, or involve broader historical, ethical, social-scientific or policy research. Students also take additional courses to broaden their scope, for example multidisciplinary courses at other UU faculties and a special interdisciplinary elective course. International experience is also an option, for example through summer school, a study trip or an international conference.

Overview of courses in Bachelor programme

Year 1

From Organism to Tissue (5.5 ECTS)

After completing this course, the student understands the general macroscopic and microscopic structure of both birds and mammals, including their embryonic development. Moreover, the student can operate a light microscope and interpret histological images.

From Cell to Molecule (6 ECTS)

The student gains general knowledge of and insight into the molecular aspects of the cellular blueprint. This includes the most important biochemical processes and the central biological principles and mechanisms that underlie the health and disease of the animal, primarily at the molecular and cellular level. This also entails understanding the biological basis for normal functioning and the mechanisms that maintain homeostasis.

From Cell to Tissue (6 ECTS)

Tissues are composed of cells and extracellular matrix, which is produced and secreted by cells. The essence of this course is to understand the functioning of healthy tissues down to the cellular and subcellular level. A second central objective is understanding of general pathological mechanisms at the cellular and tissue level (adaptation, inflammation, neoplasia).

From Genome to Population (5.5 ECTS)

Studying genetics at the genome and population level involves topics such as ‘which biochemical processes occur with respect to nucleic acids’, ‘what is a gene and how does it function’, ‘why do animals differ even if they have the same genes’, ‘how is genetic predisposition passed on to offspring and what can go wrong’, and ‘how can you predict the genetic predisposition of the next generation and which processes influence this genetic predisposition.

Infection and Immunity (7 ECTS)

Many diseases in animals are caused by microorganisms and parasites. The prevention and treatment of these diseases requires knowledge of the biology of these agents and their interaction with the host. This course discusses the biology of these microorganisms and the structures and functions of the host immune system and the interaction between host and microorganism.

Physiology and Pharmacology (4 ECTS)

This course serves as a stepping stone towards pharmacotherapeutic action in the later professional practice of a veterinarian. It also provides the foundation for diagnosing and treating poisonings. Starting from the basics, the cell, it becomes clear how the functioning of cells/tissues can be influenced by endogenous substances and exogenous substances (pharmaceuticals and toxins).

Circulation and Respiration (8 ECTS)

In this course, knowledge and insight are obtained about the structure, (dys)function, and recovery (reaction mechanisms) of the circulatory and respiratory system. Much attention is paid to physiology, pathophysiology, and the associated clinical symptoms in conjunction with anatomy, biochemistry, and pathology. During the seminar assignment, students conduct an exercise test to independently analyse and interpret changes in both respiratory and circulatory parameters afterward.

Blood and Blood-forming Organs (6.5 ECTS)

During the course “Blood and blood forming organs,” the (patho)physiology of blood is discussed with respect to oxygen transfer and blood clotting. The course also covers the (patho)physiology of lymphoid organs (including lymph nodes and spleen) and the pharmacological influence on blood (components).

Longitudinal course: The Veterinary Clinician (LVC; 7 ECTS)
In this course, students become acquainted with the natural behaviour of various animal species and how to handle them. Students learn how to interpret farm-specific animal data (especially for livestock). LVC teaches students to perform and gain insight into all aspects of clinical and additional investigations related to concurrent and preciously taught organ-directed courses. A detailed description of the course objectives is listed in the study guide.

Veterinary Clinical Reasoning (VKR) education within LVC covers the entire decision-making process from care request to treatment plan. In the first year, VKR principles are highlighted, and students familiarize with the basics of VKR in 3 tutorials.

Longitudinal course: The Veterinary Professional (LVP; 4.5 ECTS)
LVP aims at developing various skills essential for a graduated veterinary professional. For this purpose, different sub-areas are identified as follows: the veterinary professional (1) has knowledge of relevant legislation, can (2) place veterinary issues within the broader context of the environment, shows (3) scientifically responsible thinking and acting, can (4) make morally responsible considerations, and is (5) consciously engaged in their own professional development and well-being. The first year covers giving and receiving feedback, basic presentation and cooperation skills, ethical dilemmas, legal aspects animal neglect, scientific literature search and review and group- and individual tutor programme for personal and professional development.

<u>Year 2</u>
Digestion-1 and 2 (2 x 6 ECTS)
The first digestion course focusses on pathophysiological mechanisms and their relation to complementary and clinical diagnostics and therapy. This first course also includes practice with the physical examination of the digestive system in dogs and cats, small mammals and birds. Of the latter two animal groups, circulation and respiratory examination will also be covered. This is to reduce animal usage.
In digestion 2, continues with concepts of digestion and fermentation including the role of the liver and applies the different reaction patterns in case the function is abnormal. The pathophysiological mechanisms and the relationship to complementary and clinical diagnostics and therapy are central. This course includes further practice in the physical examination of the digestive system in horses and ruminants.

Kidneys and urinary tracts (5 ECTS)
In this course the students gain knowledge about the construction and function of the kidneys and urinary tract. Subjects are pathophysiological mechanisms for maintaining and restoring water, volume, acid base and potassium balance and the role of various pharmaceuticals in these processes.

Metabolism and Endocrinology (5.5 ECTS)
This course covers the main metabolic diseases and disorders of the endocrine organs.

Nutrition (1.5 ECTS)
The objective of the course is to gain an understanding of the use, and digestion, of feed materials with different nutritional characteristics in different animal species (cow, pig, poultry, dog, cat, horse). The animal nutrition course covers cross-species principles of animal nutrition.

Adaptation and Welfare (4 ECTS)
The main aim of the course is to prepare students to monitor, promote and advise on animal welfare. The student gains knowledge about the background and mechanisms of behaviour, regulation,

adaptation and welfare and can use this information integrally to make statements about animal welfare. A holistic view is applied, focusing on the animal and looking primarily at the biology of the animal to gain insight into the adaptive capacity of a number of different animal species, kept in different contexts and for different purposes (e.g. pet, farm animal, laboratory animal).

Neurology, the senses, and anaesthesiology (5 ECTS)
Students gain and apply knowledge of the organisation of the central nervous system. They perform and interpret anamnesis/physical examinations, for the purpose of diagnosing disorders of the nervous system and senses. Students learn which analgesic/ anaesthetic options are available to reduce/prevent pain in animals.

Skin and Skin Derivatives (3.5 ECTS)
This course covers cross-species knowledge of the structure and function of normal skin and the most common skin diseases in the animal species later encountered in general practice.

Longitudinal course: The Veterinary Clinician (LVC; 3 ECTS)
Veterinary Clinical Reasoning (VKR) education within LVC covers the entire decision-making process from care request to treatment plan. In the second year, case studies become increasingly complex, and the emphasis shifts more towards building differential diagnoses and validating the probability diagnosis.
Also, organ specific investigations and additional investigation techniques are covered in year 2.

Longitudinal course: The Veterinary Professional (LVP; 5.5 ECTS)
LVP aims at developing various skills essential for a graduated veterinary professional. The second year covers basic consultation techniques, effective cooperation in teams, discussion in practice and general society, legal aspects of animal misuse, One Health, statistics, self-directed learning and group- and individual tutor programme for personal and professional development.

Elective courses (2 x 7.5 ECTS, see below).
These are intended to broaden and/or deepen knowledge on specific topics and allow students to develop a personal profile within their programme. Courses are on university level and contain assessment.

<u>Year 3</u>
Reproduction (8 ECTS)
This course discusses normal and abnormal aspects of reproduction, basic aspects of obstetrics, lactation, and primary neonatal care in an integrated, supra-species manner. Diseases related to aberrant development and function of reproductive organs and mammary, glands, fertility, gravidity, obstetrics, and post-partum period that are of particular interest to primary veterinarians are discussed.

Veterinary Public Health (5.5 ECTS)
This course focusses on the basic concepts of process control in a guaranteed safe food production chain and the role of veterinarians. Subjects include microbial and non-microbial cycles that may influence humans, animals, or the environment. Attention is paid to relevant zoonoses in companion animals and livestock farms that are not primarily operated as production systems. Aspects of animal welfare and public health are dealt with in their social context. The course discusses processing techniques for animal-based foods in relation to food safety (hygiene, preservation, storage, etc.).

Locomotion (6.5 ECTS)
The course deals with the structure, function, and clinical diagnostics of the locomotion system,

including clinically relevant diseases, orthopaedic trauma, first aid, basic bandaging, and pharmacotherapy for all animals, including birds. The lessons integrate the concepts of health, sickness, healing and health-maintenance. The therapeutic and preventative strategies will be presented in conjunction with the underlying pathology.

Epidemiology and economics (4.5 ECTS)
The objective of the course is to develop insight and skills for recognizing, understanding and studying diseases in an animal population in conjunction with the economics of veterinary medicine and animal diseases. More specifically, it involves methodology of scientific research and data analysis; the mechanism of spread of (infectious) animal diseases and interpretation of diagnostic tests in populations; use of economic techniques as decision support for the veterinarian.

Thesis (7.5 ECTS)
An individual Bachelor thesis based on the student's own literature-based research. The most important learning objectives are: (1) to learn to be responsible for completing a project independently, (2) to improve scientific writing skills and learn to carefully conceptualize ideas, (3) to become familiar with one of the fields in the veterinary profession, (4) to critically analyse and scrutinize new, scientific information from a variety of sources, (5) to prepare for the research internship (optional), and (6) to report in a concise, structured and timely manner in English. The subject of the thesis should be of a veterinary or biomedical nature. Students choose a topic and work independently, guided with regular meetings with a supervisor.

Elective course (7.5 ECTS, see below).
These are intended to broaden and/or deepen knowledge on specific topics, and allow students to develop a personal profile within their programme. Courses are on university level and contain assessment.

Integration and multi-organ diseases (6.5 ECTS)
This course concentrates on the multi-organ character of diseases. Subjects include systemic diseases, shock, and neoplasia. The central topic is the interaction between various organs and organ systems, diseases and the cause and consequences they have for the entire organism.

Surgery (2.5 ECTS)
This course introduces students to suture materials, suture methods and instruments both theoretically and practically. This leads to the student being able to perform simple surgery on a practice object (incision, dissection, ligation and closure). This course covers the classification of wounds (traumatic and non-traumatic) and the ways in which wound healing can be influenced with surgical procedures. The principles of asepticism are applied to describe how to make a surgical procedure aseptic. Students also learn to make a reasoned choice among the various operative approaches to "the acute abdominal patient." The different injection techniques are discussed, and their advantages and disadvantages are used to select the most appropriate injection technique. Finally, safe and aseptic preparation of a syringe or infusion for administration is practiced.

Longitudinal course: The Veterinary Clinician (LVC; 8.5 ECTS)
Veterinary Clinical Reasoning (VKR) education within LVC covers the entire decision-making process from care request to treatment plan. In the third year, complex case are discussed, with emphasis on building differential diagnoses and validating the probability diagnosis. Also, organ specific investigations techniques are covered in year 3.

Longitudinal course: The Veterinary Professional (LVP; 3 ECTS)
LVP aims at developing various skills essential for a graduated veterinary professional. In year 3 this

comprises advanced consultation techniques, effective cooperation in teams, ethical issues in practical and beyond disciplinary context, disciplinary law, interdisciplinary responsibility/ One Health, thesis writing (see separate heading "thesis"), evidence-based acting. The individual tutor programme for personal and professional development focusses on realistic overview of the veterinary work field at large, and the students' individual future perspectives.

Electives

The elective courses listed below are offered by the VEE. Simultaneously, students are encouraged to enrol in elective courses from other faculties or universities, as long as the regulations concerning electives are followed (see below). Electives are scheduled in Year 2, period 4, and in Year 3, period 3.

Period 3, year 3

Animals and humans in the Anthropocene (7.5 ECTS)

Emerging zoonoses, the climate crisis, declining biodiversity, the global food issue and animal rights: today's major challenges involve the relationship between animals, humans and the environment. The elective course Animals and Humans in the Anthropocene examines this relationship from a longer-term perspective. How did the relationship between animals, humans and the environment change over time and in different cultural and social contexts? Where do the major contemporary issues surrounding animals and the environment come from and how can we understand that emergence? The course gives students a fresh perspective on topics such as sick animals, animals as a hobby, animals as food, vegetarianism/veganism, animal protection, the Anthropocene, wild animals and animal politics, using inspiring work by historians and other humanities scholars on animals and the environment. Emphasis is on the modern period between 1800 and the present.

Didactic skills in Veterinary Medicine (7.5 ECTS)

In this elective course students are introduced to (veterinary) education. Students acquire knowledge about different educational principles and will are given the opportunity to gain experience in teaching classes in a variety of ways. During the elective students intensively collaborate with your fellow students and teachers. In addition, there are journal clubs in which students learn to correctly assess (educational) literature on content and quality.

Equine (foal) neonatal intensive care (7.5 ECTS)

The student participates in the Foal Intensive Care team, supported with theoretical background and guided assessments on submitted patients, and practical aspects belonging to the care of critically ill foals.

Fish (7.5 ECTS)

Students gain knowledge of the various aspects of fishkeeping in The Netherlands and in the world. This concerns both the commercial farmed fish, farmed and wild catch, as aspects of ornamental fishkeeping.

Human health risks regarding animals and the environment (7.5 ECTS)

Preparing for your role as a veterinarian in advising customers with questions regarding health risks of themselves (or their staff, visitors) due to handling animals. It concerns the interaction with animals in the broadest sense: farm animals, companion animals and horses, wildlife and fish, both direct and indirect contact through food and the environment.

Integrated Reproductive Physiology (7.5 ECTS)

Objective of this course is to obtain in-depth cross-species knowledge and insight of a) the regulation of reproduction of both male and female animals and b) possibilities to influence propagation. Coming up for discussion are epigenetics, embryonic imprinting, and autocrine and paracrine systems.

Paediatrics (7.5 ECTS)
In Paediatrics, students gain insight in numerous and various (veterinary) problems that manifest around the birth and growing up of young animals. Coming up for discussion are vitality, peri-natal thermoregulation, care and feeding of orphaned animals, interaction between mother and young, immunology neonates.

Regenerative Medicine (7.5 ECTS)
Students gain insight in: a) chronic disease processes which lead in different organ systems and species to chronic organ dysfunction (on pathological, cellular and biochemical level); b) the role and function of adult stem cells, mesenchymal stem cells compared to embryonic stem cells; c) the functional relationship between adult stem cells and their immediate surroundings (the "stem cell niche"); d) cross body insights into cellular and molecular pathogenesis of chronic diseases (integration of knowledge and understanding above the organ systems): and e) regenerative and anti-degenerative biological agents.

Period 4, year 2
Biology of the honeybee (7.5 ECTS)
Students are familiarized with insect biology, especially with the anatomy, physiology, and behaviour of the honeybee. Much attention is paid to disease detection, management, and veterinary aspects of bee disease control. In addition, students learn the food safety aspects of processing bee-derived products. Students are trained to work safely and properly with honeybees during practical training in the UU bee stand.

Clinical pathophysiology and immunology (7.5 ECTS)
The aim of this elective course is to teach students about the translation of clinical signs of a patient into relevant pathophysiological mechanisms and to learn more about the disturbances of the innate and adaptative immune system.

Comparative Ethology (7.5 ECTS)
Behaviour is THE read-out parameter for the emotional status of animals and their adaptive capacity (and thus animal welfare). In this elective course on comparative ethology, we build on previously acquired knowledge about animal behaviour (from the bachelor course 'adaptation and welfare') and zoom in on the functionality of animal behaviour.

Economic Principles of Veterinary Medicine (7.5 ECTS)
Students gain knowledge on the economics of a veterinary company. Discussed are the theoretical aspects of the economic laws of the free market, among which a veterinarian should work, specific examples from veterinary practice management, and pricing.

Emerging Infectious diseases: from discovery to intervention (7.5 ECTS)
Students attend lectures and dive into the literature to learn about different aspects of emerging infectious diseases in animals, including zoonotic diseases. You will be looking into their immunopathology, epidemiology, diagnosis, therapy and preventive measures. Classroom lectures, tutorials and group-assignments are delivered and guided by staff of our faculty. In addition, we usually invite experts from other institutions, such as the RIVM (National Institute Public Health), for complementary lectures on specific topics.

Equine University Clinic Brigade (7.5 ECTS)
Second-year students gain an overall idea of working as a veterinarian in a (referral) clinic and the (im)possibilities involved. Present knowledge on equine medicine is deepened through structured students' case presentations of submitted clinical cases, supported by a structured series of theoretical

and practical instructions. Personal and professional development is worked on during peer review meetings.

Genes and Health (7.5 ECTS)
The aim of the course is to deepen the knowledge of molecular genetics, the applications of which are becoming more and more important for diagnostics and treatment. The field develops rapidly, and it may be expected that applications in human medicine will also become available for veterinary medicine.

Herpetology (7.5 ECTS)
Herpetology teaches various relevant aspects of reptiles and amphibians, as students know how to act when these animals are presented as patients in practice. Special attention is paid to some common diseases, mostly related to improper housing, feeding and/or care.

One Health (7.5 ECTS)
Students are actively involved in creating an interesting and challenging course. Subgroups of six students from different backgrounds choose their own theme for the whole course. Examples of themes include One Health issues like Q-fever, MRSA, brucellosis, toxoplasmosis, avian influenza or MERS. Students are encouraged to contact experts on subjects not yet or incompletely covered in the course but required for their chosen topic or for all students in the course. Students are stimulated to organize excursions to topic-linked destinations.

Passion for Farm Animals (7.5 ECTS)
The student gains insight into the ways in which farm animals are kept in the Netherlands and how the current forms of animal husbandry have arisen. The student acquires knowledge of the position of livestock farming in the Netherlands and what consequences it has for humans, animals and the environment. In addition, the student is introduced to the role of veterinarians on modern livestock farms. The role of the veterinarian is now more that of advisor than in the past. The student is aware of different perspectives and interests during discussions on socially relevant issues related to animal husbandry

Veterinary Toxicology (7.5 ECTS)
Toxicological issues are regularly encountered within the veterinary practice, both for farm and companion animals. Toxic compounds encompass medication (veterinary and human), cleaning agents, pesticides and toxic plants and animals. In addition, differences in physiology result in species-specific differences in toxic outcomes. Together this makes veterinary toxicology a very broad subject and necessitates basic knowledge on kinetics, mechanisms of action and pathology to enable correct diagnostics and treatment in case of animal intoxications.

Wildlife health (7.5 ECTS)
In Wildlife Health students gain knowledge and understanding of issues in conservation medicine and wildlife management to which veterinary science contributes. Discussed are the most important health and welfare issues in wild and feral animal populations, including ecological, epidemiological, ethical, societal, legal, and practical aspects, data retrieval systems for wildlife related issues and awareness systems for wildlife related issues.

Under construction:
Evolutionary medicine (7.5 ECTS) – start academic year 2024/2025, period 4
The main objective of the Evolutionary Medicine course is to provide students with an in-depth understanding of the evolutionary principles and processes underlying diseases and health and apply them in veterinary contexts.

Sustainability in veterinary medicine (7.5 ECTS) – start academic year 2025/2026, period 4
Co-creation of students and lecturers, coordinated by the Faculty Green Team.

Enrolment in elective courses at other faculties or universities
At other faculties within the UU
The range of courses on offer at Utrecht University is hugely diverse. By searching the education catalogue for courses open to minors, a student can easily filter available courses.

Examples and student experiences
Interested in science in general?
Do you have a broad interest in science and enjoy working with students from other disciplines? Then check out one of the UU-wide courses 'Sustainability as a worldview; on the role of science in social change' or 'Philosophy of science'. Teaching of these courses takes place in the evenings.

Interested in a teaching challenge?
Curious about a different teaching format and an interdisciplinary collaborative assignment? Check out one of the teaching challenges organised in collaboration with other faculties and universities.
- Interuniversity Sustainability Challenge (7.5 ECTS)
- Replacing Animal Testing (7.5 ECTS)
- Dutch Dairy Challenge (6 ECTS)
- Thematic Interdiciplinary Challenges (TiC). More information about the TiC challenges offered by UU and how to register can be found on the TiC website. The challenges currently on offer are:
- Investing in the Future (Pathways to Sustainability)
- Green Teens (Dynamics of Youth)
- Humans on the move (Migration and societal change)
- One Health (Life Sciences)

Read below about Jaap's experience with the Replacing Animal Testing course:

"The RAT (Replacing Animal Testing) challenge was a fun challenge outside the regular undergraduate veterinary curriculum. The RAT challenge was interdisciplinary with both UU and HU participants. This was a fun way to get acquainted with the different ways of thinking across the many faculties in Utrecht. Besides exposing me to new ways of working, the RAT course also did a lot for my network within the scientific world. Through the RAT challenge, we were put in touch with companies and the Ministry of Health and from this I have kept valuable contacts. For the next veterinary students who follow the RAT challenge, I would advise them to enter the challenge with an open mind. Try to be open to working methods you are not used to in veterinary medicine and learn from them! Then the RAT challenge will be incredibly valuable, not only for your studies, but also for the continuation of your career."
- Jaap Tump, student 'Replacing Animal Testing (RAT)'

Interested in biology?
Interested in biology and a broader view of the animal kingdom? Take a look at biology. In the biology courses below, 2 places are reserved annually for DGK students.
- Biotechnology & Society
- Neurobiology

Read below about Rebecca's experience with the Neurobiology course:

"Taking a course from another faculty is highly recommended! It is incredibly interesting to learn about neurobiology from a different perspective. Because of the more theoretical approach to the course, you feel like you are learning even more than you are already used to. You besides a lot through all the different forms of studying involved. For example, you had to take a Blackboard test before the start of each lecture."
Rebecca Öostrom, 'Neurobiology' student

Interested in behaviour?
Are you interested in behaviour? You might like to broaden your knowledge with courses such as: Bioethics, Social Cognition, The science, ethics, and experience of diagnostic labels in mental health, or Child and environment: pedagogical explorations.

Read about Sam's experience here:

"I have a keen interest in behaviour and psychology and really like children. I also found it very applicable to veterinary medicine as you may also encounter behavioural problems in practice later on and with this course you also learn more about the origin and expression of problems. It is nice to come into contact with students from other studies and to step out of the veterinary world for a while. Tip: Do it! Just have a look through the courses available to see if you see something that suits you. It is really easy if you start on time!
Sam van Zuijlen, student 'Child and Environment: Pedagogical Explorations. Introduction to Pedagogy for Non-Pedagogues'

Interested in pharmacy?
Did you find the Physiology and Pharmacology course from year 1 interesting? Consider a course in Pharmacy, such as: In vitro models of disease for pharmacology, Learning from patient, Addiction and addiction medicine, Psychoneuropharmacology theoretical part or Advanced pharmacokinetics.

Read about Marinke's experience below:

"'In vitro models of disease for pharmacology' is a very interesting course that definitely changed my opinion on certain issues regarding laboratory animals and research. In addition, I really enjoyed working with students from other studies. As a tip; contact the course coordinator beforehand to check whether your expectations of (the content of) the course are correct and whether the level is attainable for you. The way of studying can be very different for a course outside the Faculty of Veterinary Medicine and it is nice if you can prepare for this in advance."
Marinke van Esveld, student 'In vitro models of disease for pharmacology'

Interested in the medical field?
Perhaps a course in Biomedical Sciences or Medicine is something for you. Then courses like Dimensions of social issues, Unravelling bias in science, History and philosophy of medicine, Global health, environmental health and climate change, Narratives in medicine, or COVID-19 and society are definitely worth checking out.

Interested in physics, chemistry, mathematics and sustainability?
Then take a look at the Faculty of Geosciences and the Faculty of Science:
- Philosophy of Science and Ethics
- Climate and Society
- Mathematics for poets, thinkers and doers

Interested in subjects outside life sciences?
Besides all this, you can also choose for a course outside life sciences and develop yourself in

completely different areas. For example, you can choose to gain knowledge in foreign languages, history, politics or economics.

For example, read about these students who took an Arabic and art history course:

It was great fun learning a new language, Arabic, with a different alphabet at a nice pace! By the end, I could already record short videos and make sentences. Teaching was structured differently from our faculty. The emphasis was much more on self-study, with only three 2-hour classes a week. But it was manageable and a nice change. As a tip; check the prior knowledge requirements, for courses at level 1 (Bachelor Introductory) you often don't need prior knowledge.
- Puck Heijenrath, student 'Arabic 1'

It was super fun to be introduced to other forms of teaching and content topics. At the beginning of the course, it is a bit uncomfortable to study in a different way, but lecturers and fellow students are very helpful to brush up on any previous knowledge. It's nice that you get the chance to choose courses that suit your interests, that way you also discover something new! As a tip: look carefully at the timeslots, so you know which days you need to be available for the course.
- Rebecca Drok, student 'The masterpiece. Key works in Western art of the 20th and 21st centuries'

Interested in law and governance?
Are you interested in law and governance? Then take a look at the Faculty of Law, Economics, Governance and Organisation.

<u>**At other universities**</u>
Studying with EduXchange (TU/e and WUR)
Utrecht University has a partnership with Eindhoven University of Technology (TU/e) and Wageningen University & Research (WUR), which allow students easy access to elective courses at one of these universities. Via <u>EduXchange</u> a student can find out which courses at these two universities are open to UU students.
To get the students started in the search for interesting elective courses already deemed suitable by the exam board, the VEE already listed the following options:

Wageningen University & Research (WUR)
- Animal Behaviour (3 ECTS
- Introduction to Animal Ecology (6 ECTS)
- Behavioural Endocrinology (6 ECTS
- Animal Cell Biotechnology (3 ECTS)
- Animal Ecology (6 ECTS)
- Behavioural Ecology (6 ECTS)
- Developmental Biology of Animals (6 ECTS)
- Disease Ecology (6 ECTS)
- Marine Animal Ecology (6 ECTS)
- Population and Quantitative Genetics (6 ECTS)
- Eating, Customs and Health (6 ECTS)

Eindhoven University of Technology (TU/e)
- Brain, body & behaviour (5 ECTS)

Read below about a student's experience outside UU:

> *"Studying at WUR I found a very positive and valuable experience. There is a beautiful, inviting campus, and the teaching style was different from that in Utrecht. I would definitely recommend taking a course outside veterinary medicine, do what you feel comfortable with and try to push your boundaries!"*
> - Jessy Vijn, Animal Behaviour

Studying without EduXchange

Besides taking courses at WUR and TU/e, it is also possible to choose for a course at another university. Looking for and enrolling in a suitable course at another university requires the student's own initiative and independence. They have to contact the student office of the relevant faculty and university before enrolling.

A2. Programme outcomes, Bachelor of Veterinary Medicine

Utrecht, July 2017
UNDER THE AUSPICES OF
Wim Kremer, vice dean of education and Theo van Haeften, education director bachelor

Introduction

The learning outcomes for the Bachelor of Veterinary Medicine programme were established in 2006 and amended in the interim in 2009. In 2016, at the behest of the vice-dean for education, a revision was carried out of the learning outcomes and thus also of the objectives and profile of the Bachelor of Veterinary Medicine (see assignment description). To ensure international acceptance of the learning outcomes, the Dublin descriptors were taken into account in the revision, according to the assignment. The learning outcomes are outlined and subdivided into domains. Further detailed elaboration of the learning outcomes in relation to the learning goals takes place at course level.

Aims
The bachelor's programme in veterinary medicine prepares students for a further (study) career: (primarily) the master's programme in veterinary medicine or a biomedical master's programme[2].

Profile
The Bachelor of Veterinary Medicine graduate has knowledge and understanding of pathobiological and population biological systems and processes regarding animal health, welfare and disease. The graduate understands the relationship between animal health and public health and can intervene where necessary in accordance with contemporary scientific insights and developments in society. The graduate is thereby able to perform the relevant (manual) skills required for a responsible start of the Master of Veterinary Medicine programme. In doing so, the graduate bachelor of veterinary medicine has an understanding of the social and societal context in which an academically trained animal doctor will work. The graduate can include ethical principles and personal values. The Bachelor of Veterinary Medicine student is scientifically trained and able to effectively communicate information, ideas and solutions to a diverse audience. The student can deal flexibly with changing circumstances and is positively critical and reflective of his/her own professional actions and the actions of others.

The Bachelor of Veterinary Medicine graduate possesses skills that enable him/her to evaluate, maintain and provide insight into his/her own expertise and professionalism. The student knows what lifelong learning and development means. He/she is aware of his/her own ambitions and (im) possibilities and can thus make a well-considered choice regarding a possible continuation study programme.

2 *Examples are certain Medicine master's programmes, certain Life Sciences research master's programmes and master's programmes in health education or policy/administration. A comprehensive overview of (possible) connecting master's programmes is available from the student advisers.*

<u>Programme Outcomes</u>

1. Veterinary knowledge, understanding and skills

The Bachelor of Veterinary Medicine student has broad cross-species (cell) biological, anatomical and (patho)physiological knowledge and understanding. This means knowledge and understanding of:

V.1 the construction and function of an animal, from molecule to organism;
V2 the patho(physio)logical processes that can disrupt the health of an animal or population;
V3 disease and animal health;
V.4 the diagnostic investigation and possible interventions in case of disturbances to health and welfare of individual animals and groups of animals (populations);
V.5 the systems aimed at keeping animals healthy, the living environment and public health.

The Bachelor of Veterinary Medicine student is able to perform in a practice context:

V.6 use the knowledge and insight gained in clinical reasoning;
V.7 use relevant animal species;
V.8 perform relevant diagnostics on both individual animals and groups of animals;
V.9 interpret outcomes of further research and communicate them appropriately;
V.10 establish a treatment and intervention plan.

2. Animal, vets & society

The Bachelor of Veterinary Medicine student:

D.1 has knowledge and understanding of the position of the animal and the role of the veterinarian in society when it comes to animal health, animal welfare and public health. This applies to both individually kept animals and food-producing animals (chains);
D.2 has knowledge and understanding of legal and ethical aspects of Veterinary Medicine;
D.3 is able to form and defend a reasoned opinion on veterinary issues, also based on consideration of relevant social, clinical, scientific and/or ethical aspects.

3. Scientific thinking and conduct

The Bachelor of Veterinary Medicine student:

W.1 has knowledge of the general principles of hypothesis formulation, research methodology, statistics and epidemiology and can relate this to the pyramid of evidence;
W.2 is able to clearly define a problem, formulate a corresponding research question and systematically collect, organise, analyse and interpret relevant information;
W.3 can communicate this information and substantiate it in a convincing manner;
W.4 demonstrates academic attitude, shows curiosity to solve complex problems in an evidence-based manner;
W.5 knows what scientific integrity means and acts accordingly.

4. Personal and professional development

The Bachelor of Veterinary Medicine student:

P.1 has knowledge and understanding of the development of his/her own competences, is focused on continuous improvement thereof and can also demonstrate this;
P.2 reflects on own professional actions;
P.3 takes responsibility for own actions and decisions taken;
P.4 is capable of effective communication;
P.5 is able to give, accept and use feedback;
P.6 is capable of effective and multidisciplinary cooperation;
P.7 shows a respectful attitude towards humans and animals;
P.8 is self-confident about his/her own ambitions and (im)possibilities, and is able to make a well-considered choice regarding further education;
P.9 shows to take care of personal own well-being.

A3. Course Table

For this table, see the Excel file on SURFdrive

B1. Master Curriculum programme

Programme outcomes: The Master programme prepares students to become fully qualified veterinarians as defined by law. Additionally, graduates are also qualified to work in the wider domain of the life/biomedical/animal sciences. In 2018 the programme outcomes were updated in alignment with AAVMC's CBVE Framework[3] (see appendix 3.1.5. for the Programme outcomes Master Veterinary Medicine). How each individual course contributes towards achieving the programme outcomes is illustrated in appendix 3.1.6. In 2010, competency-based education including a longitudinal assessment system based upon the principles of programmatic assessment was designed and implemented in the Master programme[4]. In September 2022, a revised curriculum was implemented to ensure a full alignment with the updated programme outcomes. The design and implementation of competency-based education and the programmatic approach to assessment were evaluated in a design-based research approach as part of a PhD thesis[5]. Appendix 3.1.6. also provides an overview of the alignment between the programme outcomes and the EAEVE day-one competencies.

Optimisation of the Master programme: In September 2022, the first students enrolled in the revised Master programme. In the 2023/ 2024 academic year, the revised programme was introduced in Year 2, and in September 2024, Year 3 will start. The revised programme is in alignment with the updated programme outcomes. Important reasons for revising the Master programme were to increase ownership for students to personalise their own curriculum, to increase exposure to primary care patients, and to increase focus on essential generic competencies relevant for daily clinical practice (e.g., entrepreneurial skills, interdisciplinary collaboration and communication). The elective space allows students to broaden their horizons and engage in interdisciplinary collaborations by taking courses outside the VEE.

Curriculum structure: The Master programme consists of three parts: 1) the Uniform Phase, 2) the Differentiated Phase including a Master's thesis, and 3) the Elective Phase. An overview of the Master programme is presented in box 1 and figure 1.

<u>Uniform Phase</u>
The programme starts for all students with eight compulsory courses. One of these courses, PPO ('*Persoonlijke en Professionele Ontwikkeling*'), is a longitudinal course over three years in personal and professional development. The uniform courses provide students with a robust foundation in essential veterinary skills and knowledge and empower students to successfully progress into the differentiated and elective phase.

<u>Differentiated Phase</u>
In the differentiated phase, students choose one of three tracks, namely (1) Companion Animal Medicine (CAM), (2) Farm Animal Health (FAH), or (3) Equine Medicine (EM). Part of the differentiated phase is a ten-week extramural clerkship in a veterinary primary practice related to the chosen animal species track, i.e., the senior extramural clerkship (SeCO). Veterinarians participating as preceptors (i.e., qualified personnel) in these clerkships are trained by senior faculty members on how to teach in the clinical phase, how to provide feedback and assess students and on other relevant subjects (see Area 9 for additional information). These extramural clerkships are integrated in the programme of assessment and structural part of the quality assurance system.

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3 https://cbve.org/framework
4 https://bmcmededuc.biomedcentral.com/articles/10.1186/1472-6920-13-123
5 https://link.springer.com/article/10.1007/s40037-015-0172-1

Box 1	**Overview of the Master programme**			
		Course	**ECTS**	**Weeks**
Core	Uniform phase	Eight courses*	60	40
	Differentiation phase	CAM, FAH or EM	30	20
		SECO	15	10
	Thesis	Thesis	22.5	15
Elective		Seven courses*	52.5	35
Total			180	120

**See below for an overview of all courses in the Master programme*

Figure 1 provides an example of a programme followed by a Master student.

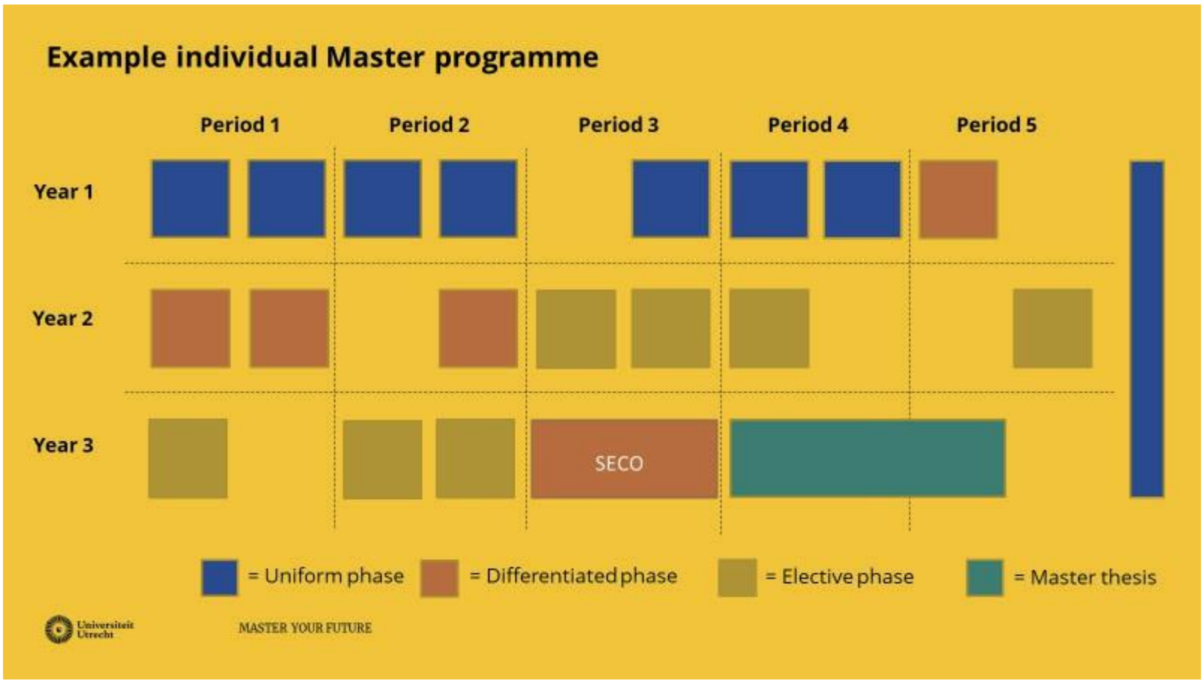


Figure 1: schematic overview Master programme

Elective phase

One of the goals of the Master programme is to give students the opportunity to emphasise the topics or skills that align best with their own ambitions and talents. A student can choose to focus on clinical knowledge and skills acquisition, but also on, for example, research, communication, entrepreneurship, animal welfare, or One Health. To make this possible, students are, within the VEE's requirements, free to choose up to 52.5 ECTS credits of their own learning pathway. The most important requirement is that students have to choose two courses from a list of clinical profiling courses offered at the VEE. Students may choose to follow courses or internships outside the VEE also in alignment with the predefined guidelines (see below for additional information about the requirements).

The 'Thursday afternoon' sessions

A special feature of the revised Master programme are the longitudinal thematic sessions for the full student cohort. During the academic year (40 weeks), these compulsory sessions are organised every

Thursday afternoon from 1:15 PM to 5:15 PM. With these sessions, the VEE aims to create a sense of community and provide allocated time for specific elements that do not directly fit within a single course but are necessary elements in preparing students in successfully making the transition from school to veterinary practice. Particular attention is paid to personal development, academic skills, scientific skills, soft skills, discussion of ethical and social dilemmas, cross-curricular matters, as well as some fun, less scientific components.
All Master students participate in these sessions. Some sessions are offered to all cohorts at the same time, whilst other sessions are organised at year level and/or animal species track. Some sessions are organised in collaboration with the lifelong learning programme and are open for graduated veterinarians. This provides additional learning opportunities for the students.

Themes that are currently addressed include:
- Personal and professional development (including peer group meetings, soft skills training, tutor talks and reflective activities)
- Integration of research and education: meet the scientist and journal clubs
- Evidence-based veterinary medicine
- Advanced clinical reasoning
- Triage afternoons (crisis management)
- Bridge to working life: entrepreneurship, lifelong learning, working as an employee, business, policy, alternative veterinary medicine, collaboration with veterinary technicians and -nurses, wildlife, dilemmas, etc.
- Special events: Symposia, Vetlink, sports day, etc.

Extracurricular practical training
In addition to the elective courses offered, extracurricular activities can provide useful practical experience. For instance, students can register to milk the cattle at 'De Tolakker' farm. This is a required element in the first year to do under supervision; once students have experience in milking, they can register for the evening shift and, with more experience, they can register for weekend shifts. This is popular, and provides practical experience with observation of udder issues, treatment for mastitis, handling of cattle, as well as teamwork, since the observations need to be communicated properly to the next shift. Following mandatory training, students can also assist during the lambing and foaling seasons. Similar opportunities are available for extracurricular practical work on the pig farm.

Honours programmes
Honours programmes are available at the VEE as a selective opportunity. For Master students, the honours programme is a 12-month period focused on research, which students can apply for in the third year of their Bachelor's degree. There are several rounds of selection, and, ultimately, up to ten students are selected. These students can choose from a wide range of research proposals under the supervision of different supervisors/teams at the VEE. The honours programme culminates with a final report in English and a presentation at the annual concluding symposium. Upon successful completion, the student receives a certificate and frequently this path leads to a PhD track upon graduation.

Overview of courses in Master programme
Uniform phase
Master Introduction course (7.5 ECTS)
The first course 'Master's introduction' covers four topics: 1) Pharmacy management, with attention to antibiotics policy, pharmaceutical calculations, legislation, chemistry of medicines and 'preparing for administration'; 2) Communication, in which attention is paid to cooperation and communication with colleagues and animal owners; 3) The veterinarian and the practice: facets of the practice such as the organization of the practice, how does a practice work economically/financially? Insight into the revenue model of a veterinary practice or clinic; and 4) Sector orientation, which discusses how

the veterinary sector works and how you can find your way in it. The student also learns about the developments in the field, from within and outside the profession, which ultimately influence the day-to-day course of business.

Paraclinical and cross-species education (7.5 ECTS)
The PD (paraclinical and cross-species education) course covers topics that were discussed in the bachelor but are placed in a clear veterinary clinical context in this course. Deepening previously covered concepts but also further developing practical actions are objectives of this course. The topics covered in this course are pathology, microbiological diagnostics, pharmacology, toxicology, clinical pathology and nutrition. Pathology and microbiological diagnostics in particular have a clear practical content, the same applies, albeit to a somewhat lesser extent, to clinical pathology. All components contain cross-species teaching, which may involve treatment of general principles that are similar in various animal species, but also species-specific differences from the general principles.

Basic rotation Veterinary Public Health (7.5 ECTS)
Students gain basic knowledge of and insight in methodology of pathological and microbiological examination, which are being discussed in the context of a clinical case. Dissection and microbiological diagnostic techniques are practiced, as well as interpretation of results and translation of the findings to the individual animal, herd, product, or environment. Concepts of hygiene and food microbiology are also addressed in the course as well as the role of veterinarians in slaughterhouse (see section “Description (timing, group size per teacher, ...) of the teaching in slaughterhouses and in premises for the production, processing, distribution/sale or consumption of food of animal origin” for details).

Basic Rotation Farm Animal Health (7.5 ECTS)
In basic rotation Farm Animal Health, the various husbandry systems are covered and the production cycle of the various sectors (cattle, pigs, poultry, small ruminants) are shown at the university farm ‘De Tolakker’ and in e-modules. Farm animal veterinary medicine is further introduced through real-life or paper cases, so that students can work up a patient independently and learn to assess whether a case is urgent, and whether they can solve it independently or need to call in help. Students learn how preventive veterinary medicine works and develop a vision on the veterinarian’s role in the transition of livestock production to more sustainable systems taking animal health and welfare, as well as the environment and public health into account.

Basic Rotation Companion Animal Medicine (7.5 ECTS)
This course prepares students to provide veterinary care to companion animals in emergency situations. In addition, it gives the student a rough idea of the (im)possibilities of a referral clinic. The course starts with a common pre-week consisting of theoretical education and practicals. This is followed by 4 weeks of clinical teaching, for which the students, divided into 4 groups of 6 students, enter the 4 weeks according to a carousel schedule. The theoretical teaching during the pre-week focuses on the recognition of emergency patients and their management. Lectures, self-studies and work seminars are used for this purpose. Practicals during the pre-week focus on handling, stabilizing and treating emergency patients. 50% of the clinical teaching is in the Emergency Department (both during and out of office hours). The students participate the other 50% of the clinical teaching in the different disciplines of the veterinary hospital (Surgery, Internal Medicine, Ophthalmology, Anesthesiology, and Birds, exotic animals & small mammals (VBD)) in order to gain not only knowledge, clinical and social skills, but also an impression of the (im)possibilities of the care that a referral clinic can provide. All examinations findings are reported in the patient report system “Provet”.

Basic Rotation Equine Medicine (7.5 ECTS)
This course prepares students to provide veterinary care to horses in emergency situations. In addition, it gives the student a rough idea of the (im)possibilities of a referral clinic. The first week is a so-called pre-week in which skill training and updating of theoretical knowledge relevant to the final objectives, gained during the Bachelor's phase, are refreshed and new, relevant skills and theoretical knowledge are gained. This is done with the group of 24, split into smaller groups in practical sessions (for instance 4 students per teaching horse). This preparation allows optimal participation in the clinic weeks (6 students per group) without unnecessary interruptions: 1 week in Internal Diseases, 1 week in Surgery, 1 week in evening and night duty and 1 week in the Ambulatory Clinic. In clinic, students are always part of a student team consisting of one or more: Basic Rotation students, students from the differentiation Equine, students from the elective and profiling courses. The student team is guided by an intern for some practical teaching and by one veterinarian who is, resident or treating specialist for that discipline at that time. Within the teams, the division of tasks between the different students will be different for each "type" of student, based on the different final requirements. In this way, it is also possible that a patient can be used for several (types of) students, with the students focusing mainly on the skills relevant to them (common part, both equine and cross species). Also, more experienced students (master horse students) can guide/ teach less experienced students (basic co-assistants) (PAL system: peer assisted learning). All examinations findings are reported in the patient report system "Provet".

Extramural Clerkship (in a Private Veterinary Practice) JECO (7.5 ECTS)
Students are individually placed and supervised in extramural clerkships; student cohorts are for student "return days" for reflection and peer-group meetings ('intervision'). During the junior extramural clerkship, students come into contact with primary care veterinary medicine in veterinary practice early in the master's program. It offers students the chance to practice performing operations such as drawing blood, administering injections, deworming and vaccinating. In addition, they get a good picture of primary care practice early in the master's program by performing assignments on such topics as consultation, reporting and referral, pharmacy management and anesthesia protocols. Students take this clerkship at the end of the first year of the master's program. In addition to the required learning goals, the external practice adapts the practice's program as much as possible to the personal goals the student has for him/herself. The content of the program depends on the particular caseload offered at that specific period of time. See the specific explanations for JECO and SECO in sections 3.5 – 3.7.

Personal and Professional Development (PPO) (7.5 ECTS)
To train the professionals of the future, it is important to intensively guide students in their personal and professional development and to prepare them for their role in society, in addition to guidance in their professional development. Because this is a personal journey for each student, explicit space has been made in the new Master's to give substance to this. This line thus contributes to the well-being and sustainable employability of the (prospective) professional.

Various training courses are given, including workplace learning, competence-oriented development, reflection, communication, dilemma, well-being, resilience, identity, discussion, debate, transition to the professional field, and other soft skills. In this course there is a single permanent teacher per 24 students during the entire master. There is intervision throughout the master, Tutor meetings are held 3 times a year.

<u>Differentiated phase</u>
<u>*Track Companion Animal Health (4 x 5 weeks, 30 ECTS)*</u>
Students who select the Companion Animal Health track are trained to acquire and develop knowledge, skills and professional conduct which make them pre-eminently fit to function in the

sector of veterinary medicine that is focused on dogs, cats, and small companion animals (in particular rabbits, rodents, ferrets and companion birds) that are kept individually or in groups, for recreational purposes, for sports or for breeding. The training in this course will be theoretical and practical, most often in a clinical setting with patients. The students will obtain an increasing responsibility for the patients.

Pre-clinic Companion Animals (7.5 ECTS)
In this theoretical course, each day another discipline of companion animal medicine will be covered, along with the differential diagnosis of the most relevant problems and diseases within this discipline. Additionally, students have the opportunity to practice the physical examination of different organ systems. Furthermore, pharmacotherapy will be discussed, as well as the additional value of diagnostic imaging. This course is therefore an essential preparation for the remaining companion animal clerkships.

Internal medicine 1 (7.5 ECTS)
In this course, students will be working in the clinic, divided between the different policlinics and the IVA (Interne Verpleegafdeling – Internal Nursing unit). Topics that will be covered include clinical reasoning, deciding the emergency level of patients, communications, patient files, health checks, zoonosis responsibilities, working together and professional behaviour.

Emergency and intensive care, bird and small mammal medicine (7.5 ECTS)
In this clinical clerkship, students will participate in the emergency clinic. Supervised by a veterinarian, students will manage the policlinics of the emergency and VBD departments. Additionally, they will take care for dogs, cats and exotic animals admitted in the veterinary hospital. There will be patient rounds, where students will learn the theory of different patient cases, and students have the opportunity to broaden their knowledge with the help of e-learning modules.

Surgery 1 (7.5 ECTS)
In surgery 1, students will get to know the companion animal surgery department of the veterinary hospital. During the 5 weeks of the course, students will work in the subdisciplines general surgery, orthopedics, dentistry, ophthalmology and anesthesia, where they will also participate in evening, night and weekend shifts. During the course, they will also be able to practice the work-up and treatment of surgical patients, as well as get experience in communication with owners and referrers.

Track Equine Medicine (4 x 5 weeks 30 ECTS)
Students who select the Equine Medicine track are trained to acquire and develop the knowledge, skills and professional conduct which prepare them to function in the sector of veterinary medicine focused on horses that are kept individually or in groups, as companion animals, for recreational purposes, sports, or breeding. The training in this course is both theoretical and practical, most often in an equine clinical setting (veterinary teaching hospital). Students will be given increasingly responsibility in the care of patients.

Pre-clinic horse (7.5 ECTS)
This pre-clinical theoretical course is meant to prepare the students for their future equine clerkships. The main goal is to gather, expand and apply specific knowledge, insight and skills for different organ systems of the horse, based on the following specialization areas: reproduction, surgery & orthopedics, anesthesia, diagnostic imaging and internal disease. Other topics that will be discussed include anatomy, infection & immunology, nutrition, pharmacology and wellbeing.

Ambulatory care and reproduction (7.5 ECTS)
This course is mainly focused on the knowledge and skills that are essential to the first line equine

practitioner. Students will participate in clerkships in the ambulatory clinic and the reproduction department. In addition to working in the clinic, there are a few assignments that will give students insight into the broad work field of the equine practitioner.

Surgery (7.5 ECTS)
This course covers a clerkship where students will actively participate in all aspects of surgery, locomotion and anesthesiology of the horse: history, clinical examination, further diagnostics, treatment advice and treatment. Due to the exposure to a wide variety of patients, students will be confronted with all kinds of surgical, locomotion and anesthesiology patients. Important diseases students will not have seen in the clinic, will be studied using books, modules and discussions with teachers/clinicians. Students are also expected to participate in evening, night and weekend shifts.

Internal disease (7.5 ECTS)
This course covers a clerkship where students will actively participate in all aspects of internal disease of the horse: history, clinical examination, further diagnostics, treatment advice and treatment. Due to the exposure to a wide variety of patients, students will be confronted with all kinds of internist patients. Important diseases students will not have seen in the clinic, will be studied using books, modules and discussions with teachers/clinicians. Students are also expected to participate in evening, night and weekend shifts.

Track Farm Animal Health (4 x 5 weeks 30 ECTS)
Students who select the Farm Animal Health track are trained to acquire and develop the knowledge, skills, and professional conduct to perform as a veterinarian in the sector of veterinary medicine for farm animals (ruminants, pigs, and poultry) regarding both individual animals as well as herds with respect to animal health, human health and animal welfare. The training in this course is theoretical and practical, most often in a setting with patients/herds. During the training, students will be assigned an increasing responsibility for the health of patients/herds.

Sustainable animal production chains (7.5 ECTS)
The course Sustainable Animal Production Chains offers the student an introduction into the broad workfield of the farm animal veterinarian. Subjects that will be focused on include nutrition and how the animal uses the nutrition, and regional, national and international animal production chains. Furthermore, the student is expected to adopt a realistic, critical attitude towards the future of the animal husbandry and the role of the veterinarian in this industry.

Dairy Health Management (7.5 ECTS)
The main course goal of DHM will be to prepare the students for the cattle practice in a practice-oriented learning environment. Several important themes, based on our own work field survey, will be discussed. These themes, among others, include udder health and fertility. During the course, we will keep in mind the continuously changing work field (e.g., circular agriculture).

Swine Health Management (7.5 ECTS)
The students will be introduced to the pig farmery in all facets, as preparation for the farm analysis. This includes zootechnical factors, a few infectious agents on flock-level, preventative care, diagnostic possibilities and curative plan. During the course, there will be a few “adoptive farms”, where students can visit to be introduced to different kinds of pig farms.

Poultry Health Management (7.5 ECTS)
Students will be introduced to poultry medicine. The first part of the course will focus on the healthy animal and animal well-being, whereas later on diseases and diagnostics will be discussed with a special focus on disease prevention. The education will be both theoretical and practical; students will visit poultry farms, a veterinary clinic and a hatchery.

Senior Extramural clerkship (SECO) (15 ECTS)
In addition to the required learning goals, the external practice adapts the practice's program as much as possible to the personal goals the student has for him/herself. The content of the program depends on the particular caseload offered at that specific period of time. See the specific explanations for JECO and SECO in sections 3.5 – 3.7.
As with the JECO, students are individually placed and supervised in extramural clerkships; student cohorts are for student "return days" for reflection and peer-group meetings ('intervision'). Cohorts differ per specialization; a maximum cohort size of 35 for companion animals, 10 for horses, and 19 for farm animals. In addition to expanding general skills, students in the senior extramural clerkship will focus on improving surgical skills, dentistry, nutrition, ethical dilemmas, animal welfare, practice management, monitoring programs, zoonoses and legislation. Students are given increasing levels of responsibility and independence, congruent with the final phase of the study (final year) in which this clerkship takes place.

Master Thesis (22.5 ECTS)
The thesis is the product of a research project. As part of the curriculum, students conduct research and write a research thesis in a period of 15 weeks. The size of the thesis can be increased using the elective space. Students, supervised by an experienced member of the research staff, formulate a research question on a subject from the research portfolio of the VEE, study relevant literature, work on a research question and report on their findings orally and in writing.
Students have some degrees of flexibility in scheduling in their thesis project, as long as they have completed all courses of the uniform part, except PPO. The thesis is assessed by two assessors: the supervisor assesses the practical work and academic skills of the student during the research project; a second, independent examiner assesses the thesis; the presentation is assessed by the supervisor. Both the grade of Master thesis and the final grade of the research project need to be sufficient (equal or higher than a 5.5) to complete this course.

Electives

The courses in the elective phase provide students the opportunity to broaden their educational experiences and academic development in alignment with their own ambitions and talents.

Design of the elective phase	
Two 'mandatory' clinical elective courses	**15 ECTS** Two clinical courses a student can choose from a predefined list of courses. Some courses have entry requirements, e.g., completion of a specific course prior to registration.
Five elective courses	**37.5 ECTS** Five elective courses (clinical or non-clinical) of which three are organised within the UU Life Sciences domain (Veterinary Medicine, medicine or Life sciences). Also, external elective courses, 'tailor-made' clinical traineeships or other internships are possible as long as they meet the predefined requirements. is also an option.

Clinical elective clerkships

The VEE offers a significant number of clinical clerkships. Some are open to all students regardless of their chosen differentiation track, some have limited access, depending on previous choices of the students. This means that students can further their knowledge and skills in their animal-species differentiation track or choose to gain expertise in one of the other two animal-species differentiation tracks.

The following clerkships are offered (7.5 ECTS unless mentioned):

Ambulatory care and reproduction
This course is mainly focused on the knowledge and skills that are essential to the first line equine practitioner. Students will participate in clerkships in the ambulatory clinic and the reproduction department. In addition to working in the clinic, there are a few assignments that will give students insight into the broad work field of the equine practitioner.

The advising companion animal veterinarian
This course prepares the student for the role as an advising veterinarian in the first line clinical practice, with emphasis on case studies and preventative veterinary medicine. The students are able to apply the obtained advising and communication skills into practice during patient care. The course builds further upon the knowledge acquired in the uniform phase.

Animal Movement Sciences
This course covers the newly growing and exiting area of biomechanics in animals with a focus on locomotion. In recent years, new technology is becoming available to quantify the locomotion of animals already in a clinical setting. The clinical assessment of locomotion/lameness can now be supported by technological devices that quantify lameness, aiding clinicians in the difficult task of lameness assessment. During the course period the students will dive in the theoretical and practical aspect of the application of these technologies in daily practice.
The course will cover technologies such as Optical Motion Capture, IMU sensors, Force plates, Pressure plates, Surface EMG, Computer Vision (AI) and others.
During this course we will cover several species such as horses (mainly), dogs and farm animals.

Farm analysis (15 ECTS)
In this course students will form small groups to, mainly independently, work on the analysis of either a cattle farm, pig farm or poultry farm. The knowledge that students have acquired on pathology, pathophysiology and epidemiology will be deepened and applied. The course results in a report in which a strategy for guidance is described for the analyzed farm, for both long and short term.

Diagnostic and clinical skills
In this course the student will focus on the further development of the theoretical and practical skills of pathological diagnosis, infectious disease diagnosis, antimicrobial stewardship and diagnostic imaging. In addition, the student will also spend one of the five weeks of this course focusing specifically on the clinical and diagnostic skills relevant for their differentiation.

Companion animal surgery 2
During this course, the student will participate in the clinical activities of the surgery department, with the sub-disciplines general surgery, orthopedics, ophthalmology and anesthesia. At the end of the course, the student will be able to independently decide for additional diagnostics and possible treatment, as well as perform simple surgery under supervision, using basic surgery and suture techniques.

Companion animal internal disease 2 and 3
This course consists of a combination of clinical activities within the internal medicine department and shifts in the intensive care department outside of office hours. The students will practice the application of the problem-oriented approach with real patients and their owners. The students will be further trained in professional communication with owners, fellow students, teachers, and veterinary nurses, as well as the written documentation in the digital patient files.

Companion animal orthopedics/neurosurgery
This course provides a varied in-depth program in which clinic and theory will be combined in the areas of orthopedics and neurosurgery. Students will participate in the clinic and surgeries, as well as the patient discussions in the orthopedics department. In addition, the student will work on theoretical cases and will write an EBCR (Evidence-Based Case Report) on a self-chosen topic.

Companion animal soft tissue surgery
This course provides a varied in-depth program in which clinic and theory will be combined in the areas of surgical oncology, hepatology, urology, and emergency surgery. Students will participate in the clinic and surgeries, as well as multidisciplinary consultation meetings in the oncology and urology department. In addition, the student will work on theoretical cases and will write an EBCR (Evidence-Based Case Report) on a self-chosen topic.

Birds, exotic animals & small mammals
In this course, students will participate in the VBD clinic. Supervised by a veterinarian, students will manage the policlinics and take care for the animals admitted to the veterinary hospital. There will be patient rounds, where students will learn the theory of different patient cases, and students have the opportunity to broaden their knowledge with the help of e-learning modules.

Small ruminants and camelids
This course covers the sector knowledge, guidance of small ruminant farms, pathophysiology, pathology, obstetrics and clinical skills of small ruminants and camelids.

Farm animal clinic
Under supervision, students will work up and treat patients in the farm animal clinic (cattle, sheep, goats). This will consist of clinical examination, diagnostic methods (ultrasounds, blood tests etc.) and treatment.

Equine surgery 2
Equine surgery 2 is a 5-week clinical rotation, in surgery/orthopedics, during which students participate in all aspects of patient care. Students can enroll for this course after they have completed their uniform rotations, the equine preclinical course and the (first) surgery rotation. Students, under the supervision of interns and equine surgery residents and specialists, take histories, perform clinical exams and treat equine patients presented to the university’s equine clinic. During this course they also spend time with anesthetists and farriers. During equine surgery 2 students are expected to demonstrate greater case responsibility (compared to equine surgery 1) and work more independently. Students spend four weeks in surgery/orthopedics during the day, including one Saturday and one Sunday, and in one week they have five evening or night shifts. During the five weeks students receive feedback from peers on 3 occasions, from teachers/veterinarians on 3 occasions and feedback from a veterinarian on a clinical skill on 3 occasions. In addition, students present a clinical case to peers and veterinarians and receive feedback on their presentation. All feedback is collected in Scorion, the online portfolio.

Equine surgery 3
Equine surgery 3 is a 5-week clinical rotation, in surgery/orthopedics, during which students participate in all aspects of patient care. Students can enroll for this course after they have completed equine surgery 2. Students, under the supervision of interns and equine surgery residents and specialists, take histories, perform clinical exams and treat equine patients presented to the university’s equine clinic. During this course they also spend time with anesthetists and farriers. During equine surgery 3 students are expected to demonstrate greater case responsibility (compared to equine surgery 2) and work more independently. Students spend four weeks in surgery/orthopedics

during the day, including one Saturday and one Sunday, and in one week they have five evening or night shifts. During the five weeks students receive feedback from peers on 3 occasions, from teachers/veterinarians on 3 occasions and feedback from a veterinarian on a clinical skill on 3 occasions. In addition, students present a clinical case to peers and veterinarians and receive feedback on their presentation. All feedback is collected in Scorion, the online portfolio.

Equine internal medicine 2

Internal medicine 2 is a 5-week clinical rotation, in equine internal medicine, during which students participate in all aspects of patient care. Students can enroll for this course after they have completed their uniform rotations, the equine preclinical course and the (first) internal medicine rotation. Students form patient teams and, under the supervision of interns and equine medicine residents and specialists, take histories, perform clinical exams and treat equine patients presented to the university's equine clinic. During internal medicine 2, the focus shifts (compared to the initial internal medicine rotation) more towards development of diagnostic and treatment plans. Students spend four weeks in internal medicine during the day, including one Saturday and one Sunday, and in one week they have five evening or night shifts. During the five weeks students receive feedback from peers on 3 occasions, from teachers/veterinarians on 3 occasions and feedback from a veterinarian on a clinical skill on 3 occasions. In addition, students present a clinical case to peers and veterinarians and receive feedback on their presentation. All feedback is collected in Scorion, the online portfolio.

Equine internal medicine 3

Internal medicine 3 is a 5-week clinical rotation, in equine internal medicine, during which students participate in all aspects of patient care. Students can enroll for this course after they have completed internal medicine 2. Students form patient teams and, under the supervision of interns and equine medicine residents and specialists, take histories, perform clinical exams and treat equine patients presented to the university's equine clinic. During internal medicine 3 students are expected to be involved in all aspects of patient care, including the development of diagnostic and treatment plans and communication with owners, supervising and referring veterinarians, both orally and in writing. Students spend four weeks in internal medicine during the day, including one Saturday and one Sunday, and in one week they have five evening or night shifts. During the five weeks students receive feedback from peers on 3 occasions, from teachers/veterinarians on 3 occasions and feedback from a veterinarian on a clinical skill on 3 occasions. In addition, students present a clinical case to peers and veterinarians and receive feedback on their presentation. All feedback is collected in Scorion, the online portfolio.

Equine clinical rotation general

This course prepares the student for providing veterinary care for horses in emergency situations and regular consultations. In addition, it will give the student an idea of the possibilities a referral clinic has to offer.

Equine clinical rotation advanced

Equine clinical rotation advanced is a 5-week clinical rotation, in the equine clinic, during which students participate in all aspects of patient care. Students can enroll for this course after they have completed their uniform rotations, the equine preclinical course and the (first) surgery and medicine rotations. The programme is tailored to the students' areas of interest and can cover various disciplines within the equine clinic. Students are expected to demonstrate a high degree of case responsibility and independence. During the five weeks students receive feedback from peers on 3 occasions, from teachers/veterinarians on 3 occasions and feedback from a veterinarian on a clinical skill on 3 occasions. In addition, students present a clinical case to peers and veterinarians and receive feedback on their presentation. All feedback is collected in Scorion, the online portfolio.

Pre-clinic companion animals
In this theoretical course, each day another discipline of companion animal medicine will be covered, along with the differential diagnosis of the most relevant problems and diseases within this discipline. Additionally, students have the opportunity to practice the physical examination of different organ systems. Furthermore, pharmacotherapy will be discussed, as well as the additional value of diagnostic imaging. This course is therefore an essential preparation for the remaining companion animal clerkships.

Sustainable Animal Production Chains
The course Sustainable Animal Production Chains offers the student an introduction into the broad work field of the farm animal veterinarian. Subjects that will be focused on include nutrition and how the animal uses the nutrition, and regional, national and international animal production chains. Furthermore, the student is expected to adopt a realistic, critical attitude towards the future of the animal husbandry and the role of the veterinarian in this industry.

Supervisory Veterinarian
This course will focus on the aspects that are part of the job as a supervising veterinarian, such as veterinary public health, pathology and laws and regulations. The course in its entirety composes an introduction to a less-known career path for veterinarians and is thus an addition to the existing curriculum of the master program.

ULP general
In a large, progressive and education-oriented farm animal clinic, the student will learn how to apply the knowledge and skills they acquired in the bachelor and basic rotations. The course provides an opportunity to practice the skills and abilities that a veterinarian must have to provide first-line ambulatory care for ruminants and pigs. The students will often work with veterinarians in 1-on-1 or 1-on-2 settings and will also be introduced to veterinary farm supervision. The students will be supported as much as possible during this course to independently perform operations and make veterinary substantive decisions with patients in the practice.

ULP advanced
In this course, the student will expand on what was previously learned in the ULP. As a student, you will encounter both clinical/consultative work and corporate veterinary medicine in the area of ruminants and pigs in the commercial setting in this course. knowledge activation and its application in practice, as well as reflection from practical case histories on the theory learned, is the main goal of this course.

Equine reproduction
This course focuses on skills important as a primary care equine practice veterinarian. The focus of this course is on the fertility management of mares (history, performing a rectal and ultrasound examination, pregnancy diagnostics, diagnostics in case of fertility problems). During this course you will spend 5 weeks in the equine reproduction department. Besides learning various practical skills, you will participate in the “Journal club” on Fridays.

Advanced Poultry Health
This course is a continuation of the course “poultry health management”. Issues and unresolved problems (such as diseases, hygiene, entrainment, nutrition) present in poultry practices, feed mills, breeders, are worked out by the student.

Advanced Swine Health
This course is a continuation of the course “swine health management”. The course offers a deeper understanding of pig health. Topics covered include existing sow lines, difference in sow and boar

and effectiveness on fertility and genetics, learning to optimize the insemination process and becoming familiar with analyzing key figures and applying measures based on these key figures.

Non-clinical elective courses offered at the VEE

The VEE offers a variety of non-clinical courses for students that can be followed in their elective space. See below for an overview of the courses:

Better Science with less Animal Experimentation

Which new technologies could make scientific tests completely animal-free in the future?
It is about how to be innovative and able to develop a sustainable and more humane science for the near future.
This course will consist of five modules, all of which focus on a different aspect of research and innovation in animal-free methods. The course will include regulatory and communication aspects. During this course, you will focus on innovations in animal-free methods including advanced in vitro (cell culture) and in silico (computational) approaches. The course will highlight the unique advantages of human-derived cells, such as induced pluripotent stem cells, organoids and multi-organ-on-chip devices. You will discover and discuss core topics related to the transition to a more humane science with the help of ethics, statistics and philosophy experts. You will dive in critical data interpretation in order to enhance your understanding of science. A group of experts will teach you the methodology of systematic reviews of scientific studies.
The veterinary students are advised to register for the two extra weeks (in total 5 weeks).
During the two extra weeks the student will have the possibility to dive into the technology related to advanced in-vitro models. During the last two weeks of the course, the participants in groups will conduct independent research within the most promising current lines of research at different departments. At the end of the final 2 weeks the student will present their research assignment.

Communication and marketing

In this course, the student will efficiently use methods to personally develop in the field of communication and marketing. Several aspects of communication (crisis, promotion, bad news etc,) will be extensively discussed. With this, the student will acquire insight in the way in which the professional appearance of the veterinary practice can be improved, and additionally how the presentation and marketing can be optimized. The course will take up 5 weeks and contains the following aspects: communication, professional behaviour, organisational skills, social-economic insight and networking.

Communication week (1.5 ECTS)

In the communication week, communication with the client is the main point of discussion. After all, this is an important and reoccurring theme the future careers of the students. How do you, for example, handle a situation in which a client has money issues, or if you have to deliver some bad news? And how do you give advice to a client, in a way that the message is as clear as possible and the client will follow your advice? By means of discussing different kinds of situations with fellow students, under supervision of a teacher, students will learn how to handle these kinds of conversations, an important tool as a future veterinarian.

Dermatology, immunology, gastroenterology, hepatology

This 5-week theoretical course offers students an opportunity to delve into dermatology, immunology, gastroenterology and hepatology. The 5 dermatology days are divided into 5 topics, atopic dermatitis in the dog and cat, otitis externa in the dog including ear cytology, Infectious skin diseases (Pyoderma, MRSP and Dermatophytosis), autoimmune skin diseases in the cat and autoimmune skin diseases in the dog. The immunology section focuses on the pathology of the most common immunological diseases in primary care practice. The focus here is on immunopathogenesis, pathology and the associated diagnostic pathway. Gastroenterology education focuses on specific disorders of the digestive system of dogs and cats. In hepatology, students engage in various liver diseases based on anatomical classification: parenchymal diseases, diseases of the bile ducts and diseases of the vena porta in dogs and cats.

Animal and law
The course “Animal and Law” aims to expand the knowledge about law that has been gathered in the bachelor. The subjects that have been discussed in the bachelor (criminal law, disciplinary law, civil law) will be discussed more thoroughly by the means of specific cases connected to relevant social questions regarding animal and law. Additionally, juridical knowledge will be broadened by considering other themes, such as animal welfare, animal health, current affairs, laboratory animals, enforcement etc. These themes will be studied from a juridical perspective but will be judged based on the practical consequences for the veterinarian. The connection to the day-to-day practice will be made by, among other things, guest lecturers who work in this specific field, and an excursion.

Animal and data
Nowadays a lot of data is collected in livestock farming. These data generate information that can be used in curative and preventative animal healthcare. However, these data also lead to new challenges. In this course, the student will learn how to use this new digital stethoscope by means of several practical examples. Subjects that will be discussed include converting data to information using visual techniques, basic principles of statistic programming, combining complex data from livestock farming (data joining), questioning the data (query building), and using them to analyze a farming problem, and finally converting data-driven farming problems into advice.

Veterinarian, health and society
This course covers social and communication skills important to your development as a veterinarian and puts them into a broader perspective. It puts the veterinarian and veterinary medicine in context. Go figure: suppose something didn’t go right and a dissatisfied client ends up going to the disciplinary court. What preceded that? Did you make a mistake or was there a misunderstanding? Did the client understand what you were explaining? How do you know? What is wrong, or right, what is quality? Is that just about guidelines or also about standing for your profession? These kinds of topics, and more, are highlighted from different perspectives through a variety of guest lectures and interesting assignments to master the material. Several guest lecturers will come to speak and discuss, from the academy, but certainly also from the field, from various veterinary support organizations, and from the health care industry. Students can learn from their perspective on veterinary medicine, on their future profession, and vice versa students will see where they can end up with the study of veterinary medicine.

Donkey Health
There are a lot of donkeys in the Netherlands, and this number is rising every year However, donkeys are often misunderstood, as a lot of people see them simply as “horses with long ears”. This is the reason why it is important that veterinarians who are going to treat donkeys possess the right knowledge about donkey behavior, desired housing, anatomy and physiology, clinical and blood parameters and pharmacology. Topics that will be discussed include normal and abnormal behavior of donkeys in the Netherlands and the preferred housing. It also includes assessing the exterior, hoof trimming and dental treatment. This course also considers clinical examination. Premises with donkeys are visited.

Ethics for veterinarians
This course offers a broadening of the material covered in the bachelor. This includes both an expansion of animal ethics and professional ethics issues. Previously acquired knowledge and skills in the field of ethics are mobilized, deepened and applied to concrete social issues. New knowledge in the field of ethical theory, moral judgment, and the moral status of animals needed to deal with

concrete (clinical and societal) ethical issues as a veterinarian are gained and new skills that enable the professional - with insight from theoretical backgrounds - to come to practical decisions are developed and practiced. You learn to actively reflect on your own (veterinary) role and responsibility in the social and ethical issues to be dealt with.

Euthanasia of animals
Euthanasia of animals is a daily topic of conversation in veterinary practice. It also raises questions on a regular basis, because how do you perform euthanasia? How do you start the conversation about euthanasia and how can you deal with the emotions that may be involved? The goal of the course is to introduce you to the various facets of euthanasia of animals and to give you tools to deal with them. We will work with both cross-species issues and issues that relate to a specific context, such as euthanasia at an animal shelter.

Forensic veterinary medicine
In this course, the student will gain insight into some aspects and pitfalls related to the examination, description (interpretation) and documentation of findings in veterinary forensic examination of live and deceased animals (companion animals and horse). Furthermore, the student will gain an understanding of the methods for sampling trace and body materials and monitoring the chain of custody in the process.

Endocrinology, nephrology, urology, reproduction
In this course, students will delve into specific topics of internal medicine in companion animals: nephrology, urology, endocrinology and reproduction. Together with your fellow students and lecturers, you will explore the underlying causes of common problems such as, for example, dysuria, emaciation despite eating well and an abnormal cycle and focus on how to help patients with these types of problems. Various diseases and diagnostic steps will be covered, from urinary tract infections to hyperthyroidism and a parturition that does not progress. The interpretation of blood tests, vaginoscopy, urinalysis and ultrasound examination will also be an important part of this course, as will the steps after. What are the therapeutic options for those patients?

Herpetology
The purpose of this course is to introduce students to the various veterinary relevant aspects of different species of reptiles and amphibians. Topics that will be covered include housing, nutrition, care, reproduction, legal aspects, handling and clinical examination. Parasitic diseases and some viral diseases will also be covered, as well as anesthesia and pain control options.

Equine interclinic
This course connects with the course Preclinic Horse. Within the differentiation towards the horse, the Interclinic horse course offers an - for future equine veterinarians - essential deepening. Students acquire in-depth theoretical knowledge and skills based on the following themes: reproduction, surgery and orthopedics, anesthesia, diagnostic imaging, internal disease, infection and immunology, nutrition and pharmacology. The focus is on applying this knowledge in complex cases.

Master your boss (1.5 ECTS)
An elective week to gain a better understanding of practice management, ownership and entrepreneurship. Financing, different forms of entrepreneurship, (practice) management, personnel management, negotiation and everything involved in keeping a business.

Clinical ethology
In the field of clinical ethology, behavioral knowledge from the biology of the animal is used to solve behavioral problems in animals in a clinical setting. This usually involves dogs, cats and parrots with behavioral problems, but rabbits and ferrets are also sometimes presented. As with medical problems,

a history is taken to understand the problem in detail. Conducting behavioral histories, establishing behavioral diagnosis and writing treatment plans is truly customized work, an up-and-coming example of personalized medicine. Important factors that play a role in the success or failure of a treatment advice depend not only on the behavioral problem of the pet, but also on the capabilities of the owner as a person with his wishes and expectations, knowledge, skills and limitations, on the environment in which the pet lives (both indoors and outdoors), how much time someone has, and unfortunately also how much money someone has (or is willing to spend) to tackle the behavioral problem. This course addresses all these issues and teaches the student how to manage a patient with behavioral problems.

Clinical pharmacology and toxicology
This course offers students the opportunity to learn advanced concepts in veterinary pharmacology and toxicology, building on knowledge from earlier courses in the veterinary curriculum. Students interested in careers in the (veterinary) pharmaceutical industry, academia (as researcher or educator), diagnostic and forensic laboratories, or with regulatory bodies such as the European Medicines Agency may find this course particularly interesting. The knowledge gained in this course is also directly applicable to clinical practice, where a deeper knowledge of pharmacology and toxicology enables safer and more effective use of medications in animals and helps to manage cases involving toxic exposures. By the end of the course, veterinary students will understand how veterinary medicines are discovered, developed and brought to market, and how they should be used safely, effectively and ethically. Special attention will be given to vaccines, ecto- and endoparasiticides, as these are not covered in depth in the regular curriculum. Students will also have a deeper understanding of important poisonings, and how these can be diagnosed, treated and prevented.

Natural Livestock Farming
The Natural Livestock Farming elective focuses on 3 main themes. 1) Non-traditional and emerging animal husbandry systems such as, for example, organic livestock farming, nature inclusive livestock farming and circular farming. 2) The use of natural means in animals, including legislative frameworks, underlying evidence and practical applications. 3) Soil health and relationship to animal and human health. The main objective of the profession is for future veterinarians to learn to relate to the above topics, take an informed position in them and be able to become a professional conversation partner for their future clients. Although the course focuses primarily on farm animals, cross-species teaching will be used where relevant. The course will be a combination of theory and practical visits in which theory will be linked to practice.

Neurobiology of behavior
The animal cross-species course Neurobiology of Behavior focuses on the functioning of the brain and its role in establishing behavior. As a veterinarian, you will encounter a wide variety of animals with behavioral problems. To properly understand and treat animals - from companion animals to horses, chickens, pigs and wildlife - it is important for you to understand how functional and dysfunctional behavior in animals is established. The elective course Neurobiology of Behavior is structured around three themes: “Neuroanatomy and Neurophysiology,” “Neurobiology and Emotion,” and “Neurobiology and Cognition” with the goal of increasing knowledge about neuroanatomy and neurobiology of complex behaviors.

Equine pre-clinic
This pre-clinical theoretical course is meant to prepare the students for the future equine clerkships. The main goal is to gather, expand and apply specific knowledge, insight and skills for different organ systems of the horse, based on the following specialization areas: reproduction, surgery & orthopedics, anesthesia, diagnostic imaging and internal disease. Other topics that will be discussed include anatomy, infection & immunology, nutrition, pharmacology and wellbeing.

Laboratory animal science
The Laboratory Animal Science course discusses, among other things, the 3Rs (replacement, reduction, refinement), which are essential when setting up or conducting animal experiments. Laws and regulations regarding animal testing, ethics, animal welfare, experimental design and more subjects related to Laboratory Animal Science are also covered in this course.

Shelter medicine (3 ECTS)
In the Netherlands, companion animals are not only kept by private individuals, but are also housed and cared for in commercial farming, such as in animal shelters, animal pensions and large breeding farms. The Shelter Medicine course focuses on farm management, legislation in this area, risk assessment and taking appropriate measures to prevent or stop infectious disease outbreaks as much as possible or as quickly as possible. Using problem-driven cases, one is introduced to all aspects of farm management and control of infectious diseases in companion animals.

Tropical animal health
The course provides students insight into the peculiar and unique aspects of animal health and livestock management in the tropics. Animal health in tropical countries is facing specific challenges, unique for each country, like working in a resource-poor environment, an underdeveloped system for veterinary services, political instability, and the presence of specific (infectious) diseases, including zoonoses.
The course will address the management and veterinary care of livestock, and the aspects of the livestock-wildlife-human interface. During the course several important tropical infectious diseases will be discussed, to gain insights in epidemiology, ways of transmission, pathogenesis, diagnostics and therapeutics. Special attention will go to control and prevention strategies (vaccine development, early warning systems, etc.) and the role of the vectors in transmission of some major tropical animal diseases and zoonoses in resource poor countries.
The role of major international organizations dealing with animal health and zoonotic spillover in developing countries (e.g., WHO, FAO, OIE) and the contributing role of veterinarians in those organizations will be highlighted during the course.

Veterinary education
In this course, students are going to experience for themselves what it is like to stand in the teacher's shoes. How do you keep everyone focused, what activating teaching methods are there and in what situations can they be applied, what is important when transferring knowledge, what does science have to say about this? These are just some of the questions that may arise during the course. Students follow this course with a small group of students which allows for customized education. Part of the time will be spent preparing and teaching within various disciplines. We try to take students' personal interests into account. Besides teaching, students will also work on, among other things, making and following knowledge sessions of fellow students, peer-group meetings ('intervision') discussions, individual coaching discussions and working out an educational issue (educational project).

Advanced Veterinary Public Health
Veterinary Public Health (VPH) is a component of public health that focuses on the application of veterinary knowledge to protect and improve health and welfare of humans, using a One Health approach. The student will be introduced to advanced methods and applications from human, animal and environmental health domains to characterize, assess and manage risks from biological and chemical hazards, and how to prevent them.
The course is structured around four main themes:
1. microbial genomics, molecular epidemiology and microbiome research;
2. One Health surveillance, response, control and burden of zoonotic diseases;

3. healthy living environment and sustainable farming;
4. veterinary medicine residues and environmental contaminants in food.
   The course aims to provide students with cutting-edge knowledge on these themes using an interdisciplinary approach at the human-animal-environment interface. Areas of controversy will also be addressed. The course is research-oriented and will be in English.

Non-clinical elective courses outside the VEE

Students can also opt to follow courses outside the VEE. This can be at other UU schools or at other universities in the Netherlands or abroad (exchange, for instance at the University of Wageningen or the TU Eindhoven within the EWUU alliance). These courses usually relate to biomedical topics within the life sciences but can also have a broader scope. These courses must attain to the guidelines as stated for elective courses. The Board of Examiners has pre-approved a number of courses. Examples of such courses are:

- Basic One Health (Master Health and Environment, Utrecht University)
- Virology (Master of Biomedical Science, Utrecht University)
- Sustainability, Health and Innovation (Geoscience, Utrecht University)
- Fundamental and applied aspects of the biology of insects (Wageningen University WUR)
- Quantitative veterinary epidemiology (Wageningen WUR),
- Interuniversity Sustainability Challenge (Utrecht, University, Wageningen University WUR, Technical University Eindhoven and UMCU)
- Dutch Dairy Student Challenge (Utrecht, University, Wageningen University WUR, Technical University Eindhoven and UMCU)

Research

Students who are interested in research may use the elective space (7.5 or 15 ECTS) to expand the duration of their thesis project.

Internships

Students may also spend ECTS on internships. There are three types of internships:

- Clinical internships, mostly working in a veterinary primary practice
- Policy, business or organisation internships, e.g., at a feed producer or the NVWA or FVE
- Research internships, in which students perform a research internship outside the VEE

Each type of internships is coordinated by a senior staff member. All internships may be performed in the Netherlands or abroad.

Guidelines for the elective phase

There is 52.5 ECTS worth of elective space. 15 ECTS must be spent on courses out of a predefined list of clinical courses. The remaining space of 37.5 ECTS may be filled in by the students, if they adhere to the following guidelines:

- All courses must be of an academic master's level.
- Courses may not overlap with courses the student has previously followed and passed.
- In principle, 22.5 of the 37.5 ECTS must be spent on courses offered by the VEE. Permission to deviate from this rule may be obtained from the Board of Examiners if it finds there is a valid reason to do so. Examples of valid reasons are: extending external internships, specific courses from other programmes that exceeding 15 ECTS.
- 22.5 of the 37.5 ECTS must be spent on courses within the field of veterinary medicine or in another field of the life sciences.

B2. Programme outcomes, Master Veterinary Science

Introduction

The Master's program in Veterinary Medicine in Utrecht leads to generally qualified veterinarians. By obtaining the veterinary diploma, the veterinarian meets the requirements as stated in the Animal Act and follows the EU Directive on the recognition of professional qualifications (Directive 2013/55 / EU). In 2006, the program outcomes for the Veterinary Curriculum were first described (Curriculum Veterinary Medicine Program Outcomes, January 2006). These program outcomes have been revised in 2008-2009.

At the beginning of 2017, the dean of the Faculty of Veterinary Medicine commissioned a committee to review these program outcomes in line with international and national developments in society and the professional field and the related strategic choices of the Faculty of Veterinary Medicine (see Faculty Strategic Plan 2017-2021).

In this document the program outcomes were formulated on the basis of the competence framework of the American Association of Veterinary Medical Colleges (AAVMC) and the framework of the Veterinary Professional (VetPro[6]1) developed within Utrecht University. The program outcomes comply with the guidelines set by the European Association of Establishments for Veterinary Education (EAEVE), the European Coordination Committee for Veterinary Training (ECCVT), the American Veterinary Medical Association (AVMA) and the Royal College of Veterinary Surgeons (RCVS).

The program outcomes are described at two levels: competence domains and competencies. The translation of the program outcomes into concrete learning objectives and Entrustable Professional Activities (EPAs) takes place at program and course level[7]2. The starting point is that every veterinarian in Utrecht is trained to a general basic level and parts, through individual choices for program and track, to a more advanced level.

Program outcomes master 2020 committee:

- dr. Geart Benedictus, DVM;
- dr. Harold Bok, DVM, University Lecturer, Assistant Professor and Researcher of Veterinary Education Quality;
- Len Dijstelbloem MSc MEd, (secretary), DVM, Quality Assurance Coordinator Faculty of Veterinary Medicine;
- dr. Robert Favier, DVM, (former) Coordinator of the Master Program at the Department of Companion Animal Health;
- Iris Hummel BSc, Veterinary Medicine Student;
- dr. Gerrit Koop, DVM, Assistant Professor of Farm Animal Health; prof. dr. Wim Kremer, (chair), DVM, Vice Dean of Education and Director of the Master Veterinary Medicine;
- drs. Maria de Nijs, DVM and part-time Teacher at the Department of Companion Animal Health;
- prof. dr. René van Weeren, DVM, Chair of the Equine Health Department.

6 *Bok HGJ, Jaarsma DADC, Teunissen PW, Van der Vleuten CPM, Van Beukelen P: Development and validation of a competency framework for veterinarians. JVME 2011, 38:262–269.*

7 *Within the Master's program of Veterinary Medicine, the student can choose from three programs: Companion Animal Health, Farm Animal Health and Veterinary Public Health or Equine Health. Within these three programs, students can profile themselves in multiple directions: a clinical profile, a profile in the field of One Health, a specific research profile from the research fields of Life Sciences, a profile specifically aimed at animal welfare, a profile focused on consumers and chain, or an individual profile focused on management, policy or entrepreneurship.*

The Utrecht veterinarian

The veterinarian graduating from the Master of Veterinary Science in Utrecht:

- is a qualified veterinary general practitioner;
- has followed advanced training in specialist areas of veterinary science according to personal interests;
- works effectively in an interdisciplinary and international setting or network;
- has developed higher-order thinking skills and behaves according to scientific principles;
- has the necessary knowledge, insights, skills and attitude to embark on a career in any of the diverse areas of this field;
- has a good understanding of the social context in which she/he will fulfil a key role in the areas of veterinary healthcare, animal welfare and One Health;
- is intrinsically motivated to pursue lifelong learning;
- is open to and can adapt to change in both society and, in particular, the field of Veterinary Science;
- conducts according to the ethical and moral standards of the profession and society in the pursuit of sustainable practices[8].

Domains and Competencies, Master of Veterinary Science, Utrecht University, final version 22-10-2018

1. Clinical reasoning and decision-making

The graduate demonstrates critical thinking and problem solving to arrive at evidence-based decisions that considers animal and client needs, available resources, and social and societal context.

The graduate:

1.1 Gathers and assimilates relevant information about the issue.
1.2 Identifies and prioritizes problems to arrive at differential diagnoses.
1.3 Creates and adjusts a diagnostic and/or treatment plan based on available evidence.
1.4 Incorporates animal welfare, public health, client expectations, economic and political constraints as well as personal and professional moral and ethical considerations into the diagnostic or treatment plan.
1.5 Prioritizes situational urgency and allocates resources.
1.6 Responds to changing circumstances.
1.7 Recognizes own limitations with respect to knowledge, skills and resources and consults as needed.

2. Individual animal care and management

The graduate has relevant knowledge and expertise to perform preventive, diagnostic, medical and surgical procedures for the health, welfare and treatment of animals, appropriate to the context and life stage of the animal.

The graduate:

2.1 Performs veterinary procedures including preventive care and post-procedural care.
2.2 Advises on sustainable animal stewardship of individual animals and the associated risks for animal-, public- and environmental health (in compliance with legal regulations taking account of economic realities).
2.3 Advises on and promotes welfare of individually kept animals.

8 *Sustainability: development that meets the needs of the present without compromising the ability of future generations to meet their own needs (source: World Commission for Environment and Development, United Nations).*

<u>3. Animal population care and management</u>
The graduate designs and implements programs to improve the health, welfare and productivity of animal populations.

The graduate:
3.1 Analyses quantitative and qualitative data to optimize the structures and systems in which animal populations are embedded in the local, national and global context.
3.2 Advises on sustainable animal stewardship and the associated risks for population and the associated risks for animal-, public- and environmental health (in compliance with legal regulations taking account of economic realities).
3.3 Advises on biosecurity.
3.4 Advises on and promotes the welfare of animals kept in populations.

<u>4. Veterinary public health/ one health</u>
The graduate responds to issues at the interface of animals, humans, and the environment, utilizing a global perspective and sensitivity to local cultures.

The graduate:
4.1 Recognizes zoonotic diseases and other animal associated health risks and responds accordingly.
4.2 Promotes sustainable health, welfare and safety of animals, people and the environment.

<u>5. Communication</u>
The graduate communicates effectively with diverse clients, colleagues, other relevant stakeholders and the public to promote animal, human and environmental health and wellbeing.

The graduate:
5.1 Listens carefully and communicates professionally.
5.2 Demonstrates client-centred communication whilst being aware of the context.
5.3 Documents actions as appropriate.

<u>6. Collaboration</u>
The graduate collaborates with colleagues, other health care professionals, clients and other stakeholders, shows leadership and acts as an interprofessional team member.

The graduate:
6.1 Solicits, respects and integrates contributions from others.
6.2 Functions as leader or team member based on experience, skills and context.
6.3 Maintains ongoing professional relationships to ensure continuity of collaborative effort.
6.4 Demonstrates inclusivity and (inter)cultural competence.

<u>7. Professionalism and professional identity</u>
The graduate is self-reflective, seeks personal and professional development and is aware of their personal wellbeing and societal responsibilities.

The graduate:
7.1 Adopts an ethical approach to meeting professional obligations.
7.2 Practices time management.
7.3 Reflects on personal actions.
7.4 Engages in lifelong learning and career planning.
7.5 Attends to wellbeing of self and others.

8. Entrepreneurship, financial and practice management
The graduate utilizes business acumen to manage professional and personal decisions, complies with legal and regulatory requirements and ensures safety of the workplace.

The graduate:
8.1 Has an entrepreneurial attitude and is innovative and creative.
8.2 Weighs economic factors in personal and business decision-making.
8.3 Delivers veterinary services compliant with legal and regulatory requirements.
8.4 Advocates the health and safety of patients, clients, and members of the team within the workplace.

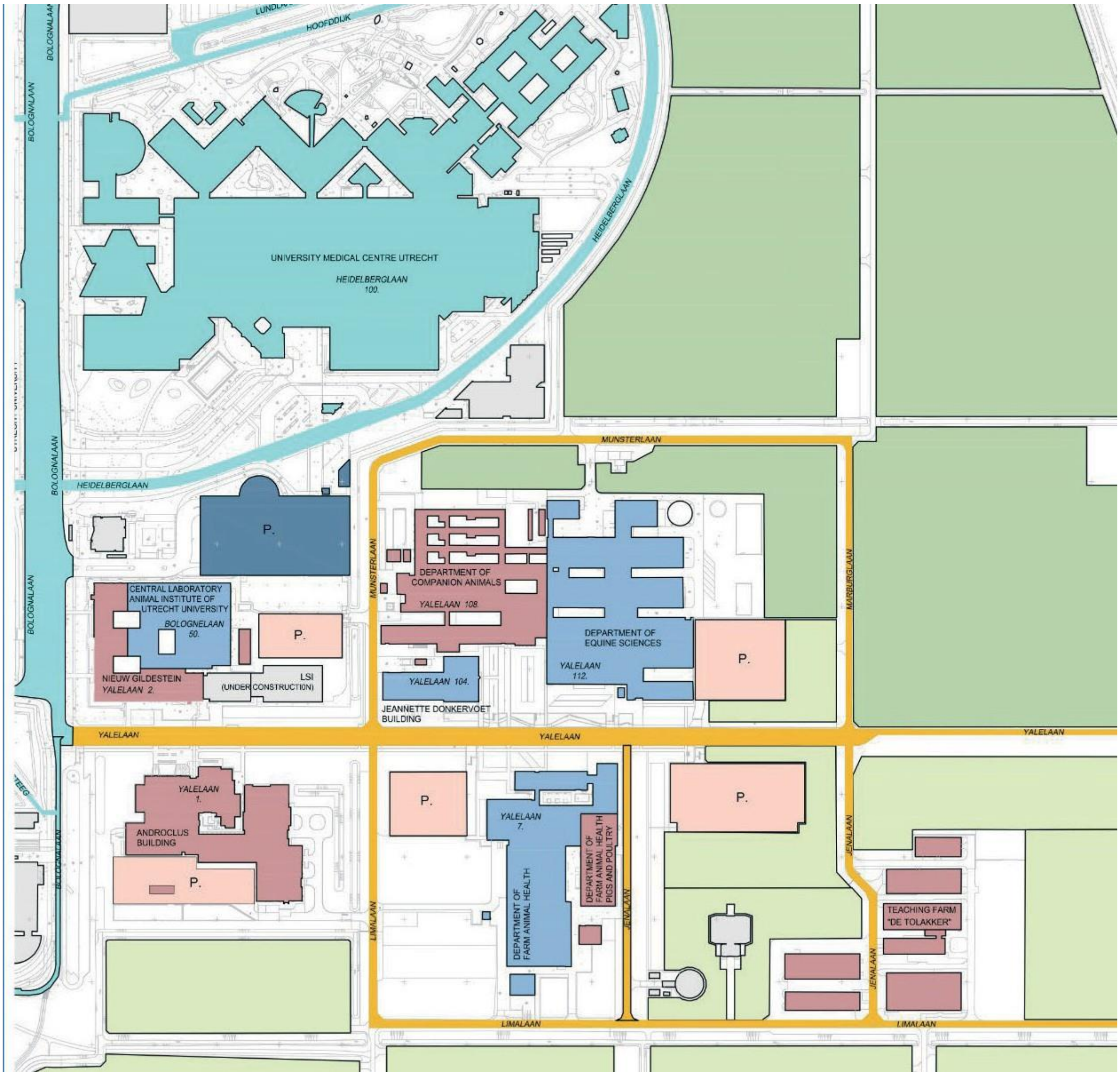
9. Scholarship
The graduate demonstrates the systematic identification, evaluation, integration and adaptation of evidence and experience to formulate questions and solutions, and to educate others.

The graduate:
9.1 Understands and evaluates research and literature.
9.2 Endorses the fundamental position of science in the veterinary profession and the public debate.
9.3 Integrates and applies (evidence-based) knowledge and skills.
9.4 Disseminates knowledge and practices to stakeholders.

B3. Course Table

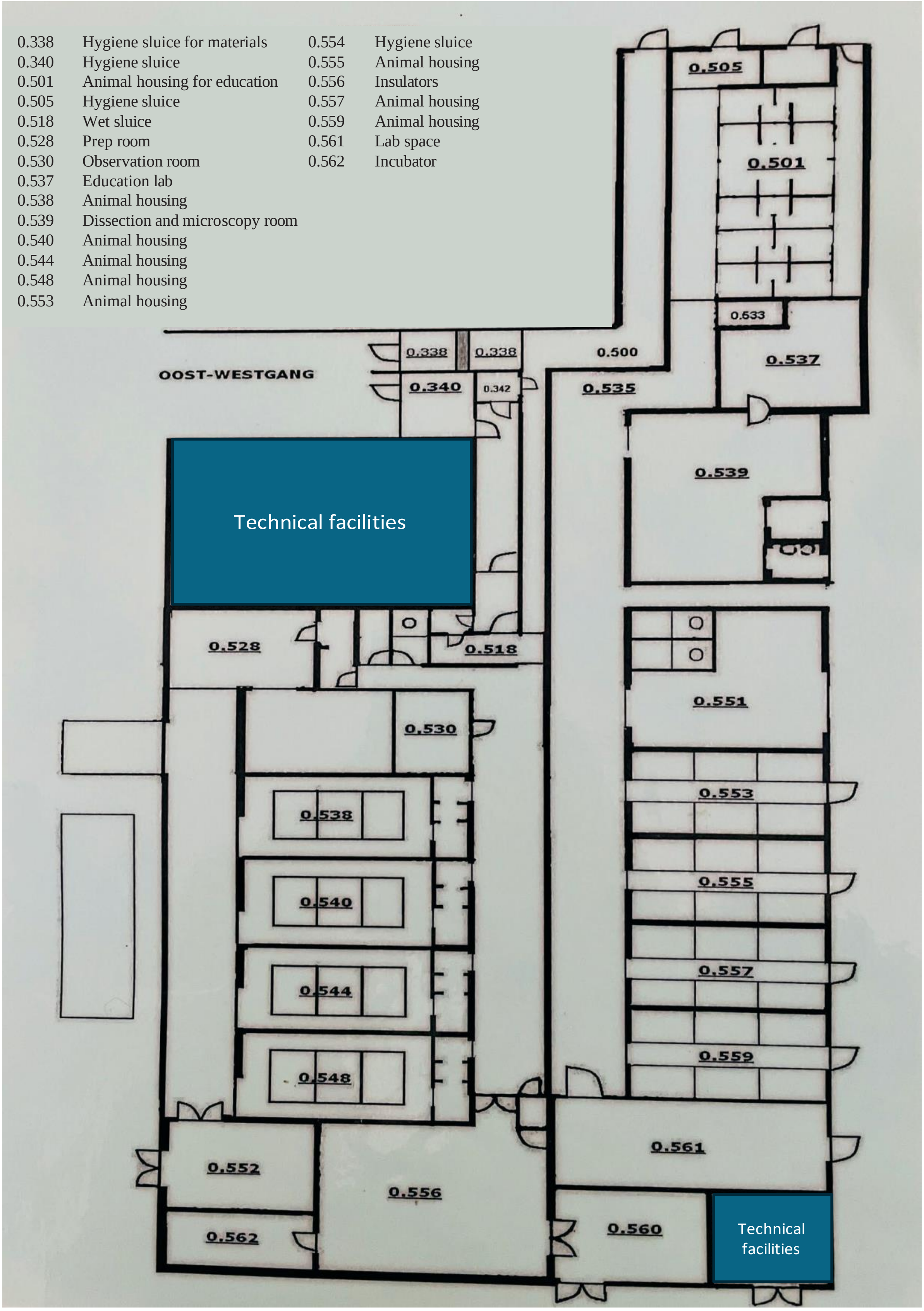
For this table, see the Excel file on SURFdrive

III Map Campus - Yalelaan



III.A Floor plan MGB clinic

Appendix 4.2.2. Floor plan clinic MGB building
Only the relevant rooms are indicated.



III.B Floor plan HJG en WCS

Appendix 4.2.3 Floor plans Prof. Dr. H. Jakob building (Small Animal Hospital) and Willem C. Schimmel building (Equine hospital including the Diagnostic Imaging department)

Building 3 Prof. Dr. H. Jakob building (Small Animal Hospital)			
Room number	**Room functionality**	**Square meters**	**healthy animals**
HJG 0.031	Physiotherapy room	21	
HJG 0.034	Policlinicalroom 1/3	38,3	
HJG 0.033	Policlinical room 2	21,6	
HJG 0.035	Policlinical room 4	21,1	
HJG 0.038	Policlinical room 5	18,5	
HJG 0.037	Policlinical room 6	21,1	
HJG 0.040	Policlinical room 7	21,1	
HJG 0.039	Policlinical room 8	21,1	
HJG 0.042	Policlinical room 9	21,1	
HJG 0.041	Policlinical room 10	21,1	
HJG 0.044	Policlinical room 11	21,1	
HJG 0.043	Policlinical room 12	15,2	
HJG 0.046	Policlinical room 13	21,1	
HJG 0.045	Policlinical room 14	15,9	
HJG 0.048	Policlinical room 15	21,2	
HJG 0.047/0.047a	Policlinical room 16	16,3	
HJG 0.052	Policlinical room 17	23,3	
HJG 0.054	Policlinical room 18	29,6	
HJG 0.132	Preproom	42,1	
HJG 0.144	Operation room 1	48,3	
HJG 0.164	Operation room 2	32	
HJG 0.142	Operation room 3	35,3	
HJG 0.160	Operation room 4	38,4	
HJG 0.136	Operation room 5	38,4	
HJG 0.154	Operation room 6	25,6	
HJG 0,150	Recovery room	35,8	
HJG 0.285B	Radiotherapy laboratory (bunker)	55	
HJG 0.151	Cardio Ultrasound room (ECG)	28,4	

IV. Quality assurance

Date: December 4, 2023

This document describes the application of the VEE's quality assurance (QA) framework in the undergraduate program of veterinary medicine in academic year 2023/ 2024. It describes instruments and responsibilities.

QA assurance has two levels: course and curriculum.

Quality assurance at course level

Responsibility for the quality of individual courses lies primarily with the course coordinator[9] . Course coordinators are the first point of contact for questions from students and lecturers involved in the course. To ensure that the duties of the course coordinator are feasible for all lecturers, and course documentation and evaluation takes place in a uniform way, a number of systems and formats is used by all course coordinators.

Courses

Every course that ran for the first time in the optimized Bachelor (curriculum 2022) will be evaluated after completion. In academic year 2023/24, all courses from bachelor year 2 will be evaluated. In future years, each course will be evaluated once every three years in the outlined procedure.

Through a standardized QA focus groups, an overview is obtained regarding strengths and areas for improvement per course. Uniformity in discussed subjects between different QA course focus groups is safequarded by a focus group guide document..

Input during the quality assurance interview originates from:

- Course survey results for students, on course content and assessment. The survey is carried out by Caracal and sent to all course participants. If desired, course coordinators can add one or two additional questions to the standard survey
- When performed: assessment check by the Board of Examiners (conducted by the Assessment Quality Committee)
- Interview participants' experiences
- If taken: teacher survey results regarding the course.

Present at QA focus groups (and the person's role) are:

- Course coordinator: leading the focus group & writing improvement plan afterwards.
- Education coordinator: deliver documentation/make sure interview guide is followed
- At least 1 more teacher: sharing experience
- At least 2 students (preferably from the year's representative's panel): sharing experience
- Student-assessor: planning/ writing minutes of QA focus groups/inviting and possibly instructing students
- Optional: members of the Education Advisory Committee (OAC)

Following the QA interview, the course coordinator writes an improvement plan (if necessary). Major changes such as adding/deleting teaching moments or assessment changes have to be approved by the education director.

9 *In case of issues or the desire for major changes, the course coordinator consults Director of Education.*

In any case, these actions *result* in:
- (brief) QA interview report prepared by student-assessor. The interview report is checked by the course coordinator, and made accessible to the education director, education coordinator and policy advisor. The student assessor puts an anonymized version on the publicly accessible Blackboard *community* for lecturers and students.
- Brief feedback by course coordinator in first teaching moment of the (modified) course after next implementation of course/improvement plan.

Quality assurance at curriculum level

At curriculum level, the complete three-year bachelor programme is distinguished from the ten-weeks teaching periods. After the optimized undergraduate course has run for one year, the following year the teaching period is evaluated. Thus, in 2023/24 four teaching periods of year 1 will be evaluated. Therefore, first-year students receive four surveys.

The quality of the entire curriculum is the responsibility of the Director of Education. The ten weeks teaching period is the responsibility of concerned course coordinators of that period.

Teaching periods

Teaching periods are evaluated regarding study ability at period level and coherence/overlap between courses within a single ten-week period. A QA interview after surveys provides this information.

Uniformity in discussed subjects between different QA period focus groups is safequarded by a focus group guide document.

Input for these quality assurance interview originates from:
- Period survey results for students, on period content and assessment. The survey is carried out by a standardized Caracal survey sent out to all participants of the period. If desired, per individual course coordinators can add one or two additional questions to the standard survey
- Interview participants' experiences

Present at QA period focus groups (and the person's role) are:
- Director of Education: chairs the focus group
- Course coordinators: possibly writes joint period improvement plan
- Education coordinator: Delivers documentation/ensures interview guide is followed
- At least 1 more teacher: sharing experience
- At least 2 students (preferably from the years representative council): sharing experience
- Student-assessor: planning/ writing minutes /inviting and possibly instructing students
- Optional: members of the Education Advisory Committee (OAC)

Following the QA focus group, (if necessary) an improvement plan is written by (one of) the course coordinator(s). Major changes such as adding/deleting teaching moments or assessment changes have to be approved by the Director of Education.
In any case, these actions result in:
- (brief) QA focus group report prepared by student-assessor. After the interview report is checked by the course coordinators, the report is accessible to the Director of Education, education coordinator and policy advisor. The anonymized version is made available on the Blackboard community for lecturers and students.
- Feedback by the course coordinator in the first teaching moment of the (modified) course after next course/improvement plan implementation

The entire curriculum
The bachelor 2022 curriculum implementation committee carries out comparisons between old and optimized curricula regarding experienced study load for students, and teachers' hours.

Quality assurance Master's degree of Veterinary Medicine 2023-2024
This appendix describes how the Master of Veterinary Medicine programme applies the quality assurance policy of the Faculty of Veterinary Medicine. It describes the instruments deployed, the roles of the actors and who is responsible for what.
Quality assurance of the programme plays out at two levels: course level and curriculum level. The curriculum level includes evaluating clusters of courses that form a unit.

Quality assurance at course level
Regular courses
Each course is formally evaluated at least once every three years: the courses of the uniform phase and of the differentiated phase every two years and electives at least once every three years. This is done in a quality assurance meeting at which at least students, the course coordinator, an examiner and some lecturers are present, with as input:
- A course survey for students that checks whether the goals of the course have been achieved. If desired, course coordinators can add one or two additional questions to the list
- A check on the examination by the Board of Examiners (conducted by the Assessment Quality Committee (TCD))
- Participants' experiences

Each year, after each block in which the course is offered, students have the opportunity to complete a course survey. Course leaders have access to the results and, if they wish, they can use this survey (and other information) to evaluate their course and formulate and implement improvement actions. They do not have to report on this to the Director of Education, unless they intend to make major changes.

In case of formal evaluation at course level, course coordinators and the examiners involved are responsible for making and implementing an improvement plan. If major changes (learning objectives, testing, etc.) are involved, they seek prior approval of the improvement plan from the Director of Education or the Board of Examiners.

When the modified course is offered again for the first time, the course coordinator will let students know in which areas the course has been modified.

Special courses
In courses that differ from the bulk of courses in purpose or design, quality assurance is set up slightly differently. This is the case for the following courses:
- The Junior extramural clerkship (JECO)
- The Senior extramural clerkship (SECO)
- Personal and professional development (including Tutoring)
- Thursday afternoons
- The Master Thesis

Special courses are evaluated as frequently as regular courses, but in different ways. Generally, quality assurance focus groups are also conducted here, but often with additional participants. In addition, adapted instruments are used:
- The Junior extramural clerkship: Quality assurance discussion with the coordinators of the three animal disciplines as additional guests. Input comes from a survey for students and a survey for

external education teachers. The surveys are the same for each differentiation, but also serve to compare the differentiations, for example to determine whether all common learning objectives are met. The assessment is also checked by the Board of Examiners.

- The Senior extramural clerkship: quality assurance discussion with the coordinators of the three animal species disciplines as additional guests. Input comes from three different surveys for students and a survey for external education teachers. Unlike the JECO, the surveys may differ, but again they serve for comparing the differentiations, for example to determine whether all common learning objectives are met. The assessment is also checked by the TCD (Assessment Quality Committee) at the request of the Board of Examiners.
- Personal and professional development: Quality assurance discussion with input from two student surveys (one on the course itself, one on the Tutoraing) and the tutor/teacher survey.
- The Master Thesis: Quality assurance focus group with a survey for students and supervisors regarding their experiences and with a thesis sample that determines whether the grading is correct. This sample is carried out by the TCD at the request of the Board of Examiners.

NB As with regular courses, students also have the option of completing a course survey each year after each block in which the course is offered. Course leaders have access to the results and, if they wish, they can use this survey (and other information) to evaluate their course and formulate and implement improvement actions. They do not have to report on this to the education director, unless they intend to make major changes.

The report of the quality assurance focus group with the improvement plans is sent to the Education Advisory Committees (OAC) for its opinion.

For special courses, the making of the improvement plan may lie with course coordinators and examiners, but sometimes with a "MOC" (Master Education Committee):

- The Junior extramural clerkship: the course coordinator and/or the coordinators (and ditto examiners) of the JECO's of the different animal species disciplines.
- The Senior extramural clerkship: the course coordinator and/or the coordinators (and ditto examiners) of the SECO's of the different animal species disciplines.
- Personal and professional development: the course coordinator(s) and examiner(s)
- The Thesis: the MOC Research [10]

When the modified course is offered again for the first time, the course coordinator will let students know in which areas the course has been modified.

Quality assurance at curriculum level

Course clusters

Groups of courses that together form a unit are evaluated together for various reasons. Input here is at least the reports of the quality assurance focus groups of the individual courses. The instrument is almost always a discussion with teachers and possibly students involved. Subject of the conversation is whether the goals as described in the curriculum manual are still satisfactory and whether they have been achieved. If they are not, that and what needs to be changed becomes the subject of discussion. From this, the improvement plan follows. The Course Clusters are:

- The uniform phase: Participants are the course coordinators of the eight courses, and the coordinators of the animal species disciplines. Input is (also) the course descriptions of the uniform phase.
- The three differentiation phases (separately): Participants are the course coordinators of the courses and the coordinators of the differentiation phases. Input is (also) the course descriptions of differentiations, feedback from extramural teachers of the SECO and the professional field.

10 The MOC Research acts as course coordinator.

- All courses of a species direction as well as cross-species courses : Participants are (a selection of) coordinators of the relevant courses. Input are the course descriptions and feedback from the professional field.

Reports of the evaluations with improvement plans are sent to the *Education Advisory Committees* (OAC) for its opinion.

In principle, the responsibility for implementing improvement plans lies with the Director of Education. In practice, however, so much diverse and deep, substantive knowledge is required that implementation is often delegated to the coordinator of a cluster. This person is in contact with the course coordinators of the individual courses and takes responsibility for drawing up and implementing improvement plans. Usually, the improvement actions will fall within the courses from the cluster and in practice will therefore be implemented by the course coordinators of these courses. If a cluster does not have its own coordinator, the education director takes over the responsibility. Responsibilities are divided as follows:

- The uniform phase: the education director.
- The three differentiations (separately): the coordinator of the respective species directions.
- All courses of a species direction as well as cross-species courses: the relevant coordinator.

<u>The entire curriculum</u>
Under the responsibility of the education director, the Curriculum Committee evaluates the entire curriculum. It consists of:

- The Director of Education (chair),
- Education portfolio holders,
- Species coordinators,
- Cross-species courses coordinator,
- Chairman of the Examination Board,
- Representatives of the student and lecturer sections of the Education Advisory Committees (OAC).
- Master’s education coordinator,
- Master’s policy advisor.

The committee discusses whether the curriculum is being implemented as planned and whether it meets all requirementsannually, using the Curriculum Manual, its appendices and other available information.

Input for the curriculum evaluation by the curriculum committee is in any case the output of the group evaluations of the uniform phase, the three differentiation phases, the SECO, the three species directions and the cross-species courses, to the extent available at the time of evaluation (see planning). In addition, other tools are deployed:

- An exit survey for recent graduates, asking their opinions on the entire programme,
- An examination of graduation level on all competences (final results achieved in the portfolio and from the Master Thesis),
- A study of study duration (cleaned and un-cleaned) to determine whether the study ability of the curriculum is good,
- An alumni survey for students who have graduated for one to three years that asks their opinion on the connection to the profession,
- A work field advisory board that discusses numerous topics related to the programme, including the connection to the professional field.

Reports of the evaluations with improvement plans are sent to the *Education Advisory Committees* (OAC) for its opinion.

All evaluations carried out by the curriculum committee together result in the Programme Annual Report with a draft improvement plan for the coming years. The education director and the chair of the examination committee discuss the Programme Annual Report with the vice dean of education to reach annual agreements. The implementation of the plans is the responsibility of the education director and the examination committee (where it concerns examinations). The Programme Annual Report with the improvement plan is submitted to the *Education Advisory Committees* (OAC) for advice.

V. Relevant scientific output research group 'Educational Scholarship in Veterinary Medicine'

May 2024

This overview is limited to scientific output of the research group Educational Scholarship in Veterinary Medicine. An overview of all scientific output of the VEE is available upon request.

Educational research

Relevant scientific publications in international peer-reviewed journals:

1 Schellekens, L. H., Van der Schaaf, M. F., Baartman, L. K. J., Van der Vleuten, C. P. M., Kremer, W. D. J., & Bok, H. G. J. (2024). *Students' perceptions of the assessment programme's impact on self-regulated learning: a multiple-case study.* Assessment & Evaluation in Higher Education, 1–17. https://doi.org/10.1080/02602938.2024.2343317

2 De Jong L.H., Bok H.G.J., Kremer W.D.J., et al. *From theory to practice: An international study on the implementation of the high-stakes decision-making procedure in programmatic assessment.* (In preparation)

3 Moffett J., Little R., Illing J., de Carvalho Filho M.A., Bok H.G.J. (2024) *Establishing psychological safety in online design-thinking education: a qualitative study*. Learning Environments Research, 1-19

4 Westermann C.M., Bok H.G.J. (2023) *A decade of experience in high-stakes decision-making in competency-based education*. JAVMA. DOI: https://doi.org/10.2460/javma.23.05.0247

5 Schellekens LH, Kremer WDJ, Van der Schaaf MF, Van der Vleuten CPM and Bok HGJ (2023) Between theory and practice: educators' perceptions on assessment quality criteria and its impact on student learning. Front. Educ. 8:1147213. doi: 10.3389/feduc.2023.1147213

6 Moffett J, Cassidy D, Collins N, Illing J, de Carvalho Filho MA, Bok H. (2023) *Exploring Medical Students' Learning Around Uncertainty Management Using a Digital Educational Escape Room: A Design-based Research Approach*. Perspect Med Educ. 20;12(1):86-98. doi: 10.5334/pme.844

7 Pornsakulpaisal R, Ahmed Z, Bok H, de Carvalho Filho MA, Goka S, Li L, et al. (2023) *Building digital escape rooms for learning: From theory to practice*. Clin Teac. 20(2): e13559. https://doi.org/10.1111/tct.13559

8 Kool, L., Feijen-de Jong, E.L., Mastenbroek N.J.J.M., Schellevis, F., Jaarsma, A.D.C. (2023) *Midwives' occupational wellbeing and its determinants. A cross-sectional study among newly qualified and experienced Dutch midwives.* Midwifery, 125, [103776]. https://doi.org/10.1016/j.midw.2023.103776

9 Sonneveld, D., Goverts, Y., Duijn, C. C., Camps, G., Bougie, R., & Mastenbroek, N. J. (2023). *Dutch veterinary graduates leaving practice: A mixed-methods analysis of frequency and underlying reasons.* Veterinary Record, 192(4)

10 Duijvestijn M., Van der Wiel B., Vinke C., Diaz Espineira M., Bok H.G.J., Vernooij J. (2022) *Implementation of a Blended Learning Module to Teach Handling, Restraint, and Physical Examination of Cats in Undergiraduate Veterinary Training*. Journal of Veterinary Medical Education. 49:5, 537-546.

11 Hardeman A., Van Weeren R., Serra Braganca F.M., Warmerdam H., Bok H.G.J. (2022) *A first exploration of perceived pros and cons of quantitative gait analysis in equine clinical practice.* Equine Veterinary Education, 34,10, 2022. https://doi.org/10.1111/eve.13505

12 Schellekens, L. H., van der Schaaf, M. F., van der Vleuten, C. P., Prins, F. J., Wools, S., & Bok, H. G. (2022). *Developing a digital application for quality assurance of assessment programmes in higher education*. Quality Assurance in Education, DOI:10.1108/QAE-03-2022-0066

13 De Jong, L. H., Bok, H. G., Schellekens, L. H., Kremer, W. D., Jonker, F. H., & van der Vleuten, C. P. (2022). *Shaping the right conditions in programmatic assessment: how quality of narrative information affects the quality of high-stakes decision-making*. BMC medical education, *22*(1), 1-10.

14 Bok HGJ, van der Vleuten CPM and de Jong LH (2021) *"Prevention Is Better Than Cure": A Plea to Emphasize the Learning Function of Competence Committees in Programmatic Assessment.* Front. Vet. Sci. 8:638455. doi: 10.3389/fvets.2021.638455

15 Schellekens, L. H., Bok, H. G., de Jong, L. H., van der Schaaf, M. F., Kremer, W. D., & van der Vleuten, C. P. (2021*). A scoping review on the notions of Assessment as Learning (AaL), Assessment for Learning (AfL), and Assessment of Learning (AoL).* Studies in Educational Evaluation, DOI: 10.1016/j.stueduc.2021.101094

16 Annandale A., Fosgate G.T., Eksteen C.A., Kremer W.D.J., Bok H.G.J., Holm D.E. (2021) *Electromyographic analysis of muscle activation patterns and muscle activity levels during bovine transrectal palpation*. Journal of Veterinary Medical Education. DOI: 10.3138/jvme-2020-0039

17 Ritter, C., L. Dorrestein, D.F. Kelton, and H.W. Barkema. (2021) *Herd health and production management visits on Canadian dairy cattle farms: structure, goals and topics discussed.* J. Dairy Sc. 104:7996-8008.

18 't Mannetje, J., Heijne-Penninga, M., Mastenbroek, N., Wolfensberger, M. & Jaarsma, D. *Personal resources conducive to educational success: high achieving students' perspectives.* Journal of the European Honors Council 5.1 ,2021

19 Zeijen, M. E. L., Brenninkmeijer, V., Peeters, M. C. W., & Mastenbroek, N. J. J. M. (2021). *Exploring the Role of Personal Demands in the Health-Impairment Process of the Job Demands-Resources Model: A Study among Master Students*. International Journal of Environmental Research and Public Health, 18(2), [632]. https://doi.org/10.3390/ijerph18020632

20 Brown A., Hecker K.G., Bok H.G.J., Ellaway R.H. (2020) Strange Bedfellows: *Exploring Methodological Intersections Between Realist Inquiry and Structural Equation Modeling.* Journal of Mixed Methods Research. Online first

21 Annandale A., May C.E., van der Leek M.L., Fosgate G.T., Kremer W.D.J., Bok H.G.J., Holm D.E. (2020) *Effect of a high-intensity one-week training programme and student-level variables on the bovine transrectal palpation and pregnancy diagnosis skills of final-year veterinary students*. Veterinary Record, Online first

22 Annandale A., Fosgate G.T., Eksteen C.A., Kremer W.D.J., Bok H.G.J., Holm D.E. (2020) *Influence of an Exercise Program, Muscle Strength, Proprioception, and Arm Length on Veterinary Students' Bovine Pregnancy Diagnosis Accuracy*. Journal of Veterinary Medical Education, Advance online

23 Matthew S.M., Bok H.G.J., Chaney K.P., et al. (2020) *Collaborative Development of a Shared Framework for Competency-Based Veterinary Education*. Journal of Veterinary Medical Education, Advance online

24 Salisbury S.K., Rush B.R., Ilkiw J.E., …, Bok H.G.J., et al. (2020) *Collaborative Development of Core Entrustable Professional Activities for Veterinary Education*. Journal of Veterinary Medical Education, Advance online

25 Favier R.P., Ten Cate O.Th., Duijn C.C.M.A., Bok H.G.J. (2020) *Bridging the Gap between Undergraduate Veterinary Training and Veterinary Practice with Entrustable Professional Activities*. Journal of Veterinary Medical Education, Advance online

26 Molgaard L.K., Chaney K.P., Bok H.G.J. et al. (2019) *Development of core Entrustable Professional Activities linked to a Competency-Based Veterinary Education Framework.* Medical Teacher, 41(12), 1404-1410

27 Duijn C.C.M.A., Bok H.G.J., Ten Cate O., Kremer W.D.J. (2019) *Qualified but not yet fully competent: bridging the gap between education and clinical practice.* Veterinary Record, 186(7)

28 Annandale A, Fosgate G., Bok H.G.J., et al. (2019) *Ability of a bovine transrectal palpation objective structured clinical examination to predict veterinary students' pregnancy diagnosis accuracy*. Veterinary Record, 185(6)

29 Duijn C.C.M.A., Van Dijk E.J., Bok H.G.J., et al. (2019) *Assessment tools for feedback and entrustment decisions in the clinical workplace: a systematic review*. Journal of Veterinary Medical Education, 1-23
30 Favier R.P., Godijn M., Bok H.G.J. (2019) *Identifying entrustable professional activities for surgical skills training in companion animal health*. Veterinary Record, 186(4)
31 Favier R.P., Vernooij H., Jonker H., Bok H.G.J. (2019) *Inter-rater reliability of grading undergraduate portfolios in veterinary medical education*. Journal of Veterinary Medical Education, 1-8
32 Duijn C.C.M.A., Ten Cate O., Kremer W.D.J., Bok H.G.J. (2019) *The development of entrustable professional activities for competency-based veterinary education in farm animal health.* Journal of Veterinary Medical Education, 46(2)
33 Bakkeren, N. M., Mastenbroek, N. J. J. M., Brenninkmeijer, V., Peeters, M. C. W., Kremer, W. D. J., & van Rijen, H. V. M. (2019). *Welzijnsonderzoek "How are UU?": Managementrapport over het welzijn van masterstudenten Rechten, Geesteswetenschappen, Biomedische wetenschappen en Diergeneeskunde.*
34 Stelling, A. G. P., Mastenbroek, N. J. J. M., & Kremer, W. D. J. (2019). *Predictive Value of Three Different Selection Methods for Admission of Motivated and Well-Performing Veterinary Medical Students*. Journal of Veterinary Medical Education, 46(3), 289-301.
35 https://doi.org/10.3138/jvme.0417-050r1
36 Bok H.G.J., De Jong L.H., O'Neill T., Maxey C., Hecker K. (2018) *Validity evidence for programmatic assessment in competency-based education*. Perspectives on Medical Education, 7(6)
37 De Jong L.H., Bok H.G.J., Kremer W.D.J., Van der Vleuten C.P.M. (2018) *Programmatic assessment: can we provide evidence for saturation of information?* Medical Teacher, 1-5
38 Koehler T.C., Bok H.G.J., Westerman M., Jaarsma A.D.C. (2018) *Development a competency framework for Pharmacy Technicians: Perspectives from the field.* Research in Social and Administrative Pharmacy, 1-8
39 Duijn C.C.M.A., Welink L.S., Bok H.G.J., Ten Cate O. (2018) *When to trust our learners? Clinical teachers' perceptions of decision variables in the entrustment process*. Perspectives on Medical Education, 1-8
40 Duijn C.C.M.A., Welink L.S., Mandoki M., Ten Cate O., Kremer W.D.J., Bok H.G.J. (2017) *Am I ready for it? Students' perceptions of meaningful feedback on entrustable professional activities.* Perspectives on Medical Education, 6, 256-264
41 De Jong L.H., Favier R.P., Van der Vleuten C.P.M., Bok H.G.J. (2017) *Students' motivation toward feedback-seeking in the clinical workplace*. Medical Teacher, 39(9), 954-958
42 Stassen Q.E.M., Koskinen L.L., Van Steenbeek F.G., Joskinen T.S., Prins P.G.M., Bok H.G.J., Zandvliet M.M.J.M., Vos-Loohuis M., Leegwater P.A.J., Lohi H. (2017) *Paroxysmal Dyskinesia in Border Terriers: clinical, epidemiological and genetic investigations*. Journal of Veterinary Internal Medicine, 31, 1123-1131
43 Vijfhuizen M., Bok H.G.J., Matthew S.M., Del Piccolo L.L. McArther M. (2017) *Analysing how negative emotions emerge and are addressed in veterinary consultations, using the Verona Coding Definitions of Emotional Sequences (VR-CoDES)*. Patient Education and Counseling, 100, 682-689
44 Van den Berg, J. W., Mastenbroek, N. J. J. M., Scheepers, R. A., & Jaarsma, A. D. C. (2017). *Work engagement in health professions education*. Medical Teacher, 39(11), 1110-1118. https://doi.org/10.1080/0142159X.2017.1359522
45 Mastenbroek, N. J. J. M. (2017). *The Art of Staying Engaged: The Role of Personal Resources in the Mental Well-Being of Young Veterinary Professionals.* Journal of Veterinary Medical Education, 44(1), 84-94. https://doi.org/10.3138/jvme.0216-041R1
46 Bok H.G.J., Jaarsma A.D.C., Spruijt A., Van Beukelen P., Van der Vleuten C.P.M., Teunissen P.W. (2016) *Feedback-giving behaviour in performance evaluations during clinical clerkships.* Medical Teacher, 38 (1), 88-95

47 Ten Cate O., Chen C., Hoff R., Peters H., Bok H.G.J., Van der Schaaf M. (2015) *Curriculum development for the workplace using Entrustable Professional Activities (EPAs): AMEE Guide No. 99.* Medical Teacher 1-20
48 Spruijt A., Leppink J., Wolfhagen H.A.P., Bok H.G.J., Mainhard M.T., Scherpbier A.J.J.A., Van Beukelen P., Jaarsma A.D.C. (2015) *Factors influencing seminar learning and academic achievement.* Journal of Veterinary Medical Education, 42 (3), 259-270
49 Bok H.G.J. (2015) *Competency-based veterinary education.* Perspectives on medical education, 3
50 Jeuring, J. T., Grosfeld, F., Heeren, B. J., Hulsbergen, M., Ijntema, R. C., Jonker, V., Mastenbroek, N. J. J. M., van der Smagt, M. J., Wijmans, F., Wolters, M., & van Zeijts, H. (2015). *Communicate! — A Serious Game for Communication Skills*. In G. Conole, T. Klobucar, C. Rensing, J. Konert, & E. Lavoué (Eds.), *Design for Teaching and Learning in a Networked World: 10th European Conference on Technology Enhanced Learning, EC-TEL 2015, Toledo, Spain, September 15–18, 2015, Proceeding* (pp. 513-517). (Lecture Notes in Computer Science; Vol. 9307). Springer International Publishing. https://doi.org/10.1007/978-3-319-24258-3_49
51 Jeuring, J., Grosfeld, F., Heeren, B., Hulsbergen, M., IJntema, R., Jonker, V., Mastenbroek, N., Smagt, M., Wijmans, F., Wolters, M., & Zeijts, H. (2015). *Demo: Communicate! — a serious game for communication skills.* (Technical Report Series; No. UU-CS-2015-009). UU BETA ICS Departement Informatica.
52 Mastenbroek, N. J. J. M., van Beukelen, P., Demerouti, E., Scherpbier, A. J. J. A., & Jaarsma, A. D. C. (2015). *Effects of a 1-year development program for recently graduated veterinary professionals on personal and job resources: a combined quantitative and qualitative approach.* BMC Veterinary Research, 11(311). https://doi.org/10.1186/s12917-015-0627-y
53 Bok H.G.J., Teunissen P.W., Boerboom T.B.B., Rhind S.M, Baillie S., Tegzes J., Annandale H., Matthew S., Torgersen A., Hecker K.G., Härdi-Landerer C.M., Gomez-Lucia E., Ahmad B, Muijtjens A.M.M., Jaarsma A.D.C., Van der Vleuten C.P.M., Van Beukelen P. (2014) *International survey of veterinarians to assess the importance of competencies in professional practice and education.* JAVMA 245(8), 906-913
54 Mastenbroek, N. J. J. M., Jaarsma, A. D. C., Demerouti, E., Muijtjens, A. M. M., Scherpbier, A. J. J. A., & Van Beukelen, P. (2014). *Burnout and engagement, and its predictors in young veterinary professionals: The influence of gender.* Veterinary Record, 174(6), 144. https://doi.org/10.1136/vr.101762
55 Mastenbroek, N. J. J. M., Demerouti, E., Van Beukelen, P., Muijtjens, A. M. M., Scherpbier, A. J. J. A., & Jaarsma, A. D. C. (2014). *Measuring potential predictors of burnout and engagement among young veterinary professionals; Construction of a customised questionnaire (the Vet-DRQ).* Veterinary Record, 174(7), 168. https://doi.org/10.1136/vr.101761
56 Mastenbroek, N. J. J. M., Jaarsma, A. D. C., Scherpbier, A. J. J. A., van Beukelen, P., & Demerouti, E. (2014). *The role of personal resources in explaining well-being and performance: A study among young veterinary professionals.* European Journal of Work and Organizational Psychology, 23(2), 190-202. https://doi.org/10.1080/1359432X.2012.728040
57 Bok H.G.J., Teunissen P.W., Spruijt A., Fokkema J.P.I., Van der Vleuten C.P.M., Van Beukelen P., Jaarsma A.D.C. (2013) *Clarifying students' feedback-seeking behavior in clinical clerkships.* Medical Education 47(3), 282-291
58 Bok H.G.J., Teunissen P.W. (2013) *Patients and learners: time for a re-evaluation of our goals in bringing them together*. Medical Education 47(12), 1157-1159
59 Teunissen P.W., Bok H.G.J. (2013) *Believing is seeing; how people's beliefs influence goals, emotions, and behavior*, Medical Education 47(11), 1064-1072
60 Bok H.G.J., Teunissen P.W., Favier R.P., Rietbroek N.J., Theyse L.F.H., Brommer H., Haarhuis J.C.M., Van Beukelen P., Van der Vleuten C.P.M., Jaarsma A.D.C. (2013) *Programmatic assessment of competency-based workplace learning: when theory meets practice.* BMC Medical Education 13(123)

61 Spruijt A., Wolfhagen H.A.P., Bok H.G.J., Schuurmans E.M., Scherpbier A.J.J.A., van Beukelen P., Jaarsma A.D.C. (2013) *Teachers' perceptions of aspects affecting seminar learning*. BMC Medical Education 13(22)
62 Bok H.G.J., Jaarsma A.D.C., Teunissen P.W., Van der Vleuten C.P.M., Van Beukelen P. (2011) *Development and validation of a competency framework for veterinarians*. Journal of Veterinary Medical Education 38(3), 262-269
63 Boerboom, T. B., Jaarsma, D., Dolmans, D. H., Scherpbier, A. J., Mastenbroek, N. J., & Van Beukelen, P. (2011). *Peer group reflection helps clinical teachers to critically reflect on their teaching*. Medical teacher, 33(11), e615-e623.

Relevant book chapters:

1 Bok H.G.J., Jonker G., Hamstra S.J., Boscardin C.K., ten Cate O., Hennus M.P., Integrating key concepts in workplace-based assessment: entrustable professional activities, programmatic assessment, and milestones. In: ten Cate O, Hennus MP, Chou FC, Burch V, Chen HC. (Eds). *Entrustable Professional Activities and Entrustment Decision Making in Health Professions Education*, Chapter 6, pp... [2024] London: Ubiquity Press. Doi XXX [submitted]
2 Bok H.G.J. Chapter 20: Constructive Alignment and Programmatic Assessment. In: Veterinary Medical Education: A Practical Guide 2nd Edition. (2024)
3 De Jong LH, Bok HGJ. Hoofdstuk 6: De beslisfunctie van programmatisch toetsen. In: Baartman L, van Schilt-Mol T. (2024)
4 Mastenbroek, N., Warman, S., de Groot, E. (2024) *Lifelong learning and reflective practice.* In: Veterinary medical education, 2nd ed. New York: Wiley-Blackwell, p. 455 – 468.
5 De Jong L.H., Bok H.G.J., Bierer S.B., Van der Vleuten C.P.M. *Quality assurance in Programmatic Assessment*. In: Optimizing Assessment in Medical Education through Quality Assurance. Eds. Hays R., Malau-Aduli B., Van der Vleuten C.P.M. 2021
6 Schellekens L.H., Slof B., Bok H.G.J. *Quality assurance of an assessment program: theory, practice and case studies*. In: Optimizing Assessment in Medical Education through Quality Assurance. Eds. Hays R., Malau-Aduli B., Van der Vleuten C.P.M. 2021
7 Mastenbroek, N., Prins, J. T., & Jaarsma, A. D. C. *Fluitend naar je werk.* In: Professionaliteit in de zorg: Reflecteren op je professie, Bohn, Stafleu en van Loghum, 2021
8 Baartman L., Bok H.G.J., Van Schilt-Mol T, Van der Vleuten C.P.M. *Programmatisch toetsen tijdens de coschappen bij de Master Diergeneeskunde*. In: Programmatisch toetsen: Voorbeelden en ervaringen uit de praktijk. Eds. Baartman L., Van Schilt-Mol T., Van der Vleuten C.P.M. 2020
9 de Groot, E., & Mastenbroek, N. *Lifelong Learning and Reflective practice.* In: Veterinary Medical Education: A Practical Guide. Wiley-Blackwell, 2017
10 Bok H.G.J., Jaarsma A.D.C. *Competency-Based Education.* In: Veterinary Medical Education: A Practical Guide, Wiley, 2017
11 Bok H.G.J., Van Beukelen P., Jaarsma A.D.C. *Scholarship in veterinary education*. In: Veterinary Medical Education: A Practical Guide, Wiley, 2017

Relevant books:

1 De Jong L.J. Unraveling programmatic assessment: Issues of validity in high-stakes decision-making. PhD-thesis, Faculty of Veterinary Medicine, Utrecht University, 2022
2 Annandale A. Thinking differently about clinical skills training: The bovine pregnancy diagnosis via transrectal palpation showcase. PhD-thesis, Faculty of Veterinary Medicine, Utrecht University, 2020
3 Duijn C.C.M.A. *Growing trust: Entrustable Professional Activities within Competency-based Veterinary Education.* PhD-thesis, Faculty of Veterinary Medicine, Utrecht University, 2019
4 Molgaard, L.K., Hodgson, J.L., Bok, H.G.J., Chaney, K.P., Ilkiw, J.E., Matthew, S.M., May, S.A., Read, E.K., Rush, B.R., Salisbury, S.K. AAVMC Working Group on Competency-Based Veterinary Education, *Competency-Based Veterinary Education: Part 3 - Milestones.* Washington, DC: Association of American Veterinary Medical Colleges, 2019

5 Molgaard, L.K., Hodgson, J.L., Bok, H.G.J., Chaney, K.P., Ilkiw, J.E., Matthew, S.M., May, S.A., Read, E.K., Rush, B.R., Salisbury, S.K. AAVMC Working Group on Competency-Based Veterinary Education, *Competency-Based Veterinary Education: Part 1 - CBVE Framework.* Washington, DC: Association of American Veterinary Medical Colleges, 2018

6 Molgaard, L.K., Hodgson, J.L., Bok, H.G.J., Chaney, K.P., Ilkiw, J.E., Matthew, S.M., May, S.A., Read, E.K., Rush, B.R., Salisbury, S.K. AAVMC Working Group on Competency-Based Veterinary Education, *Competency-Based Veterinary Education: Part 2 - Entrustable Professional Activities.* Washington, DC: Association of American Veterinary Medical Colleges, 2018

7 Bok H.G.J. *Competency-based veterinary education: An integrative approach to learning and assessment in the clinical workplace.* PhD-thesis, Faculty of Veterinary Medicine, Utrecht University, 2014

VI. Further appendices (provided during the site visit)

3.1.1. Bachelor curriculum hours in each academic year taken by each student

	Lectures	Seminars	Supervised self-learning	Laboratory and desk-based work	Non-clinical animal work	Clinical animal work	EPT	Others (specify)*	**Total hours**
	Hours								
Bachelor year 1	149	153	209	68	84	0	n/a	9	**673**
Bachelor year 2	92	150	48	26	79	0	n/a	15	**412**
Bachelor year 3	48	127	71	49	76	0	n/a	48	**418**

Breakdown of hours in the Bachelor's programme

* tutormeetings, responsie exam, attending parturition of sheep and pig

3.1.1. Master curriculum hours in each academic year taken by each student

	Lectures	Seminars	Supervised self-learning	Laboratory and desk-based work	Non-clinical animal work	Clinical animal work	EPT	Others (specify)*	**Total hours**
	Hours								
Ma-Uniform	51	161	78	102	48	329	210	19	**998**
Ma-GD	50	62	74	2	5	587	420	9	**1209**
Ma-LH**	60	131	4	42	52	234	420	4	**946**
Ma-P	39	24	11	15	26	564	420	0	**1099**

Breakdown of hours of courses in the uniform part and courses of the three differentiations of the Master programme.

*Practical exam, escaperoom, practical applying techniques, skillslab, one health game
** Hours from the ULP course are included. This course is chosen by approx. 90% of students.

3.1.2. Bachelor

Breakdown of the curriculum hours taken by each student (i.e. compulsory courses).

			Hours							
			lectures	seminars	supervised self-learning	laboratory and desk based work	non-clinical animal work	clinical animal work	others (specify)*	**total**
Basic subjects		Medical physics	2	5	3	0	0	0	0	**9**
		Chemistry (inorganic and organic sections)	2	4	19	0	0	0	0	**24**
		Animal biology, zoology and cell biology	8	5	12	0	0	0	0	**25**
		Feed plant biology and toxic plants	0	0	0	0	0	0	0	**0**
		Biomedical statistics	1	19	2	0	0	0	4	**26**
Specific veterinary subjects	Basic Sciences	Anatomy, histology and embryology	27	13	32	11	63	0	2	**147**
		Physiology	36	53	13	6	3	0	1	**110**
		Biochemistry	15	25	40	11	0	0	0	**91**
		General and molecular genetics	12	16	47	5	0	0	0	**79**
		Pharmacology, pharmacy and pharmacotherapy	8	13	41	2	0	0	0	**63**
		Pathology	33	41	20	19	39	0	1	**153**
		Toxicology	0	1	1	0	0	0	0	**2**
		Parasitology	2	4	1	13	0	0	0	**20**
		Microbiology	4	13	0	4	1	0	0	**22**
		Immunology	12	18	10	8	1	0	4	**52**
		Epidemiology	0	3	0	0	0	0	0	**3**
		Information literacy and data management	6	16	2	9	0	0	3	**35**
		Professional ethics and communication	9	28	0	3	0	0	17	**56**
		Animal health economics and practice management	1	7	0	5	0	0	0	**12**
		Animal ethology	7	2	3	0	11	0	0	**22**
		Animal welfare	3	2	0	0	2	0	0	**7**
		Animal nutrition	5	5	16	0	0	0	0	**26**
	Clinical Sciences Companion animals and exotic pets	Obstetrics, reproduction and reproductive disorders	3	6	0	0	0	0	0	**9**
		Diagnostic pathology	1	2	2	1	1	0	0	**6**
		Medicine	4	5	0	0	0	0	0	**9**
		Surgery	0	1	0	1	3	0	0	**5**
		Anesthesiology	0	0	1	0	0	0	1	**1**
		Clinical practical training in common animal species	11	25	19	11	36	0	0	**102**
		Preventive medicine	0	0	0	0	0	0	0	**0**
		Diagnostic imaging	1	1	0	1	0	0	0	**3**
		Therapy in common animal species	1	1	0	0	0	0	0	**2**
	Clinical Sciences Equine	Obstetrics, reproduction and reproductive disorders	1	2	2	0	0	0	0	**6**
		Diagnostic pathology	2	2	2	1	1	0	0	**7**
		Medicine	2	1	0	0	0	0	0	**3**
		Surgery	0	1	0	1	3	0	0	**5**
		Anesthesiology and analgesia	0	0	1	0	0	0	1	**1**
		Clinical practical training in common animal species	8	16	2	1	30	0	0	**57**
		Infectious diseases	0	1	0	0	0	0	0	**1**
		Preventive medicine	0	0	0	0	0	0	0	**0**
		Diagnostic imaging	1	0	0	1	0	0	0	**2**
		Therapy in common animal species	0	1	0	0	0	0	0	**1**
	Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Obstetrics, reproduction and reproductive disorders	3	2	5	3	0	0	3	**16**
		Diagnostic pathology	2	1	0	1	4	0	0	**7**
		Medicine	2	2	0	0	0	0	0	**4**
		Surgery	0	1	0	1	3	0	0	**5**
		Anesthesiology and analgesia	0	0	1	0	0	0	1	**1**
		Clinical practical training in common food producing animals	6	20	10	1	35	0	0	**72**
		Infectious diseases	0	3	2	0	0	0	0	**5**
		Preventive medicine	0	0	0	0	0	0	0	**0**
		Diagnostic imaging	0	0	0	1	0	0	0	**1**
		Therapy in common food producing animals	0	1	0	0	0	0	0	**0**
		Animal Production, including breeding, husbandry and economics	45	4	5	0	3	0	0	**57**
		Herd health management	0	5	2	0	0	0	0	**7**
	Food Safety and Quality, Veterinary Public Health and OneHealth Concept	Veterinary legislation including official controls and regulatory veterinary services, forensic veterinary medicine and certification	3	14	6	10	0	0	0	**33**
		Control of food, feed and animal by-products	2	4	4	6	0	0	0	**15**
		Zoonoses and their prevention	1	10	1	2	1	0	0	**14**
		Food hygiene and environmental health	2	7	4	8	0	0	0	**22**
		Basic food technology	1	2	0	0	0	0	0	**3**

* tutor meetings, WCO (game), responsie exam, attending parturition of sheep and pig

		3.1.2. Companian Animals	Hours								
			lectures	seminars	supervised self-learning	laboratory and desk based work	non-clinical animal work	clinical animal work	others (specify)*	**total**	
Basic subjects		Medical physics	0	0	0	0	0	0	0	**0**	*Breakdown of the curriculum hours taken by each student in the companion animal medicine differentiation (i.e. compulsory courses).*
		Chemistry (inorganic and organic sections)	0	0	0	0	0	0	0	**0**	* Skillslab
		Animal biology, zoology and cell biology	0	0	0	0	0	0	0	**0**	
		Feed plant biology and toxic plants	0	0	0	0	0	0	0	**0**	
		Biomedical statistics	0	0	0	0	0	0	0	**0**	
Specific veterinary subjects	Basic Sciences	Anatomy, histology and embryology	0	0	0	0	0	0	0	**0**	
		Physiology	0	0	0	0	0	0	0	**0**	
		Biochemistry	0	0	0	0	0	0	0	**0**	
		General and molecular genetics	2	2	1	0	0	0	0	**4**	
		Pharmacology, pharmacy and pharmacotherapy	3	2	5	0	0	0	0	**10**	
		Pathology	0	0	0	0	0	0	0	**0**	
		Toxicology	0	0	0	0	0	0	0	**0**	
		Parasitology	0	0	0	0	0	0	0	**0**	
		Microbiology	0	2	1	0	0	0	0	**4**	
		Immunology	0	1	1	0	0	0	0	**2**	
		Epidemiology	0	0	0	0	0	0	0	**0**	
		Information literacy and data management	0	0	0	0	0	0	0	**0**	
		Professional ethics and communication	19	21	0	0	0	0	0	**40**	
		Animal health economics and practice management	0	0	0	0	0	0	0	**0**	
		Animal ethology	1	2	3	0	0	0	0	**6**	
		Animal welfare	1	0	1	0	0	0	0	**1**	
		Animal nutrition	1	2	2	0	0	0	0	**4**	
	Clinical Sciences Companion animals and exotic pets	Obstetrics, reproduction and reproductive disorders	0	2	2	0	0	0	0	**4**	
		Diagnostic pathology	0	0	0	0	0	0	0	**0**	
		Medicine	13	12	20	0	0	294	0	**339**	
		Surgery	1	4	5	0	5	149	9	**172**	
		Anesthesiology	0	2	3	0	0	37	0	**42**	
		Clinical practical training in common animal species	8	10	31	0	0	79	0	**128**	
		Preventive medicine	0	0	0	0	0	0	0	**0**	
		Diagnostic imaging	2	1	1	0	0	0	0	**5**	
		Therapy in common animal species	0	0	0	2	0	28	0	**30**	
	Clinical Sciences Equine	Obstetrics, reproduction and reproductive disorders	0	0	0	0	0	0	0	**0**	
		Diagnostic pathology	0	0	0	0	0	0	0	**0**	
		Medicine	0	0	0	0	0	0	0	**0**	
		Surgery	0	0	0	0	0	0	0	**0**	
		Anesthesiology and analgesia	0	0	0	0	0	0	0	**0**	
		Clinical practical training in common animal species	0	0	0	0	0	0	0	**0**	
		Infectious diseases	0	0	0	0	0	0	0	**0**	
		Preventive medicine	0	0	0	0	0	0	0	**0**	
		Diagnostic imaging	0	0	0	0	0	0	0	**0**	
		Therapy in common animal species	0	0	0	0	0	0	0	**0**	
	Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Obstetrics, reproduction and reproductive disorders	0	0	0	0	0	0	0	**0**	
		Diagnostic pathology	0	0	0	0	0	0	0	**0**	
		Medicine	0	0	0	0	0	0	0	**0**	
		Surgery	0	0	0	0	0	0	0	**0**	
		Anesthesiology and analgesia	0	0	0	0	0	0	0	**0**	
		Clinical practical training in common food producing animals	0	0	0	0	0	0	0	**0**	
		Infectious diseases	0	0	0	0	0	0	0	**0**	
		Preventive medicine	0	0	0	0	0	0	0	**0**	
		Diagnostic imaging	0	0	0	0	0	0	0	**0**	
		Therapy in common food producing animals	0	0	0	0	0	0	0	**0**	
		Animal Production, including breeding, husbandry and economics	0	0	0	0	0	0	0	**0**	
		Herd health management	0	0	0	0	0	0	0	**0**	
	Food Safety and Quality, Veterinary Public Health and One Health Concept	Veterinary legislation including official controls and regulatory veterinary services, forensic veterinary medicine and certification	0	0	0	0	0	0	0	**0**	
		Control of food, feed and animal by-products	0	0	0	0	0	0	0	**0**	
		Zoonoses and their prevention	0	0	0	0	0	0	0	**0**	
		Food hygiene and environmental health	0	0	0	0	0	0	0	**0**	
		Basic food technology	0	0	0	0	0	0	0	**0**	
			50	62	74	2	5	587	9	789	

		Master (diff Farm Animals)	Hours										
			lectures	seminars	supervised self-learning	laboratory and desk based work	non-clinical animal work	clinical animal work	others (specify)*	**total**			
Basic subjects		Medical physics	1	0	0	0	0	0	0	**1**			*Breakdown of the curriculum hours taken by each student in the farm animal health differentiation (i.e. compulsory courses).*
		Chemistry (inorganic and organic sections)	0	0	0	0	0	0	0	**0**			*practical exam
		Animal biology, zoology and cell biology	0	0	0	0	0	0	0	**0**			
		Feed plant biology and toxic plants	0	0	0	0	0	0	0	**0**			
		Biomedical statistics	2	0	0	0	0	0	0	**2**			
Specific veterinary subjects	Basic Sciences	Anatomy, histology and embryology	0	0	0	0	0	0	0	**0**			
		Physiology	3	0	0	4	0	0	0	**7**			
		Biochemistry	1	0	0	0	0	0	0	**1**			
		General and molecular genetics	0	0	0	0	0	0	0	**0**			
		Pharmacology, pharmacy and pharmacotherapy	0	5	0	1	0	0	0	**6**			
		Pathology	0	0	0	0	0	0	0	**0**			
		Toxicology	0	0	0	0	0	0	0	**0**			
		Parasitology	0	2	0	0	0	0	0	**2**			
		Microbiology	2	1	0	1	0	0	0	**4**			
		Immunology	1	1	0	0	0	0	0	**2**			
		Epidemiology	1	8	0	1	0	0	0	**10**			
		Information literacy and data management	4	0	0	0	0	0	0	**4**			
		Professional ethics and communication	1	0	0	0	0	0	0	**1**			
		Animal health economics and practice management	5	14	2	2	0	0	0	**23**			
		Animal ethology	1	3	0	0	0	0	0	**3**			
		Animal welfare	2	5	0	4	4	4	0	**18**			
		Animal nutrition	8	23	0	2	1	0	0	**33**			
	Clinical Sciences Companion animals and exotic pets	Obstetrics, reproduction and reproductive disorders	0	0	0	0	0	0	0	**0**			
		Diagnostic pathology	0	0	0	0	0	0	0	**0**			
		Medicine	0	0	0	0	0	0	0	**0**			
		Surgery	0	0	0	0	0	0	0	**0**			
		Anesthesiology	0	0	0	0	0	0	0	**0**			
		Clinical practical training in common animal species	0	0	0	0	0	0	0	**0**			
		Preventive medicine	0	0	0	0	0	0	0	**0**			
		Diagnostic imaging	0	0	0	0	0	0	0	**0**			
		Therapy in common animal species	0	0	0	0	0	0	0	**0**			
	Clinical Sciences Equine	Obstetrics, reproduction and reproductive disorders	0	0	0	0	0	0	0	**0**			
		Diagnostic pathology	0	0	0	0	0	0	0	**0**			
		Medicine	0	0	0	0	0	0	0	**0**			
		Surgery	0	0	0	0	0	0	0	**0**			
		Anesthesiology and analgesia	0	0	0	0	0	0	0	**0**			
		Clinical practical training in common animal species	0	0	0	0	0	0	0	**0**			
		Infectious diseases	0	0	0	0	0	0	0	**0**			
		Preventive medicine	0	0	0	0	0	0	0	**0**			
		Diagnostic imaging	0	0	0	0	0	0	0	**0**			
		Therapy in common animal species	0	0	0	0	0	0	0	**0**			
	Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Obstetrics, reproduction and reproductive disorders	2	4	0	2	6	0	0	**15**			
		Diagnostic pathology	0	0	0	0	0	4	4	**8**			
		Medicine	2	1	0	1	0	0	0	**3**			
		Surgery	1	0	0	0	0	0	0	**1**			
		Anesthesiology and analgesia	0	0	0	0	0	0	0	**0**			
		Clinical practical training in common food producing animals	0	11	0	4	6	208	0	**229**			
		Infectious diseases	2	6	0	5	0	0	0	**13**			
		Preventive medicine	2	5	0	2	5	0	0	**14**			
		Diagnostic imaging	1	2	0	0	0	0	0	**2**			
		Therapy in common food producing animals	0	3	0	4	3	0	0	**10**			
		Animal Production, including breeding, husbandry and economics	5	6	0	7	25	4	0	**47**			
		Herd health management	2	15	2	4	0	4	0	**25**			
	Food Safety and Quality, Veterinary Public Health and One Health Concept	Veterinary legislation including official controls and regulatory veterinary services, forensic veterinary medicine and certification	2	3	0	0	0	5	0	**10**			
		Control of food, feed and animal by-products	4	5	0	0	0	2	0	**11**			
		Zoonoses and their prevention	2	3	0	0	0	3	0	**9**			
		Food hygiene and environmental health	4	2	0	0	2	0	0	**8**			
		Basic food technology	2	3	0	0	1	0	0	**5**			

		Equine	lectures	seminars	supervised self-learning	laboratory and desk based work	non-clinical animal work	clinical animal work	others (specify)	**total**			
Basic subjects		Medical physics	0	0	0	0	0	0	0	**0**			*Breakdown of the curriculum hours taken by each student in the equine medicine differentiation (i.e. compulsory courses).*
		Chemistry (inorganic and organic sections)	0	0	0	0	0	0	0	**0**			
		Animal biology, zoology and cell biology	0	0	0	0	0	0	0	**0**			
		Feed plant biology and toxic plants	0	0	0	0	0	0	0	**0**			
		Biomedical statistics	0	0	0	0	0	0	0	**0**			
Specific veterinary subjects	Basic Sciences	Anatomy, histology and embryology	0	0	1	0	23	0	0	**23**			
		Physiology	1	0	0	0	0	0	0	**1**			
		Biochemistry	0	0	0	0	0	0	0	**0**			
		General and molecular genetics	1	0	0	0	0	0	0	**1**			
		Pharmacology, pharmacy and pharmacotherapy	2	3	0	0	0	0	0	**5**			
		Pathology	0	0	0	0	0	0	0	**0**			
		Toxicology	0	0	0	0	0	0	0	**0**			
		Parasitology	0	0	1	0	0	0	0	**1**			
		Microbiology	0	0	1	0	0	0	0	**1**			
		Immunology	0	0	0	2	0	0	0	**2**			
		Epidemiology	0	0	0	0	0	0	0	**0**			
		Information literacy and data management	0	0	0	0	0	0	0	**0**			
		Professional ethics and communication	2	2	0	0	0	0	0	**4**			
		Animal health economics and practice management	0	0	0	0	0	0	0	**0**			
		Animal ethology	0	0	0	0	0	0	0	**0**			
		Animal welfare	1	0	0	0	0	0	0	**1**			
		Animal nutrition	2	0	5	8	0	0	0	**14**			
	Clinical Sciences Companion animals and exotic pets	Obstetrics, reproduction and reproductive disorders	0	0	0	0	0	0	0	**0**			
		Diagnostic pathology	0	0	0	0	0	0	0	**0**			
		Medicine	0	0	0	0	0	0	0	**0**			
		Surgery	0	0	0	0	0	0	0	**0**			
		Anesthesiology	0	0	0	0	0	0	0	**0**			
		Clinical practical training in common animal species	0	0	0	0	0	0	0	**0**			
		Preventive medicine	0	0	0	0	0	0	0	**0**			
		Diagnostic imaging	0	0	0	0	0	0	0	**0**			
		Therapy in common animal species	0	0	0	0	0	0	0	**0**			
	Clinical Sciences Equine	Obstetrics, reproduction and reproductive disorders	4	0	4	0	0	36	0	**43**			
		Diagnostic pathology	0	0	0	0	0	0	0	**0**			
		Medicine	0	0	2	0	0	143	0	**145**			
		Surgery	2	4	0	0	4	100	0	**110**			
		Anesthesiology and analgesia	2	0	0	2	0	50	0	**54**			
		Clinical practical training in common animal species	14	9	0	2	0	186	0	**210**			
		Infectious diseases	2	0	0	2	0	0	0	**4**			
		Preventive medicine	2	2	0	0	0	0	0	**3**			
		Diagnostic imaging	3	4	0	0	0	16	0	**23**			
		Therapy in common animal species	3	0	0	0	0	33	0	**36**			
	Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Obstetrics, reproduction and reproductive disorders	0	0	0	0	0	0	0	**0**			
		Diagnostic pathology	0	0	0	0	0	0	0	**0**			
		Medicine	0	0	0	0	0	0	0	**0**			
		Surgery	0	0	0	0	0	0	0	**0**			
		Anesthesiology and analgesia	0	0	0	0	0	0	0	**0**			
		Clinical practical training in common food producing animals	0	0	0	0	0	0	0	**0**			
		Infectious diseases	0	0	0	0	0	0	0	**0**			
		Preventive medicine	0	0	0	0	0	0	0	**0**			
		Diagnostic imaging	0	0	0	0	0	0	0	**0**			
		Therapy in common food producing animals	0	0	0	0	0	0	0	**0**			
		Animal Production, including breeding, husbandry and economics	0	0	0	0	0	0	0	**0**			
		Herd health management	0	0	0	0	0	0	0	**0**			
	Food Safety and Quality, Veterinary Public Health and One Health Concept	Veterinary legislation including official controls and regulatory veterinary services, forensic veterinary medicine and certification	1	0	0	0	0	0	0	**1**			
		Control of food, feed and animal by-products	0	0	0	0	0	0	0	**0**			
		Zoonoses and their prevention	0	2	0	0	0	0	0	**2**			
		Food hygiene and environmental health	0	0	0	0	0	0	0	**0**			
		Basic food technology	0	0	0	0	0	0	0	**0**			

3.1.2. Master uniform

			Hours							
			lectures	seminars	supervised self-learning	laboratory and desk based work	non-clinical animal work	clinical animal work	others (specify)*	**total**
Basic subjects		Medical physics	0	0	0	0	0	0	0	**0**
		Chemistry (inorganic and organic sections)	0	0	0	0	0	0	0	**0**
		Animal biology, zoology and cell biology	0	0	0	0	0	0	0	**0**
		Feed plant biology and toxic plants	0	0	0	0	0	0	0	**0**
		Biomedical statistics	0	0	0	0	0	0	0	**0**
Specific veterinary subjects	Basic Sciences	Anatomy, histology and embryology	0	0	0	0	0	0	0	**0**
		Physiology	0	0	0	0	0	0	0	**0**
		Biochemistry	0	0	0	0	0	0	0	**0**
		General and molecular genetics	0	0	0	0	0	0	0	**0**
		Pharmacology, pharmacy and pharmacotherapy	5	16	9	0	0	0	2	**32**
		Pathology	0	1	9	0	0	0	0	**9**
		Toxicology	0	2	4	0	0	0	0	**6**
		Parasitology	0	1	2	9	0	0	0	**11**
		Microbiology	2	3	0	14	0	0	0	**19**
		Immunology	0	4	0	5	0	0	0	**9**
		Epidemiology	0	0	0	0	0	0	0	**0**
		Information literacy and data management	2	18	18	5	0	0	4	**46**
		Professional ethics and communication	14	73	17	17	1	0	4	**124**
		Animal health economics and practice management	3	9	0	0	0	0	0	**12**
		Animal ethology	0	0	0	0	0	0	0	**0**
		Animal welfare	0	13	5	0	0	0	0	**18**
		Animal nutrition	7	6	0	0	0	0	0	**13**
	Clinical Sciences Companion animals and exotic pets	Obstetrics, reproduction and reproductive disorders	0	0	0	0	0	0	0	**0**
		Diagnostic pathology	1	1	1	0	0	5	1	**8**
		Medicine	0	0	1	0	0	0	0	**1**
		Surgery	0	2	0	0	0	26	0	**28**
		Anesthesiology	0	1	2	0	0	14	2	**18**
		Clinical practical training in common animal species	2	5	10	2	2	63	1	**84**
		Preventive medicine	0	5	0	0	0	0	0	**5**
		Diagnostic imaging	0	0	0	0	0	0	0	**0**
		Therapy in common animal species	0	0	4	0	4	0	0	**7**
	Clinical Sciences Equine	Obstetrics, reproduction and reproductive disorders	1	4	0	0	2	0	0	**6**
		Diagnostic pathology	1	1	1	0	0	5	1	**8**
		Medicine	0	0	0	0	0	58	0	**58**
		Surgery	0	1	0	0	2	43	0	**45**
		Anesthesiology and analgesia	0	1	0	0	0	0	0	**1**
		Clinical practical training in common animal species	0	4	0	0	10	39	0	**52**
		Infectious diseases	0	0	0	0	0	0	0	**0**
		Preventive medicine	0	5	0	0	0	19	0	**25**
		Diagnostic imaging	0	0	0	0	0	0	0	**0**
		Therapy in common animal species	0	0	0	0	2	0	0	**2**
	Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Obstetrics, reproduction and reproductive disorders	0	0	0	0	4	0	0	**4**
		Diagnostic pathology	2	2	2	0	0	9	1	**15**
		Medicine	0	0	0	0	0	0	0	**0**
		Surgery	0	0	0	0	0	0	0	**0**
		Anesthesiology and analgesia	0	0	0	0	1	0	0	**1**
		Clinical practical training in common food producing animals	3	1	0	0	7	22	0	**32**
		Infectious diseases	0	0	0	0	0	0	0	**0**
		Preventive medicine	1	6	2	0	0	0	0	**9**
		Diagnostic imaging	0	0	0	0	0	0	0	**0**
		Therapy in common food producing animals	0	0	0	0	0	0	0	**0**
		Animal Production, including breeding, husbandry and economics	0	6	7	2	0	30	0	**44**
		Herd health management	1	0	0	0	0	4	0	**5**
	Food Safety and Quality, Veterinary Public Health and OneHealth Concept	Veterinary legislation including official controls and regulatory veterinary services, forensic veterinary medicine and certification	4	3	6	7	2	1	1	**22**
		Control of food, feed and animal by-products	2	6	1	10	1	4	1	**25**
		Zoonoses and their prevention	5	4	7	13	0	3	1	**32**
		Food hygiene and environmental health	1	2	1	6	0	0	1	**11**
		Basic food technology	0	0	0	0	2	0	0	**2**

Breakdown of the curriculum hours taken by each student in the uniform part (taken in the first year) of the Master's programme (i.e. compulsory courses).

* Exams, escaperoom, practicum applying techniques, skillslab, one health game

3.1.3. Practical rotations under teaching staff supervision (excluding EPT)

	Primary type	*List of practical rotations*	*compulsory for students with differentiation*	*Duration (weeks)*	*Year of programme*
Types	Herd Health Management	Basiscoschap Landbouwhuisdieren	all	5	1
	Herd Health Management	Sustainable animal production chains	FAH	5	2
	Herd Health Management	Poultry health management	FAH	5	2
	Herd Health Management	Swine health management	FAH	5	2
	Herd Health Management	Dairy health management	FAH	5	2
	Intra-mural clinics (VTH)	Basiscoschap Gezelschapsdieren	all	5	1
	Intra-mural clinics (VTH)	Basiscoschap Paard	all	5	1
	Intra-mural clinics (VTH)	Prekliniek GD	CAM	5	2
	Intra-mural clinics (VTH)	Interne geneeskunde 1	CAM	5	2
	Intra-mural clinics (VTH)	Chirurgie 1	CAM	5	2
	Intra-mural clinics (VTH)	Spoed- en Intensieve Zorggeneeskunde en Vogel	CAM	5	2
	Intra-mural clinics (VTH)	Prekliniek Paard	EqM	5	2
	Intra-mural clinics (VTH)	Ambulante kliniek en Voortplanting	EqM	5	2
	Intra-mural clinics (VTH)	Heelkunde	EqM	5	2
	Intra-mural clinics (VTH)	Inwendige ziekten	EqM	5	2
	VPH (including FSQ)	Basiscoschap Veterinaire Volksgezondheid	all	5	1

3.5.1. Curriculum days of Elective Practical Training (EPT) for each student. In additional colums information is given on the mandatory nature and accesibility of each course

Fields of Practice

Field of Practice	*Course title*	*Course co-ordinator*	*compulsory for students with differentiation*	*accessible for students with differentiation*	*duration (weeks)*	*Year of programme*
Companion animals (clinical)	JECo CAM	Annemarie Spruijt	CAM	n/a	5	1
Companion animals (clinical)	SECo CAM	Annemarie Spruijt	CAM	n/a	5	3
Companion animals (clinical)	The advising companion animal veterinarian	Jeffrey de Gier	n/a	CAM/FAH/EqM	5	2 or 3
Companion animals (clinical)	Diagnostic and clinical skills	Niels Dekker	n/a	CAM/FAH/EqM	5	2 or 3
Companion animals (clinical)	Companion animal surgery 2	Sarah van Rijn	n/a	CAM	5	2 or 3
Companion animals (clinical)	Companion animal internal disease 2	Montse Diaz	n/a	CAM	5	2 or 3
Companion animals (clinical)	Companion animal internal disease 3	Montse Diaz	n/a	CAM	5	2 or 3
Companion animals (clinical)	Companion animal orthopedics/neurosurgery	Sarah van Rijn	n/a	CAM	5	2 or 3
Companion animals (clinical)	Companion animal soft tissue surgery	Sarah van Rijn	n/a	CAM	5	2 or 3
Companion animals (clinical)	Birds, exotic animals & small mammals	Nico Schoemaker, Yvonne van Zeeland	n/a	CAM	5	2 or 3
Companion animals (clinical)	CAM VTH internship:					
Companion animals (clinical)	/ophthalmology	Sylvia Djajadiningrat-Laanen	n/a	CAM	1	2 or 3
Companion animals (clinical)	/dentistry	Henriette Booij-Vrieling	n/a	CAM	1	2 or 3
Companion animals (clinical)	/critical & emergency care	Joris Robben	n/a	CAM	1	2 or 3
Companion animals (pre-clinical)	Pre-clinic CAM	Hans Kooistra	n/a	FAH/EqM	5	2 or 3
Equine (clinical)	JECo EqM	Ellen Roelfsema	EqM	n/a	5	1
Equine (clinical)	SECo EqM	Ellen Roelfsema	EqM	n/a	10	3
Equine (clinical)	Ambulatory care and reproduction	Yteke Elte	n/a	CAM/FAH/EqM	5	2 or 3
Equine (clinical)	Animal Movement Sciences	Filipe Serra Braganca	n/a	CAM/FAH/EqM	5	2 or 3
Equine (clinical)	Equine surgery 2	Robin van den Boom, Jos Ensink	n/a	EqM	5	2 or 3
Equine (clinical)	Equine surgery 3	Robin van den Boom, Jos Ensink	n/a	EqM	5	2 or 3
Equine (clinical)	Equine internal medicine 2	Robin van den Boom, Jos Ensink	n/a	EqM	5	2 or 3
Equine (clinical)	Equine internal medicine 3	Robin van den Boom, Jos Ensink	n/a	EqM	5	2 or 3
Equine (clinical)	Equine reproduction	Anthony Claes	n/a	EqM	5	2 or 3
Equine (clinical)	Equine clinical rotation general	Jos Ensink, Robin van den Boom	n/a	CAM/FAH/EqM	5	2 or 3
Equine (clinical)	Equine clinical rotation advanced	Jos Ensink, Robin van den Boom	n/a	EqM	5	2 or 3
Equine (clinical)	EqM VTH internship	various	n/a	CAM/FAH/EqM	1	2 or 3
Others (specify)	Pathology internship	various	n/a	CAM/FAH/EqM	1	3 or 3
Production animals (clinical)	JECo FAH	Arie van Nes	FAH	n/a	5	1
Production animals (clinical)	SECo FAH	Arie van Nes	FAH	n/a	10	3
Production animals (clinical)	Farm analysis	Bas Swildens	n/a	FAH	10	2 or 3
Production animals (clinical)	Farm animal clinic	Ruurd Jorritsma	n/a	CAM/EqM	5	2 or 3
Production animals (clinical)	Farm animal clinic extended	Ruurd Jorritsma	n/a	FAH	10	2 or 3
Production animals (clinical)	ULP general	David Speksnijder	n/a	CAM/EqM	5	2 or 3
Production animals (clinical)	ULP advanced	David Speksnijder	n/a	FAH	5	2 or 3
Production animals (clinical)	Advanced Swine Health	Arie van Nes	n/a	FAH	5	2 or 3
Production animals (clinical)	Advanced Poultry Health	Mieke Matthijs	n/a	FAH	5	2 or 3
Production animals (clinical)	Small ruminants and camelids	Gerrit Koop	n/a	CAM/FAH/EqM	1	2 or 3
Production animals (pre-clinical)	Sustainable Animal Production Chains	Sylvia Bannier / Thomas Schonewille	n/a	CAM/EqM	5	2 or 3
VPH (including FSQ)	Supervisory Veterinarian	Sylvia Bannier-Strik	n/a	CAM/FAH/EqM	5	2 or 3

Area 3 Courses plotted against subjects Bachelor

			From organism to tissue	From cell to molecule	From cell to tissue	From genome to population	Physiology & Pharmacology	Infection & Immunity	Circulation & respiration	Blood & blood-forming organs	LVP Veterinary professional	LVC Veterinary clinician	Digestion 1	Kidneys & urinary tracts	Digestion 2	Metabolism & Endocrinology	Nutrition	Adaptation & Welfare	Neurology, the senses & anaestesiology	Skin & skin derivates	LVC Veterinary clinician 2	LVP Veterinary professional 2	Reproduction	Veterinary public health	Locomotion	Epidemiology & Economics	Integration and multi-organ diseases	Surgery	LVP Veterinary professional 3	LVC Veterinary clinician 3
Basic subjects	Basic Sciences	Medical physics	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
		Chemistry (inorganic and organic sections)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		Animal biology, zoology and cell biology	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Feed plant biology and toxic plants	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
		Biomedical statistics	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
		Anatomy, histology and embryology	1	0	1	0	1	0	1	1	0	0	1	1	1	0	0	0	1	1	0	0	1	0	1	0	0	1	0	0
		Physiology	1	0	0	0	1	0	1	1	0	1	1	1	1	1	0	1	1	1	0	0	1	0	1	0	1	0	0	0
		Biochemistry	0	1	1	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		General and molecular genetics	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Pharmacology, pharmacy and pharmacotherapy	0	0	0	0	1	0	1	1	0	0	1	1	1	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0
		Pathology	1	0	1	0	0	1	1	1	0	0	1	1	1	1	0	0	1	1	1	0	1	0	1	0	1	0	0	1
		Toxicology	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Parasitology	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
		Microbiology	0	0	0	0	0	1	1	0	0	1	1	0	1	0	0	0	1	0	1	0	0	0	0	0	1	0	0	1
		Immunology	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	1	0	1	1	0	0	0	1	0	1	0	0	0
		Epidemiology	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Information literacy and data management	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1
		Professional ethics and communication	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1
		Animal health economics and practice management	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
		Animal ethology	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
		Animal welfare	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
		Animal nutrition	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Specific veterinary subjects	Clinical Sciences Companion animals and exotic pets	Obstetrics, reproduction and reproductive disorders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		Diagnostic pathology	0	0	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Medicine	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
		Surgery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Anesthesiology	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
		Clinical practical training in common animal species	0	1	0	0	0	0	1	1	0	1	1	1	1	1	0	1	1	0	1	0	1	0	1	0	0	0	0	1
		Preventive medicine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Diagnostic imaging	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Clinical Sciences Equine	Therapy in common animal species	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
		Obstetrics, reproduction and reproductive disorders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		Diagnostic pathology	0	0	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Medicine	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Surgery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Anesthesiology and analgesia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
		Clinical practical training in common animal species	0	0	0	0	0	0	1	1	0	1	0	0	1	1	0	0	1	1	1	0	1	0	1	0	0	0	0	1
		Infectious diseases	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
		Preventive medicine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Diagnostic imaging	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		Therapy in common animal species	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Obstetrics, reproduction and reproductive disorders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		Diagnostic pathology	0	0	0	0	0	1	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		Medicine	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
		Surgery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Anesthesiology and analgesia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
		Clinical practical training in common food producing animals	0	0	0	0	0	0	1	1	0	1	0	0	1	1	0	0	1	0	1	0	1	0	0	0	1	0	0	1
		Infectious diseases	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
		Preventive medicine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Diagnostic imaging	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		Therapy in common food producing animals	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
		Animal Production, including breeding, husbandry and economics	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
		Herd health management	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	Food Safety and Quality, Veterinary Public Health and One Health Concept	Veterinary legislation including official controls and regulatory veterinary services, forensic veterinary medicine and certification	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0
		Control of food, feed and animal by-products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
		Zoonoses and their prevention	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0
		Food hygiene and environmental health	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
		Basic food technology	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Area 3 Courses plotted against subjects Master

Subject area	Subject	Master introduction course	Paraclinical and cross species education	Basic rotation VPH	Basic rotation Farm animal health	Basic rotation companion animal medicine	Basic rotation Equine medicine	Extramural clerkship GD (JECO)	Extramural clerkship LH (JECO)	Extramural clerkship P (JECO)	Personal and professional development	Pre-clinic companion animals	Internal medicine 1	Surgery 1	Emergency and intensive care, bird and small mammal medicine	Sustainable Animal Production Chains	Poultry Health Management	Swine Health Management	Dairy Health Management	Pre-clinic horse	Ambulatory care and reproduction	Surgery 2	Internal disease
Basic subjects	Medical physics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Basic subjects	Chemistry (inorganic and organic sections)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Basic subjects	Animal biology, zoology and cell biology	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Basic subjects	Feed plant biology and toxic plants	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
Basic subjects	Biomedical statistics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Specific veterinary subjects – Basic Sciences	Anatomy, histology and embryology	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Specific veterinary subjects – Basic Sciences	Physiology	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
Specific veterinary subjects – Basic Sciences	Biochemistry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Specific veterinary subjects – Basic Sciences	General and molecular genetics	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
Specific veterinary subjects – Basic Sciences	Pharmacology, pharmacy and pharmacotherapy	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	1	0	0	0
Specific veterinary subjects – Basic Sciences	Pathology	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Specific veterinary subjects – Basic Sciences	Toxicology	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Specific veterinary subjects – Basic Sciences	Parasitology	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
Specific veterinary subjects – Basic Sciences	Microbiology	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0
Specific veterinary subjects – Basic Sciences	Immunology	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0
Specific veterinary subjects – Basic Sciences	Epidemiology	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0
Specific veterinary subjects – Basic Sciences	Information literacy and data management	1	0	1	0	0	0	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0
Specific veterinary subjects – Basic Sciences	Professional ethics and communication	1	0	1	0	1	1	1	1	1	1	1	0	1	0	0	0	1	1	1	0	0	0
Specific veterinary subjects – Basic Sciences	Animal health economics and practice management	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	0	0	0	0
Specific veterinary subjects – Basic Sciences	Animal ethology	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0
Specific veterinary subjects – Basic Sciences	Animal welfare	0	0	1	0	0	0	1	1	1	0	1	0	0	0	0	1	1	0	1	0	0	0
Specific veterinary subjects – Basic Sciences	Animal nutrition	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	1	0	0	1
Clinical Sciences Companion animals and exotic pets	Obstetrics, reproduction and reproductive disorders	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Clinical Sciences Companion animals and exotic pets	Diagnostic pathology	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clinical Sciences Companion animals and exotic pets	Medicine	0	0	0	0	1	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0
Clinical Sciences Companion animals and exotic pets	Surgery	0	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
Clinical Sciences Companion animals and exotic pets	Anesthesiology	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
Clinical Sciences Companion animals and exotic pets	Clinical practical training in common animal species	0	0	0	0	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Clinical Sciences Companion animals and exotic pets	Preventive medicine	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clinical Sciences Companion animals and exotic pets	Diagnostic imaging	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Clinical Sciences Companion animals and exotic pets	Therapy in common animal species	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Clinical Sciences Equine	Obstetrics, reproduction and reproductive disorders	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Clinical Sciences Equine	Diagnostic pathology	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clinical Sciences Equine	Medicine	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Clinical Sciences Equine	Surgery	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Clinical Sciences Equine	Anesthesiology and analgesia	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Clinical Sciences Equine	Clinical practical training in common animal species	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	1
Clinical Sciences Equine	Infectious diseases	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Clinical Sciences Equine	Preventive medicine	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
Clinical Sciences Equine	Diagnostic imaging	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Clinical Sciences Equine	Therapy in common animal species	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Obstetrics, reproduction and reproductive disorders	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Diagnostic pathology	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Medicine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Surgery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Anesthesiology and analgesia	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Clinical practical training in common food producing animals	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Infectious diseases	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0
Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Preventive medicine	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	0	0	0	0
Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Diagnostic imaging	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Therapy in common food producing animals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Animal Production, including breeding, husbandry and economics	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0
Clinical Sciences food-producing animals (including Animal Production and Herd Health Management)	Herd health management	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0
Food Safety and Quality, Veterinary Public Health and One Health Concept	Veterinary legislation including official controls and regulatory veterinary services, forensic veterinary medicine and certification	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0
Food Safety and Quality, Veterinary Public Health and One Health Concept	Control of food, feed and animal by-products	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Food Safety and Quality, Veterinary Public Health and One Health Concept	Zoonoses and their prevention	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0	0
Food Safety and Quality, Veterinary Public Health and One Health Concept	Food hygiene and environmental health	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
Food Safety and Quality, Veterinary Public Health and One Health Concept	Basic food technology	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0

Colophon

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