

**European Association
of Establishments for Veterinary Education**

**Association Européenne
des Établissements d'Enseignement Vétérinaire**



**REPORT on the STAGE 1 EVALUATION VISITATION to the FACULTY of VETERINARY
MEDICINE and BIOSCIENCES, OSLO, NORWAY**

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INTRODUCTION

The Norwegian School of Veterinary Sciences was first established in 1935. Since then, it has been the only institution in Norway that is authorised to offer education and award professional and PhD degrees within the field of veterinary medicine and related sciences. It is currently mainly located in Oslo. In 2008 the Norwegian Parliament decided that the School should be merged with the University of Life Sciences (UMB) at Ås into a new university, the Norwegian University of Life Sciences (NUMB). Furthermore, the establishment had to merge with three departments of UMB to form a new Faculty, the Faculty of Veterinary Medicine and Biosciences (VETBIO). This is one of three Faculties in the NMBU. The creation of the NMBU occurred on the 1st January 2014. The Norwegian Parliament also decided that completely new buildings and facilities will be constructed on the Ås campus of the UMB. These buildings will house both the establishment and the Norwegian Veterinary Institute. The buildings are expected to be completed in 2019. Meanwhile the former Norwegian School of Veterinary Sciences is in a transition phase in which a new organisational and financial structure that has to be implemented and in which no major investments in the facilities at the campus in Adamstuen are possible. The establishment has also a smaller campus in Sandnes, 600 km far from Oslo at the South-West coast of Norway. This campus is shared with the Norwegian Veterinary Institute and the Norwegian Food Safety Authority.

Presently the establishment has 487 students among which are 99 PhD students. The establishment admits around 70 students annually and graduates approximately 60 students annually. Due to the present location of the main campus in Oslo, a city with 1.5 million inhabitants, pet animals are abundantly present. Furthermore, horses are prevalent in the environment of Oslo, whereas pigs are less important. The Sandnes campus is located in a region with the most highly concentrated number of farm animals in Norway. The establishment has a unique position regarding its teaching of Aquatic medicine which occurs throughout the curriculum since Atlantic salmon and aquaculture industry are of major significance to the veterinary profession in Norway.

The establishment has already been EAEVE-visited twice, the last time in 2004; since then it has introduced important changes into the curriculum such as a block structure for the first 3 years and elective tracks the last year of the curriculum. Furthermore, it has increased the number of enrolled students from 60 to 70. The establishment has made major efforts to comply with the suggestions made in the previous visitation report. Besides, the establishment is highly aware of the importance of research in the veterinary field and major efforts have been done to implement a research project elective tract in the curriculum. In addition, building plans have been approved and a new state-of-the-art campus with large and small animal teaching hospital and research facilities (eg for Aquatic medicine) will emerge soon near the experimental farm in Ås.

The entire teaching at the establishment is in full compliance with the EU Directive 36/2005 and the Bologna declaration except that the Bachelor and master's degree system is not applied. In order to graduate, students deliver a degree thesis and obtain the title "*Candidata/candidatus medicinae veterinariae (Cand.med.vet.)*". The diploma allows obtaining authorisation by the Food Safety Authority to practice as a veterinarian in Norway.

1 OBJECTIVES & STRATEGY

1.1 Findings

The SER describes the vision of the establishment, i.e. to be among the leading and most progressive veterinary institutions in Europe within research, education and communication of knowledge, and its main objectives, i.e.:

- have good basic knowledge and skills in veterinary medicine so that they can work to improve animal health, public health and animal welfare
- understand both the meaning of the terms "one health - one world" and "animal's own value" and act ethically in line with this
- have a broad understanding of the nature of scientific issues and are able to identify, formulate and solve complex problems within the veterinary field of work and research
- have the ability to communicate in an understandable, efficient and respectful manner with clients, the public, colleagues and responsible authorities
- know their professional limitations, and safeguard professional liability through further education, training and professional development throughout life.

The SER provides little information on how and when this strategy is implemented and the proposed SWOT analysis is quite limited.

However, several meetings with the authorities, ie rector, pro-rector, dean, study programme director and heads of departments, have provided additional information on the objectives and the strategy to achieve them.

Clearly, evidence has been provided that the current authorities (see chapter 2 for details) consider the veterinary education as a top priority, are fully committed to permanently develop the establishment to reach excellence in veterinary education and research, and agree to comply with EAEVE SOP. This concerns individual medicine, population medicine, animal production, food safety and 'green' economy.

1.2 Comments

As the establishment is in a transition period between two rather different organisational structures and new authorities have been appointed only recently (see chapter 2 for details), the new strategy plan has not yet been fully finalised, which may induce some confusion in staff members, students and stakeholders.

However, the team has been reassured about the fact that, despite the incorporation of the veterinary establishment in a large university (see chapter 2 for details), the ability of the establishment to provide excellent veterinary education and research as well as the student-oriented policy will remain top priorities.

In the team's opinion the requirements regarding Objectives as they are laid down in Annex I of the SOP are met.

1.3 Suggestions

In order to reassure the staff, students and stakeholders with regard to the impact of the new structure and to provide consistent guidelines for the future, it is suggested to propose the new strategy plan as soon as possible in order to describe the objectives of the establishment for the near future, the strategy to achieve it as well as the schedule within which it ought to be implemented.

2 ORGANISATION

2.1 Findings

Since January 2014, the previous (and independent) Norwegian School of Veterinary Sciences is now part of the Faculty of Veterinary Medicine and Biosciences (VETBIO), which is one of the three faculties of the new Norwegian University of Life Science (NMBU).

The new organisation chart is described in Figure 1 and the list of current degrees provided by VETBIO is described in Table 1.

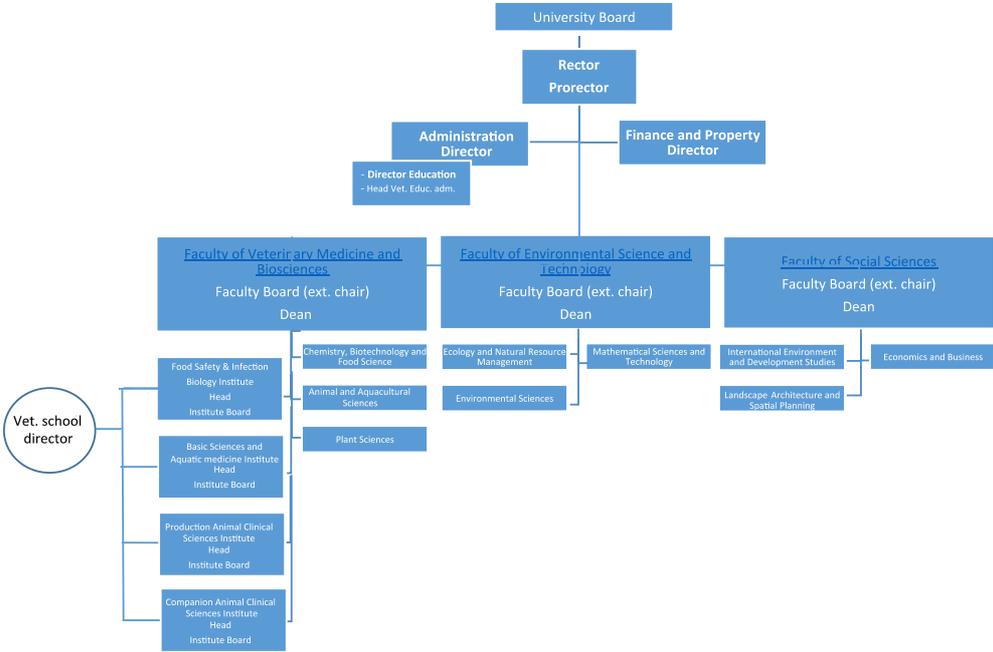


Figure 1. Organisation chart of the new University (NMBU)

Table 1. Degrees provided by the Faculty of Veterinary Medicine and Biosciences (VETBIO) and number of students who graduated in 2013

	Vet nurse	VET	Master	Bachelor	Total
Veterinary Departments	19	71			90
Veterinary medicine		71			71
Veterinary Nursing	19				19
Department of Animal and Aquacultural Sciences			47	28	75
Animal Breeding and Genetics			6		6
Animal Science			19	21	40
Aquaculture			13		13
Equine sciences				7	7
Feed Manufacturing Technology			9		9
Department of Chemistry, Biotechnology and Food Science			70	65	135
Food Science and Nutrition			20	18	38
Bioinformatics and Applied Statistics			3		3
Biotechnology			15	37	52
Chemistry and Biotechnology			13		13
Chemistry			9	10	19
Microbiology			10		10
Department of Plant Sciences			18	14	32
Plant Science			18	14	32
Total	19	71	135	107	332

The veterinary part of the faculty (referred to as 'the establishment') is subdivided into four departments, ie:

- Department of Basic Sciences and Aquatic Medicine (BasAM)
- Department of Food Safety and Infection Biology (MatInf)
- Department of Production Animal Clinical Sciences (ProdMed)
- Department of Companion Animal Clinical Sciences (SportFaMed).

These departments are in charge of two degrees, ie Veterinary Medicine and Veterinary Nursing.

The new authorities (not fully listed in the SER) are currently:

Mari Sundli Tveit : Rector of NMBU

Halvor Hektoen: Pro-Rector of NMBU

Siri Hatlen: Chair of the NMBU Board

Øystein Lie : Dean of VETBIO

Odd Magne Rodseth : Chair of the VETBIO Board

Yngvild Wasteson: Study Programme Director (0.5 FTE) for veterinary education

Ann Kristin Egeli : Head of the study affairs administration of NMBU, campus Adamstuen

Ann Margareth Grøndal : Head of SportFaMed and chair of the Department Board

Olav Reksen Head of ProdMed and chair of the Department Board

Mona Aleksandersen : Head of BasAM and chair of the Department Board

Per Einar Granum : Head of MatInf and chair of the Department Board.

The VETBIO Vice-Dean has not been appointed yet.

The current pro-Rector, Dean, Study Programme Director, Head of the Study Affairs Administration (campus Adamstuen) and most heads of department hold a veterinary degree.

Currently, the establishment is mainly based in Oslo but uses additional animal and clinical facilities in Ås (35km from Oslo) and in Sandnes (600km from Oslo). The transfer of the students to these facilities is funded by the establishment.

In 2019, the entire campus of Oslo will move to a completely new site in Ås. A budget of about 0.9 billion Euros has been officially allocated by the Norwegian Parliament for the new buildings, scientific infrastructures, equipment and furniture.

Structured collaboration is well established with the National Veterinary Institute, the National Institute of Health and as well as with other NMBU departments (mainly in the area of population medicine, animal production, food sciences and veterinary public health), however, not with the Faculty of Medicine of the University of Oslo, although informal collaboration does exist between some laboratories.

There are two official students' organisations, ie the Veterinary Student Council (VSR) and the Veterinary Social Organisation (VSF). VSR is the official liaison between the veterinary and veterinary nurse students as well as the relevant boards (at the university, faculty and department levels). The purpose of VSR is to exercise students' influence on the establishment and to maintain contact with their executive committees and students' representatives in the different boards. The VSR Board consists of 8 veterinary students and 1 veterinary nurse student who meet every 2 weeks. Students that are members of the different boards report to them, so they can spread the information to the rest of the students via their representatives in each study year. Once each semester the VSR organises a general assembly, which is an open meeting for all students where they can address problems etc. Since the merger with the NMBU, student representatives have also been partaking in the Student Parliament, the student board of the NMBU.

VSF mainly takes care of the social activities for the students. Many traditions are kept in honour and supported (also financially) by the establishment. The social and sport infrastructure, e.g. gym, sauna, Bodega (a room where parties are thrown and music band rehearsals take place) is quite outstanding.

2.2 Comments

As the new organisational structure came into existence only recently, it is too early to evaluate if the establishment has adequate influence on University policy, if it is sufficiently autonomous and if the new decision-making process proves effective despite the numerous levels of management.

Furthermore, for the time being, it is rather difficult to evaluate if departments involved in veterinary education are coordinated amongst themselves in terms of consistency in the curriculum and use of resources, since the 'faculty' level appears to be quite weak in the new structure (see chapter 3 for details).

After meeting the authorities, staff, students and stakeholders, it appears to the team that the establishment is undergoing a major change from a small and independent institution (easy to manage but with limited resources) into a large university (more difficult to manage but with larger resources).

The new structure undoubtedly presents some major opportunities like:

- A larger and more robust organisation with a stronger voice and credibility
- More efficient administrative, IT and technical resources for staff and students
- Easier collaborations with other faculties
- A broader student environment
- New facilities more adapted for modern educational methods.

However, joining a larger institution presents also some potential threats such as:

- More complicated organisation, with a risk of communication problems or slower reactivity
- Too many boards (at the University, Faculty and departments levels) with a risk of inconsistency or conflict
- Less availability for education and research because of time-consuming administration duties
- Less visibility of the veterinary part of the University.

The huge investment for the building of the new campus in Ås, the animal hospital, facilities for research, the experimental farms, student facilities and the assertion of the new authorities of the establishment clearly indicate that veterinary education and research remain a top priority for the Norwegian Parliament and for the NMBU.

Both student organisations (VSR and VFS) are very well organised and have excellent contacts with academic staff and authorities. They are involved in the different boards and councils where they have a voice and the authorities listen to them. They were involved in discussions about the new structure of the establishment and the future move of the main campus to Ås, e.g. by giving feedback on plans.

It is the opinion of the team that the requirements regarding Organisation as they are laid down in Annex I of the SOP are met.

2.3 Suggestions

It is suggested to evaluate, after the current transition year, if the new organisational structure is the most appropriate one to achieve the objectives of the establishment, e.g. to investigate if the high numbers of boards and management levels should not be reduced in order to better warrant efficiency and consistency.

It is also recommended to formalise some collaboration with the Faculty of Medicine of the University of Oslo (and other faculties or institutes), e.g. by creating transversal research centres in order to implement the 'one health' concept, to share expensive research equipment and tools and to be more competitive with a view to applying to national and international research grants.

3 FINANCES

3.1 Findings

Public funding of the establishment represents about 60% of the total income. In 2013, the establishment received 42.911 € per student per year, which is the highest level provided by the Norwegian Government for Higher Education. About 60% of this amount is provided upon registration, the remaining 40% upon graduation. These amounts are indexed on an annual basis.

The remaining funding (about 40%) is mainly provided by clinical and diagnostic incomes and research grants. Student's fees (70 euro pr. semester) go directly to the Student Welfare Organization in Oslo and are exclusively used for students' facilities and services.

The funding of each department is fixed by the University Board (with lower impact and control from the Faculty level) on an annual basis. The basic allocation (about 90%) is mainly based on the department's educational charges and the remaining amount (about 10%) is given as an incentive based on teaching and research performance (eg number of PhD and publications). This funding includes personnel and running costs and the proportion devoted to research activities is decided by the Department Board. Clearly the teaching and research activities are strongly integrated.

The building's maintenance and refurbishment are mainly funded by the Technical Services of the University.

The overheads on clinical and research incomes vary between 0 and 20%. Some solidarity does exist between departments when deficits occur at the end of the year.

A unit (TTO) devoted to the development of the research's results and the intellectual property has been created at the University level, which is appreciated by some research laboratories.

3.2 Comments

The level of public funding is appropriate for achieving the educational objectives of the establishment and for contributing to research activities, the remaining requests being funded by external incomes.

A potential worry is the growing proportion of salary costs (between 76 and 86% in the different departments) in the total budget, which may affect the availability of sufficient funding for running costs and purchasing of new equipment.

Another worry shared by some staff members is the current power of the Faculty level which appears to be weakened due to direct interaction between the University and the Department levels. Indeed, the NMBU budget model is different from the previous model of the establishment concerning the allocation of the money directly to the departments. Since important decisions are currently taken by the Department Board, there is a risk of insufficient coordination between the different departments and of inconsistency in the veterinary curriculum.

Due to increasing competition, research income is decreasing. The establishment has a strategic research plan one of the pillars of which is Aquatic medicine.

It is the opinion of the team that the requirements regarding Finances as they are laid down in Annex I of the SOP are met.

3.3 Suggestions

It is suggested to avoid an excessive proportion of the salary costs in the total budget, in order to keep sufficient funding for running costs and equipment.

It is also suggested to analyse if, in the new structure, the role and power of the Faculty level should not be reinforced in order to warrant the coordination between departments and the consistency in the veterinary educational programme.

A strategic plan on how to increase the income of the establishment/departments via services could be a way to help to cope with the increasing costs.

4 CURRICULUM

4.1 GENERAL ASPECTS

4.1.1 Findings

The study programme at the establishment is governed by Universities and University Colleges Act (2005). The establishment was a specialised university institution and has the authority to decide itself, which study programmes and disciplines the institution shall provide. The establishment's Board approves the programme description. The veterinary education comprises 5.5 to 6 years of study and leads to the degree Candidata/candidatus medicinae veterinariae (Cand.med.vet.). The academic years are divided into two semesters and teaching is conducted in 11 semesters. The entire veterinary curriculum is equivalent to 330 ECTS. Most of the veterinary curriculum is composed of "core" subjects that must be taken by every student. These subjects account for 278.5 ECTS of a total of 330 ECTS and are mainly in semesters 1 to 9. The core preclinical subjects are organised into 10 "blocks" that represent a horizontal integration of EU-listed subjects taught in the first three years (6 semesters) of the curriculum. It is not always easy to link the hours in the SER allocated to the EU-listed subjects with the hours allocated to that subject in the block system. The reason is that one block brings together and integrates several subjects. The duration of a block ranges from 3 weeks for the shortest block to 24 weeks for the longest block. Each block is concluded with an examination.

The vertical nature is retained in the curriculum with the transition from pre-clinical to clinical subjects. The clinical training consists of one and a half years (3 semesters) of compulsory core training and one year (2 semesters) of elective track training (curriculum differentiation). However, there are some compulsory subjects in the final 2 semesters (8.5 ECTS). The first semester of core clinical training (7th semester) prepares the student for their subsequent training in the Establishment's clinics. The two remaining semesters of core clinical training are organised into a rotation through the two clinical departments and a mix rotation in the disciplines of Food Safety, Pathology, Disease Control, Public Health and Fish Health. During the eighth semester students are encouraged to take part in an international exchange. For the final 2 semesters of the veterinary curriculum, the students must choose an "elective" track from five (5) differentiation programmes, i.e., Production Animal Medicine and Food Safety, Small Animal Medicine, Equine Medicine, Aquatic Medicine, and Research project.

The elective subjects account for 51.5 ECTS and may be taken in semesters 10 and 11 ("autumn" graduates) or 11 and 12 ("spring" graduates). The spring graduates do not follow normal teaching during the 10th semester. In the final year of study, the student is required to produce an essay (final graduation thesis) which differs depending on the elective track and comprises a period of 10 weeks (15 ECTS), 13 weeks (20 ECTS) or 27 weeks (40 ECTS). The latter case includes an oral presentation as well as a discussion. The extent of self-directed learning is regarded as sufficient.

The curriculum provides a considerable variety of teaching forms for the veterinary students for theoretical (lectures, seminars, self-directed learning) and supervised practical training (desk-based and laboratory practical exercises, non-clinical practical exercise and clinical work).

All changes of course content are subject to the approval of the Veterinary Undergraduate and Continuing Education Programmes Committee (SU), and major curriculum changes also require the Rector's (study programme director in the new faculty) and Establishment Board's approval. The Rector (study programme director) has the responsibility for the allocation of hours and distribution of teaching within the veterinary curriculum as specified in a quality control system. SU conducts an annual revision of the veterinary curriculum governing the Establishment based on information obtained through a quality control system such as responses to questions of workload, comments of students, feedback scores of blocks, failure rates, input from committees such as RSA and in consideration to day-one skills and EAEVE reports, and the comments of teachers and Departments. During the 10-year period since the last EAEVE report, these annual revisions have resulted in changes to the length and content of blocks and to the procedures and organisation of examinations.

All veterinary graduates from the establishment receive a general authorisation as a Veterinary Surgeon from the National Food Safety Authority (Department of Food and Agriculture). The common authorisation allows a free choice of fields of work after graduation, regardless of the topic chosen by a student during the differentiation year. The establishment is also authorised to award a Master degree (1.5-2 year), a Philosophiae doctor (PhD, 3 year with a PhD programme) and Doctor philosophiae (Dr. Philos.). The latter is a degree obtained following the successful passing of an examination and public defence without a PhD programme.

4.1.2 Comments

The organisation of the 3 first years into blocks is quite unique. The strength of these blocks is the integration of different related subjects into a period of time, shortly followed by an examination. Students can completely focus on one block without having to study other non-related subjects. Due to the integration of related topics/subjects, it is even possible that one topic is not given by one lecturer but by several lecturers in an integrated way. This helps students to see very clearly the links between the different subjects. The teaching period is immediately followed by the examination which increases the focus of the students. If they succeed, the students do not have to study this block again. During the teaching of a block, some teachers see the students almost daily.

Some blocks are very short covering only a few weeks of lectures and practicals followed by examinations. Students lack time to study the contents thoroughly. Thus, teachers as well as students would be in favour of increasing the length of these blocks.

Lectures are not obligatory. Not all theory is lectured and students are asked to study parts of the theory out of syllabi or books by themselves. Practical are mostly obligatory and an 80 to 100 % attendance is required depending on the block.

Although there exists a considerable variety of teaching forms for the veterinary students for theoretical and supervised practical training, E-learning is used to a minor extent only.

The assessment of the balance between theoretical and practical teaching was performed in the framework of a major revision of the curriculum. It has been difficult to adjust the balance in the compulsory clinical semesters (semesters 8 and 9), however, more surgery and clinical skills preparation have been allocated to semester 7 (preparation for clinics). This resulted in a compression of the numbers of hours allocated to clinical sciences. However, there is a good balance between supervised practical work and theoretical training (≥ 0.723) and between clinical practical work and non-clinical practical work (≤ 0.876) respectively. Hands-on clinical training is regarded as sufficient - during the curriculum either on the main Campus at

Adamstuen in Oslo, in the ambulatory clinics, on the campus of the University of Life Sciences at Ås, on its research farm at Sandnes or during extramural trainings supervised by the Faculty.

At the end of the 8th curricular semester, students can choose one of five Elective Tracks (PIT). This track system is supported by students and most teaching staff. The elective tracks allow the students to improve their theoretical and practical skills in areas of specific interest. Not all of these tracks have the same number of places available but in the tracks Aquatic medicine and Research not all vacancies are filled up.

The differentiation year consists of 40 weeks of study (60 ECTS) of which approximately 50% are in general subjects similar in all the differentiation tracks (examples Legislation; Infection contagious diseases, research plan, leadership course) and 50% are specific to the particular differentiation track. Comments on the electives are given in chapter 4.6.

There is no Bachelor and Master degree, as stipulated in the Bologna agreement. However, the structure is similar with three years in which basic sciences and clinical sciences are taught, integrated in blocks, and with the next two and a half years focused on diagnosis and clinical work with first a rotation system over the different clinics during one year followed by elective tracks the last year. In this last year there is a graduation thesis for which the students have to succeed. After obtaining the diploma “candidatus medicinae veterinariae”, some excellent students can pursue a PhD programme, mostly for a three-year period leading to the title of “Philosophiae doctor” (PhD).

It is the opinion of the team that the requirements regarding Curriculum and Professional knowledge as they are laid down in Annex I of the SOP are met.

4.1.3 Suggestions

The use of E-learning during theoretical training and practical training should increase. A lot of software is available for basic and clinical sciences (biochemistry, pharmacology, toxicology, microbiology, histology etc.). Exercises should be made available via the internet using the newly installed platform. Such exercises could allow students to test their study progress.

The elective tracks are of particular interest to students. However, before they make a final decision, students ought to know the contents of the tracks and the consequences of choosing a track early in their training. A way to do that is to bring students, e.g. in the 7th semester, in contact with veterinarians who have followed different tracks. A one-day workshop/seminar where research of the establishment is presented by PhD students and where veterinarians are invited to talk about their professional experiences would be an option to facilitate decision-making. Especially for tracks, which are insufficiently elected, extra efforts are necessary e.g. practical exercises on Aquatic medicine in several blocks, more veterinary research results as examples during the lecturing and via the E-learning platform.

Furthermore, practical teaching might be increased in the more clinically oriented tracks. This is also suggested in chapter 4.3.

A graduation thesis during 10 weeks without a final oral presentation and defence is very basic. At least an oral presentation and oral defence should be implemented. Furthermore, research-based theses should be stimulated as much as possible. This could be done by giving the departments a financial incentive based on the number of research-based graduate theses they produce each year.

4.2 BASIC SUBJECTS & BASIC SCIENCES

4.2.1 Findings

The basic subjects and basic sciences are taught during the first 3 years of the studies. The courses are organised in 10 blocks. Blocks integrate related subjects. Blocks are variable in length ranging from 3 weeks to 24 weeks with an exam at the end. The veterinary curriculum devotes few hours to the teaching of basic subjects. Chemistry, physics and biomathematics are not taught in the curriculum. The 112 hours basic subjects in the curriculum are devoted to animal biology and plant biology

In anatomy and pathology, carcasses or parts of carcasses are either chilled or formalin fixed. The formalin fixed tissues are placed in ethanol water to exchange the formalin before to be used by the students. Anatomy and pathology have different facilities for practical work. There are rooms where coats and shoes can be left and replaced by protective clothing and boots and where hands can be washed before entering the section rooms. The reverse can be done leaving the section rooms to prevent spreading of a disease. Washing and disinfection of hands is possible in the section rooms. Pathology as well as anatomy have practical theatres where demonstrations can take place. There are sufficient practicals and all students are exposed to sufficient hands on experience. Demonstrations occur each day of the week which can be attended by all students.

There are practicals in physiology, pharmacology, toxicology and microbiology. Groups consist of 70 students for practicals where microscopes have to be used (histology, embryology, microbiology, parasitology and histopathology). For such large groups 4 to 5 persons help the students. For biochemistry practical training occurs in groups of 34 students. For pharmacology and toxicology practicals are limited to 4 hours each. There is a good balance between theory and practicals for most basic sciences.

4.2.2 Comments

In Norway, only 70 students can enrol for studies for veterinary medicine. However, each year about 1000 students apply. Therefore entrance is highly competitive and requirements for entrance have been implemented that are determined by the Ministry of Research and Education. The students entering the establishment must have graduated from the Norwegian upper secondary school at the highest level ("extended courses") in mathematics and chemistry. Even then only a small percentage of these students are accepted. The knowledge of these students in chemistry, mathematics and physics is considered high enough. Therefore, there are no hours allocated to these subjects.

Many subjects as specified in the EU study programme for veterinary surgeons are under pressure to expand to cope with the growing knowledge in veterinary sciences. Food safety, aquaculture, biomedicine, biotechnology, genetics, immunology are some of the tremendously expanding fields. Curriculum overload is controlled by maintaining the length of the studies for veterinary surgeon at 5.5 years. The establishment has reduced and eliminated subjects from its curriculum over a period of more than 30 years. The reduction started with the removal of the basic academic subjects that were taught in Norwegian Universities: basic logic and scientific methodology; philosophy; and psychology.

The entrance requirements have been raised to require chemistry and mathematics at the highest level to cover the basic subjects of physics, chemistry and mathematics. The reduction or elimination of subjects has created "space" in a curriculum for the teaching of subjects of national importance such as Aquatic medicine and also allows teaching subjects not required by the EU study programme but becoming increasingly relevant for a modern veterinary graduate such as medical genetics, pathophysiology or management and business economy.

Parts of basic subjects are incorporated into the basic sciences and clinical subjects. Aspects of mathematics required for statistics are taught in epidemiology; necessary concepts in physics are covered in radiology and physiology; essential chemistry is a starting point in cell biology; plant biology is taught in pharmacology and toxicology.

Although barriers exist between section rooms and biosecurity changing room there should be disinfectant baths for boots available, at least in the pathology necropsy room.

Although many different teaching methods are used, E-learning is only marginally implemented in basic science teaching.

In the team's opinion the requirements regarding Basic Sciences as they are laid down in Annex I of the SOP are met.

4.2.3 Suggestions

Although many new developments could/should be implemented in veterinary medicine, basic science teaching may not be further reduced. Sufficient knowledge of the EU-listed basic sciences is needed for students. Nevertheless, there is still room within basic science blocks to implement new techniques, developments and even hands-on training of the students e.g. in physiology, heartbeats, movement of valves and the blood stream could be shown using echography, electric heart pulses could be demonstrated using ECG and nerve functioning using electro stimulation.

In bacteriology, bacterial isolation could start from nasal samples taken from dogs, sheep or cows, until bacterial culturing on selective media followed by gram staining of the bacteria. In epidemiology a visit to the experimental farm could be used to explain how diseases spread, for instance Toxoplasmosis between sheep or pigs, weaning diarrhoea in pigs, mastitis in cows or other diseases. The team has observed creative approaches by the staff to contribute their share to problem-solving in this respect.

E-learning has tremendous possibilities in basic science teaching e.g. exercises can be placed on the internet to train students in theory and for examinations, movies can be shown, streaming can reshoot an important demonstration of anatomy or another course, pictures of histological slides can be presented, students can even do group work although being at home.

4.3 ANIMAL PRODUCTION

4.3.1 Findings

The area of animal production is well covered by the Department of Production Animal Clinical Sciences (ProdMed). The Department consists of four sections: the Stationary Clinics (cattle, pigs and reproduction), the Ambulatory Clinic (Herd Health and Field Service), the Field Station in Sandnes (Small Ruminant Medicine and Poultry Science), and the Section for Experimental Biomedicine (not regularly involved in teaching undergraduates).

The students have to take a 4-week-stay at a Norwegian farm between the 2nd and 3rd semester (preferably via a contract with the establishment) to get an early pre-clinical exposure to farm animal handling. The effectiveness of this exposure may be dependent on the quality of the farm in question and on the intensity that the students are actively involved in the daily animals work, but it is definitively better than no pre-clinical contact at all.

The establishment has no teaching farm of its own, but it is granted an almost unlimited access to the Animal Science Research Unit of the facilities in Ås (140 milking cows, 40-50 sows with their offspring, 200+ sheep, 200+ goats and some poultry). This unit is used both for

propaedeutics in semester 6 and for targeted visits with groups of students by the Ambulatory Clinic (biosecurity, herd health, animal hygiene). In Ås, there is also the opportunity for groups of students to stay there several days e.g. during the lambing season to get hands-on experience in sheep obstetrics.

The mix of theoretical teaching in biosecurity, animal hygiene, animal welfare and the clinical training provided to the students by the different sections of the ProdMed-Department is well balanced with the practical teaching in the Stationary Clinics, in the Ambulatory Clinic and in the Field Station in Sandnes – both during the rotations in the 8th and 9th semester and during the Elective Track “Production Animal Medicine and Food Safety”.

The Animal Science Research Unit at Ås is also used by the Sections of the ProdMed-Department for the practical demonstrations of agronomy, animal nutrition and pasture management.

The teaching of the Prod-Med-Department, both theoretical and practical, is well integrated with related subjects such as food science and food safety. This today and also in the future a more and more important issue, since the vertical food production chain approach for assuring high quality and safe food from animal origin has become more significant than focussing on the horizontal approach where food animal practitioners and food safety veterinarians have little to do with each other as it has been in the past until only recently. There is also a well-developed integration of veterinary public health issues, which is exemplified by the fact that students that successfully passed the Elective Track “Production Animal Medicine and Food Safety” and that additionally have proven by positive test results that they have additionally attended an at least three-week course in veterinary public health.

4.3.2 Comments

The area of Animal Production, covered mostly by the Department of Production Animal Clinical Sciences, is regarded as one of the outstanding strongholds of the establishment. The major reason for this statement is that the students undergo between year one and year two a mandatory 4-week-stay on a Norwegian farm, that the Department has free access to the Animal Science Research Unit of the NMBU at Ås, and that the Department has succeeded in integrating its research-based teaching and training both within its Sections (Reproduction, Cattle, Pigs, Small Ruminants, Poultry and Animal Welfare) and with related subjects such as Veterinary Public Health, Food Sciences/Food Safety, and Animal Hygiene. This integrative approach is underlined by the fact that the Department and its Sections interact closely with the Centre of Epidemiology and Biostatistics.

Both in the theoretical lectures of the departmental sections and in the clinical and field service activities (Stationary Clinics, Ambulatory Clinic and Field Station in Sandnes) there is a strong focus on the veterinary care for the single diseased animal AND on herd health management skills, on biosecurity, on pre-harvest food safety issues, on animal welfare, on food sciences and food safety as well as on veterinary public health.

Those students that have successfully graduated from the establishment through the Elective Track “Food Animal Medicine and Food Safety” have definitively a set of above European average Day-1 skills for becoming successful food animal practitioners, herd health managers, and consultants in the food production chain for food of animal origin.

In the team’s opinion the requirements regarding Animal Production as they are laid down in Annex I of the SOP are met.

4.3.3 Suggestions

The visiting team recommends to maintain this high quality level of both theoretical and practical teaching in the area of veterinary medicine for promoting an efficient AND societally accepted production of food from and with animals, where focusing not only on curing single animal ailments, but also on preventing diseases, and on steadily improving the health and the welfare of the animals that we use for producing high quality and safe food is in the core of the teaching and training of production animal clinical sciences and food safety at the establishment.

4.4 CLINICAL SCIENCES

4.4.1. Findings

The clinical training consists of one and a half years (3 semesters) of compulsory core training (1 preparatory and 2 in a rotation) and one year (2 semesters) of elective track training (curriculum differentiation).

Students have orientation in clinical training in semester 6 with the “Preliminary course in clinical sciences” and the 10th block. The 7th semester is devoted to “Introduction to diagnostic work” and, the core clinical training in semesters 8 and 9 is organised into a rotation in the disciplines of Food Safety, Pathology, Disease Control, Public Health and Fish Health. The core clinical training that occurs in semesters 8 and 9 is organised into a rotation through the two clinical departments (Department of Production Animal Clinical Sciences (ProdMed) and Department of Companion Animal Clinical Sciences (SportFaMed).

The **compulsory clinical rotation** through the Small Animal and Equine Clinics occurs in semester 8 (5 weeks per group) and 9 (4 weeks per group). Each sub-group receives in total 2 weeks of training in small animal surgery and small animal medicine, First Opinion practice, and 3 weeks of equine medicine and surgery respectively. Diagnostic imaging, anaesthesia, and the Small Animal and Equine Emergency services are included into the rotation.

During these rotations, students are organised in the different clinical facilities under the supervision of teaching staff, and they have to share the clinical activity with a senior student of the elective track. One of the activities is participating in the mobile clinic, which operates as a regular farm practice. This activity is mandatory. All students participate in evening and night's on-call during the small animal and equine rotation period.

Several clinical procedures are performed by the technicians (nurses); in fact, nurses are involved in many procedures such as anaesthesia, rehabilitation, nutritional guidance, dentistry, pharmacy, etc. They are well prepared, are proactive and they are extremely involved in teaching.

During the rotations, the participation of students on clinical activities is adequate; depending on the clinical activities: they participate in the previous discussion of patients; they have to record the history, physical examination findings and discuss the diagnostic plan with the teachers. Also, they have to do the sampling (blood, urine) if needed, participate in basic surgical procedures (such as ovario-hysterectomy on a cat), radiological evaluations and ultrasound exams, as well as the evaluation of the hospitalised patients.

After rotations, students have to present a number of journals (case reports), depending on the clinics, however, no grading of practical teaching is done during the clinical teaching.

During the visitation, most of the students on clinics were studying for examinations, and thus there were just a few around the facilities, but there was clinical activity going on, in small animal as well as in equine clinic.

Also, students have to do **extramural work**: four weeks on a farm to gain practical knowledge and experience (after the 1st year), after which, the students must write an individual report approved by the supervising teacher; and, after the 3rd year (semester 6) and before the end of their studies, they must complete 4 weeks of extramural work in veterinary practices. During the extramural work they have a liability insurance.

After this period, a rotation in the **specialised track** is mandatory, which allows students to acquire enough skill in the speciality they have chosen. There are 5 differentiation tracks: Small Animal Medicine, Equine Medicine, Aquatic Medicine, Production Animal and Public Health, and Research Project. They contain a joint compulsory part (8.5 ECTS Credits) and a direction specific part (51.5 ECTS Credits), which includes a mandatory part for the direction, an optional part and a specialisation thesis; in total 40 weeks.

4.4.2 Comments

The ratios or indicators of teaching (theoretical/practical hours) are adequate, and the theoretical/practical skills of the students at the end of the studies are satisfactory.

The compulsory clinical teaching seems to provide sufficient clinical training for students in different species; however, in some areas as equine and small animal practice, the clinical experience might not be sufficient. The elective system is a good tool; in general, students and teachers are in agreement with this system. However, it has some disadvantages, and some teachers especially in the departments with clinical activities do not agree with the system in the sense that students which do not choose the equine or small animal specialisation, have 3 and 6 weeks of clinical in equine and small animal, respectively, in total, which might not be enough.

When moving to the Ås campus, a reorganisation of the clinical teaching will be desirable, considering the increase in the number of students from 70 to 90, especially in the tracks with clinical activities, in order to reduce the disadvantages of the elective system. In this sense, it will be desirable to increase the caseload in the clinics, as well as the proportion of referred cases (especially in the small animal clinic). Also, a reorganisation of the clinical activities within the hospital in the future might be beneficial (see suggestions).

The 24h service in the Small Animal Clinic, which started in April 2013, is absolutely necessary for the adequate clinical activity in this section of the Department. This service is needed for the adequate care of patients, but also increases the caseload, the complexity of cases, the number of referrals and the practical training of students. It is also needed for the development of new recognised residency programs and for the maintenance of the current ones. This system should be continued and potentiated with well-trained staff (see chapter 10). Since April 2013, the small animal, anaesthesia and radiology sections have noticed an increase in the number and in the complexity of patients.

Likewise, the 24h services in the equine clinic, which has been working adequately for many years, should be maintained and potentiated with well-trained staff (both teaching and technical).

The current curriculum must be adapted in the future, when the establishment will move to the Ås campus of NMBU in 2019, and veterinary studies will admit more students each year than

nowadays. This will also imply that some aspects of the clinical teaching of the compulsory part as well as the differentiated tracks must be reorganised.

In the team's opinion the requirements regarding Clinical Sciences as they are laid down in Annex I of the SOP are met.

4.4.3 Suggestions

An integration of the clinical activity might be desirable; especially the small animal clinic should be integrated into the same area, since for the time being, there are some activities that are done separately (dermatology, oncology, reproduction). Also, it is suggested that all the laboratory activities (clinical pathology) in the clinics will be centralised in one common laboratory for all the clinical activity (small animal including first opinion clinic and specialities; and the equine medicine).

Clinical rotations in the Companion Animal Clinical Sciences might be reorganised. A system is suggested that permits the student who is rotating through the different specialities to spend enough time in one speciality before moving on to another one. This will allow the students to follow-up clinical cases better than presently.

More clinical training might be obtained by increasing the extramural hours of work in practices, and also, by using the summer period in which there are no students in the hospital at present. This clinical activity at the hospital might be very useful for the students

Extramural hours should be supervised by the establishment. There must be an adequate feedback and communication between the establishment, the practitioners and the students.

The 24h service at the small animal hospital should be potentiated and not reduced. According to an agreement signed by the administration and the Rector, the surgeon on call will no longer belong to the system. However, the veterinarian on duty (staff or intern) is not able to cover the hospitalised patients, as well as the emergency cases that might arrive to the clinic during the evenings or at night. In order to have an adequate 24h service, the veterinarian on duty will need the help of an expert surgeon and anaesthesiologist if an emergency surgery is needed,

4.5 FOOD HYGIENE & TECHNOLOGY AND VETERINARY PUBLIC HEALTH

4.5.1 Findings

Food Hygiene (including meat inspection) (FH) and Veterinary Public Health (VPH) subjects are mostly covered by the Department of Food Safety and Infection Biology which includes the sections of Microbiology, Immunology and Parasitology, of Pharmacology and Toxicology, of Food Safety and of Artic Veterinary Medicine.

A block of subjects related to food safety and veterinary public health is taught at the 6th semester and lasts 16 weeks with a total of 24 ECTS. It includes in the first three weeks lectures on food borne diseases, food contaminants (pesticides, heavy metals, radionucleotides, and natural toxins), food parasites, GMOs, food preservatives and additives, mycotoxins, viruses, indicator bacteria, drug residues, cosmetics, process-induced toxicants. The students are evaluated by a multiple-choice examination of one hour at the end of the fourth week. The 9th Block restarts for two weeks with subjects related to risk assessment for microbiological and toxicological agents, product quality, technology and normal flora of fish and marine products, food safety of marine chain, product quality, technology and normal flora of milk and dairy products, food safety of milk and dairy products, water and the environment, product quality, technology and normal flora and food safety of eggs and egg products and of vegetables and tinned food. It follows with presentation of animal welfare in slaughterhouses,

food safety in the farm animal chain, meat control, cleaning and hygiene, kitchen hygiene, HACCP methodology, treatment of garbage and organic waste. The next three weeks are dedicated to the laboratory course which focuses on three items: sampling and testing of liquid and solid foodstuffs, microbiological quality and antibiotic residues in meat and milk, and methods for the detection of pathogenic bacteria. The following five weeks are used for exercises in various seminars in food safety topics and laboratory work in outbreak assignments and individual assignments in food safety. An oral examination is held at the end of Block 9.

The establishment does not have internal facilities for meat inspection and for food hygiene practical training, besides laboratory facilities, which are used for food control training.

Practical training in meat inspection and food control of all students corresponds to a total of 27 hours, at the 9th semester. Students that choose “Animal Production, Food Hygiene and Public Health” elective (10th and 11th semesters) have an additional 10 hours of food processing and technology, of food inspection or of advanced food microbiology according to each student's interests.

Practical training in meat inspection and food control uses commercial slaughterhouses (cattle, sheep, pig and poultry) and private retail and catering establishments in two different areas – Oslo district and Sandnes – far apart (600km). A specific curriculum set up has to be organised, using the mix rotation of 9th semester to allow that all students have access to four different slaughterhouses located at 10km to 55km from Sandnes campus. Groups of four to six students stay at Sandnes campus for one week and are intensively trained in meat inspection (including animal welfare, slaughter hygiene and HACCP). The establishment has access to abattoirs where Good Manufacturing Practices (GMP) and Good Hygienic Practices and HACCP systems are implemented. Under a five-year's agreement between the establishment and the Norwegian Food Safety Authority, a team of official veterinarians acting as meat inspectors at those slaughterhouses and controlling food business of Sandnes region, perform the teaching and training of the each group of students at the 9th semester. A staff member is responsible for the supervision of the student's training.

The total of the teaching and training of each student in food safety (over 147hrs at 6th semester) and in meat inspection (27hrs at 9th semester) sums up to 392 hours. This overall teaching and training in the two areas, includes hours of self-directed learning and organised study groups with plenary discussions.

Food Hygiene/VPH teaching and training totalises 392hrs corresponding to 9.5% of total curriculum (4110hrs). When considering students that take the differentiation track of Production Animal Medicine and Food Safety, the Food Hygiene/VPH teaching and training totalises 670hrs corresponding to 12.8% of total curriculum (5206hrs).

Food hygiene subjects are well linked with animal production and herd health medicine. From 2012 (according to SER) the Food Safety track merged with Production Animal Medicine. Taking in consideration the present teaching block model of preclinical years and the mix rotation of clinical and of preventative disciplines at 8th and 9th semesters, subjects such as pathology, pharmacology, toxicology and parasitology are adequately related with food safety and public health issues.

Students have the opportunity to get acquainted with the inspection of different livestock (cattle, sheep and pigs) and poultry. Fish and marine products, milk and dairy products, eggs and egg products, as well as tinned food are also addressed.

Animal production and public health track differentiation in the 10th and 11th semesters allow students to choose an elective component of the course to deepen their knowledge and to obtain a professional specialisation in these areas. Students taking “Production Animal

Medicine and Food Safety“ track have to complete three blocks of subjects as: Veterinary Public Health (4.5 ECTS, 3 weeks); Production Hygiene (3 ECTS, 2 weeks); and, Food Safety (3 ECTS, 2 weeks). This track fulfils the requirements of EU Hygiene Package 3 and qualifies for Official Veterinarians.

4.5.2 Comments

The present departmental organisation supports FH/VPH integrated teaching and training. The Team was impressed by the active collaboration of different and critical sectors of the Department towards a very efficient and integrated solution to teach and train students in the food safety of the different animal production chains.

All establishment students have practical training in meat hygiene, in good hygienic practices and in food safety assurance methodologies (HACCP) at approved commercial slaughtering plants, private food processing units and catering schools. Furthermore, students choosing the “Production Animal Medicine and Food Safety” track (10th and 11th semesters) have the requirements of EU Hygiene Package 3 that qualifies for Official Veterinarians.

The established and functional agreement between the establishment and the Norwegian Food Safety Authority is an excellent platform to teach and train students in meat inspection and food control methodologies. The Official Veterinarians involved in the hands-on training and evaluation of the establishment’s students at the referred slaughterhouses and at the other food retail business places should be rewarded with a formal recognition by the establishment.

In the team’s opinion the requirements regarding Food Hygiene as they are laid down in Annex I of the SOP are met.

4.5.3 Suggestions

The well-integrated and innovative approach of Food Hygiene and Veterinary Public Health subjects performed by the Department of Food Safety and Infection Biology (MatInf) deserves to be shared with other veterinary faculties.

The Official Veterinarians involved in the hands-on training and evaluation of the establishment students at the referred slaughterhouses and at the other food retail business places should be rewarded with a formal recognition by the establishment.

4.6 ELECTIVES, OPTIONAL DISCIPLINES & OTHER SUBJECTS

4.6.1 Findings

For the final 2 semesters of the veterinary curriculum, the students must choose an “elective” track from five (5) differentiation programmes, i.e., Production Animal Medicine and Food Safety, Small Animal Medicine, Equine Medicine, Insight into Aquatic Medicine, and Research project. The numbers of study places in the respective tracks are: Production animal medicine and food safety 35, Small animal medicine 25, Equine medicine 10, Aquatic medicine 12 and Research Project programme variable. In the final year of study, the student is required to produce an essay (final graduation thesis). Of the 330 ECTS points of the veterinary curriculum, the final year contributes 60 ECTS. Thus, the core curriculum that is followed by all veterinary students provides 270 ECTS. There are no other elective subjects or courses that the students can choose during the 5.5 years other than in the final year of study.

The differentiation year consists of 40 weeks of study. Approximately 50% of the ECTS points in the year are in general subjects in which the students receive general training that is similar in all the differentiation tracks (examples Legislation; Infection contagious diseases, research plan, leadership course). The remaining 50% of the ECTS points are specific to the particular

differentiation track. The differentiation track specific items consist of a practical part (25%) involving clinical or laboratory related work (e.g. in small animals 10 weeks of clinical training at the establishment – clinics) and a further 25% consisting of special courses for the particular differentiation (e.g. radiology; herd health management, reproduction). All the topics are covered in the general core curriculum, but in the differentiation year, topics are dealt with in more detail. Some of the topics are common for several differentiation tracks such as reproduction and imaging although focus is on the species / subject chosen.

4.6.2 Comments

There are very limited possibilities to choose another subject outside a differentiation. For the differentiation in Aquatic medicine, it is possible to choose clinical training in large animals.

The differentiation in the final year of the veterinary curriculum at the establishment gives the students the possibility to focus on the special interest that they have developed during their studies. However, some students do not feel confident with the choice they have to make.

There is little possibility to switch from one elective track to another during the studies. Theoretically, the students can change track if there is an available place on the track they want to change to. In fact, most students want to change to small animal or horse medicine, and these tracks are usually full.

Elective tracks Aquatic medicine and Research Project are less frequently chosen.

Students, who have chosen the Research project differentiation have to write a thesis at Master level (40 ECTS) and perform a presentation and discussion with the examiners. As a research thesis with a research project is expensive, some departments' heads do not seem to promote this track. The Ministry has agreed to establish a Research Year as part of the veterinary curriculum, which is regarded as an outstanding initiative. It creates a "Research track in Biomedicine" for veterinary students. However, the financing is not yet in place. The establishment wants to encourage newly educated veterinarians to pursue a career in research. The study will consist of a continuous full-time research year after the 4th semester and part-time research activity during the remainder of the veterinary curriculum. The students will be integrated into the best research groups at the establishment. The creation of a "Research track in biomedicine" is highly supported by the visitation team. The number of general theoretical and practical hours in the EU-listed subjects should remain the same.

For the clinical tracks Production Animal Medicine and Food Safety, Small Animal Medicine and Horse Medicine, the graduation thesis is minimal (10 weeks, 15 ECTS) without oral defence.

In the team's opinion the requirements regarding Electives and Optional Disciplines as they are laid down in Annex I of the SOP are met.

4.6.3 Suggestions

Students should be brought into contact with the contents of the tracks in an early phase of the curriculum and at least before the 8th semester. They should also be brought in contacts with veterinarians who followed different tracks and have different professions.

Especially for tracks which are insufficiently elected, extra efforts are necessary to promote them, e.g. practical exercises on Aquatic medicine and Research in the different blocks, more veterinary research results as examples during the lecturing or via movies available on the E-learning platform.

All graduation theses should at least contain an oral presentation and defence.

The establishment could decide to make the places in the elective tracks that are not chosen by students available for students who think they have made the wrong choice. It should be possible to have a small budget available for that purpose.

5 TEACHING QUALITY & EVALUATION

5.1 TEACHING METHODOLOGY

5.1.1 Findings

The first 3 years of the study courses are organised in 10 blocks. Blocks integrate related subjects. The clinical training consists of one and a half years of compulsory core training and one year of elective track training, with some compulsory subjects in the final 2 semesters (8.5 ECTS). The first semester of core clinical training (7th semester) prepares the student for their subsequent training in the Establishment's clinics. The teaching during the 7th semester is based on organ systems of animals that are presented as thematic modules, in addition to courses in Obstetrics and courses in Preventative medicine and Reproduction. The students are divided into 6 groups (ca. 10 students per group). Each morning (3 hours from 09-12) for the first 6 weeks of the semester, the groups rotate through Pathology (9 mornings), Production Animal Clinic (6 mornings), Equine Clinic (2 mornings), Small Animal Clinic (0.5 morning), Herd Health (5 mornings) and Laboratory Animals (2.5 mornings). The two remaining semesters of core clinical training (8th and 9th semester) are organised into a rotation through the two clinical departments and a mix rotation in the disciplines of Food Safety, Pathology, Disease Control, Public Health and Fish Health. Hereto students are divided into 3 groups (ca. 20 students per group). For the compulsory clinical rotations through the Clinics, the three groups of students are further divided into 5 sub-groups of ca. 4 students. During the 8th semester, students are also encouraged to do an international exchange. After the 9th semester, veterinary students at the establishment can apply for a license as a veterinarian ("student license"), if they have completed 3 of 4 weeks of extramural practice work (in production animal and in small animal and equine practice) and all compulsory clinical teaching in 9th semester has been approved.

This extramural work is done under the supervision of a veterinarian, and increases the knowledge of students before the elective track. For the final 2 semesters of the veterinary curriculum, the students must choose an "elective" track. Differentiation tracks in clinical sciences give adequate skills and competences in these areas. The total number of hours/student in clinical sciences is 2450, and the indicators of the type of training are adequate.

The general learning objectives have been clearly defined in the Study Plan of 2012 and have been assessed for each block and clinical semester together with Block leaders and Clinical semester leaders and have been mentioned in the SER1 at page 59. The learning outcomes have been detailed for each Block and Clinical course in the Study plan of June 2013. The strategic plans have been added in the Appendix SER1 (appendix 3). The contribution of each Block and Clinical course in the EA EVE day-one skills have been specified in the Study plan. First-day skills are assessed via the examinations. Passing an examination ensures that the student has acquired the necessary knowledge and skills.

Clinical rotations are mandatory, and it is the students' responsibility to ensure their attendance is recorded and signed off. There are stipulated demands for competencies and attitude while in the clinic.

A considerable variety of teaching forms are used including lectures, seminars, self-directed learning, desk-based and laboratory practical exercises, non-clinical practical exercise and clinical work. Seminars are supervised teaching sessions for smaller groups of students. Self-directed learning refers to sessions of individual students making use of defined teaching

material provided by the establishment. It includes the writing of clinical case reports and pathology reports and the graduation thesis in the differentiations tracks. Non-clinical animal work includes teaching sessions where students themselves work on normal animals, on objects, products or carcasses (e.g. animal husbandry, ante mortem and post-mortem inspection, and food hygiene) and perform dissection or necropsy. Furthermore, there are excursions to farms, slaughterhouses and processing plants. Clinical work has been used to describe strictly hands-on procedures by students who include work on normal animals in a clinical environment, on organs and clinical subjects including individual patients and herds. Surgery or propaedeutic hands-on training on organs of cadavers to practice clinical techniques is also classified as clinical work. There is also obligatory extramural work of which the students must write an individual report that has to be approved by the supervising teacher. The agreements with different institutions in order to support extramural teaching as there are the milking herd at UMB, the Marine Harvest, and the District Offices of Midt-Rogaland and of Dalane, Sirdal and Flekkefjord provide an excellent teaching in meat inspection.

Students have mostly syllabi, compendia, PowerPoint presentations and self-directed learning exercises which are available via an intranet platform (Class Fronter). The students are encouraged to use English Veterinary Textbooks. Supplementary audiovisual material such as videos and exercises are available in the library. The Internet is an additional source to find supplementary documentation.

Problem-based learning is not used as such, but elements of it can be found in various teaching situations. Case-based and case-orientated teaching is used throughout the studies during lecturing and practical trainings. Teaching is research-based. Throughout the curriculum students are exposed to research methods and are taught from updated and evidence-based knowledge. Students have the opportunity to engage in research through interaction with the active research groups.

In general, all lectures are voluntary and all supervised practical teaching is obligatory (80% - 100% attendance is required based on the type of exercise). An attendance list is commonly used in large groups. Varying methods are used for replacing absences. The Block Leader or responsible course teacher is required to report to SFA before the final examination all students that have not fulfilled the obligatory requirements. Students lacking the obligatory requirements are either not allowed to take the final examination or approval of the final examination is withheld until the obligatory requirements are met.

As can be seen in the revised ratios, there is a good balance between practical and theoretical training (ratio for total cumulative training = 0.766) and between non-clinical practical work and clinical teaching (ratio for total cumulative training = 0.464).

Annual appraisal meetings are conducted between the teachers and the leader of the Section. These discussions include the evaluation of teaching, scientific production, external funding, career development and plans for the coming year. The Head of the Department is responsible for following-up individual teachers to convey both praise and criticism that emerge from student evaluations.

Students are able to comment anonymously on the performance of teachers at the completion of each block/course/training. Only the individual teacher and the Head of the Department have access to the student's comments. Follow-up initiatives to solve any existing problem are dealt with by the Head of the Department. Poor evaluation by the students or high failure rate of students (over 15%) of a block/course/training gives the opportunity to the Department to take actions in order to improve its teaching performance.

The general evaluation framework for quality assurance in teaching of the veterinary curriculum entails a "Quality Cycle" that consists of an annual process of planning, implementation, evaluation and improvement and this cycle is used at the local level in each block, at the

aggregated level in each department and at the overall level of the institution. These cycles culminate each year in an annual report of study quality that is submitted to the Board.

There are several ways to reward teaching: 1) Teaching excellence is rewarded by the establishment board at the end of the graduation ceremony to individuals who have distinguished themselves in teaching and communication. Candidates are proposed by a committee on the basis of nominations from student and staff; 2) Teaching blocks with very good evaluation are given special attention at the annual review of the Study Quality Report; 3) In salary negotiations pedagogical skills are taken into consideration.

5.1.2 Comments

E-learning is not yet a hot topic at the establishment. There is “Class Fronter” as an E-learning platform where teachers can put on their teaching material and the student can access it from everywhere. It is a fairly new platform and it has been used since the fusion with UMB in January 2014. The students regard it as an improvement and appreciate that the programme has a lot of opportunities (e.g. forums to discuss about the topics in the lectures). However, students have no access to VPN, which would allow them to enter the university intranet from home.

Clinical teaching is of a good quality. The students work actively and independently in all aspects of patient work-ups, including client communication. While on clinical rotations, students participate actively in the diagnosis and management of the patients. They attend the early morning and afternoon rounds and are involved in the management of the patients from the beginning until the discharge. Students work independently, under guidance of the clinical staff (technical and teaching staff). Technical staff is also involved in the clinical teaching: they are responsible for teaching several procedures and are very committed to their chores. In the SportFaMed department, in which small animal and equine clinical training is developed, students rotate through the different sections in groups. Usually, the groups are a combination of junior students (compulsory core training) and senior ones, which enriches the learning procedure.

Although students perceive themselves as having a good knowledge and hands-on experience (e.g. all students will have castrated a horse and a cat, and ovariectomised a cat and a dog) they have expressed the will to have some extra clinical work in the 8th and 9th semester and to start even earlier with clinical training.

The 24h service both in small animal and equine is essential for an adequate practical teaching

It is the opinion of the team that the requirements regarding Teaching and Quality Evaluation as they are laid down in Annex I of the SOP are met.

5.1.3 Suggestions

E-learning is underused and should be implemented throughout the studies in theoretical and practical training. It also has tremendous possibilities for continuing education.

Clinical activity should be slightly increased in the 8th and 9th semester. Likewise, contact with clinical activity might be started at an earlier phase of the training period via extramural training or in basic science departments via integrated practicals. In order to increase the number of practical teaching, an increase of extramural teaching in practice is suggested. Also, the summer period might be used to take advantage of the facilities and the trained staff at the establishment.

In the rotations, the students in the small animal, equine, radiology and anaesthesiology section departments might be organised slightly different. A rotation that allows the students to

rotate in the different sections consecutively will permit the students to better follow-up of the patients. It is suggested that the students should know the schedule in advance (a calendar) of the different specialities that they are going to do.

For the near future, the clinical teaching within the clinical sciences might be re-organised into a system that integrates all the disciplines that belong to the large and all the ones belonging to the small animal clinical sciences as mentioned in Chapter 6. This system must include internal medicine (including all disciplines as cardiology, oncology, endocrinology, ..), surgery, reproduction, emergency, anaesthesia, diagnostic imaging and clinical pathology. This plan might be more easily developed when the new facilities will be available. An integrated system of all the disciplines in clinical science will increase the knowledge and skill of students, especially of the students of the differentiation tracks.

The increase in number of interns as well as a re-organisation of interns and teaching staff in the Animal Clinical Sciences will permit to improve the practical teaching.

5.2 EXAMINATIONS

5.2.1 Findings

Examination and assessment are strictly controlled through national legislation and specific regulations of the establishment. The SER states that the establishment's examination system and grading are strictly regulated through "Regulations for Admission, Studies and Examinations at the establishment". External examiners must be present for all University examinations in Norway (Universities and University Colleges Law). A number of documents concerning instruction and guidelines, available at the establishment website, are given to internal and external examiners, students and staff at the Study department.

Students are examined at the end of each block and clinical rotation for the year. Some blocks also have mid-term examinations that contribute to the final grade. In most blocks, requirements such as group work and presentations, case discussions, laboratory skills, written tests and compulsory courses must be passed in order to take the examination. There is a separate approval for the clinic weeks, and students who show poor attitude and behaviour can be disallowed for one or more weeks. The students mainly use syllabi, textbooks and course notes (ppt) to study for their exams.

Generally the type of examination is comprehensive as several subjects are tested in the framework of one examination. Comprehensive exams can be written (a mixture of short answer assignments, multiple choice questionnaires, photo assignments and essays) or oral. Depending on the subject they may include a practical component (clinical rotations). In the case of clinical exams there is always an external examiner involved. Day-one-skills (EAEVE SOPs, EU Directives 78/1027/EWG, 89/48/EWG, 2005/36/EC) being the referred objectives of block and clinical rotation syllabus are the core of the examinations. In the year of the clinical rotations there is no permanent evaluation. They are only graded by a final exam after the 9th semester. Furthermore, students must write a report in the style of a scientific paper in the wild and reindeer medicine in 8th semester and a thesis is submitted in the final year (15-20 ECTS). Students, who have chosen the research project differentiation, have to write a thesis at Master level (40 ECTS) and perform a presentation and discussion with the examiners.

Examination results should be available on the student's Internet account by 3 weeks after the examination. For a student to continue his or her studies, it is required that they have passed all examination sessions from the previous year. Regulations require that all the grades are entered into the Student administrative system (FS) and aggregated student results are reported and published on the website of the Database of Higher Education (DBH). Retakes take place in the last week of the summer holidays or in the Christmas holidays. Students who

fail three times in the same examination lose their right to study at the establishment. Students can apply to the Rector for a 4th attempt. The maximum time a student may use to study veterinary science is 8 years.

The students evaluate exams each year, together with the evaluation of lectures. The evaluation happens electronically and there is a very high participation rate. Even though the evaluation is done within the block, there is a possibility to comment per question as well as in general, including potential problems with teachers. After the evaluation of each block, the Block leader has a discussion with the different teachers.

5.2.2 Comments

In general, students and teaching staff seem to be happy with the present set up of examination procedures. The students think the right questions are asked. Students do question that the examinations of small blocks are similar to the examinations of the larger blocks.

Complaints of students are taken seriously and rapidly result in a review of the examination and, if necessary, in measures being taken.

The present yearly evaluation system together with the student's examination results seem to allow to measure student satisfaction and achievement.

For clinical training, there is no permanent evaluation and students do not feel evaluated.

Although there are external examiners present in exams of the clinical sector, it was not possible to measure its effect on the quality of practical teaching.

It is the opinion of the team that the requirements regarding Examinations as they are laid down in Annex I of the SOP are met.

5.2.3 Suggestions

A system of permanent evaluation will be an asset to evaluate the student especially during its clinical trainings and observe their theoretical and practical knowledge. This also gives the possibility to fail unmotivated people in the clinics. Likewise, an exchange with other Scandinavian examiners of clinical practices might also improve the practical teaching.

5.3 STUDENT WELFARE

5.3.1 Findings

The students at the establishment, as well as all university staff, are covered by the Norwegian Working Environment Act regarding health, environment and safety (HMS).

The students receive general information on safety matters during their first days of study at the establishment and compulsory instruction in emergency fire routines on their second day of study. They also have access to a "Manual for students" that deals with all matters in relation to environment, health and safety measures for students.

The establishment as governmental institution does not provide personal accident insurance for its students. Only injuries that occur during teaching at the establishment are covered by the Norwegian national health insurance. Students are strongly recommended to have a private health insurance to cover chronic injuries.

Students are also encouraged to attend the annual first aid course, which is an initiative by the student organisation VSU. The VSF (veterinary social organisation) organises a lot of social activities for the students allowing them to relax in time and develop social skills.

There are a number of facilities at student's disposal to improve the general welfare of the student population. The Foundation for Student Life (SiO) is a welfare organisation dedicated to provide student housing, fitness facilities, bookstores, psychologists, social workers, doctors, dentists and kindergartens for all students in Oslo. There is also the Veterinary Students' Organisation (VSU), which is a political organ for students at the establishment and is the official link between veterinary and veterinary nurse students and the establishment. Students with problems can also ask for help of different types at the Study department. Some of the help given is information about the curriculum, regulations and the student organisation, but there is also help for students going on exchange or for international students who come to the establishment and there is follow-up of students with study problems.

5.3.2 Comments

The students are well taken care of. There are a lot of facilities and room to study on site alone in peace or in groups as well as room to relax. The student organisations are characterised by a good structure, which makes it possible to provide enough social activities as well as enable good communication between the students and the establishment.

It is the opinion of the team that the requirements regarding Student Welfare as they are laid down in Annex I of the SOP are met.

5.3.3 Suggestions

Although the students have the barracks to work in groups, these rooms are not sufficient (too small for 6 people) and bathroom facilities are missing. There should be more rooms - just like the two rooms in the library - at the disposal of the students for group work.

6 PHYSICAL FACILITIES & EQUIPMENT

6.1 GENERAL ASPECTS

6.1.1 Findings

In 2019, the establishment will move to the new facilities built at Ås in association with the establishment of the Norwegian University of Life Sciences.

Presently, the establishment has its main campus at Adamstuen in Oslo, a teaching and research farm at Sandnes and farm facilities on the campus of the University of Life Sciences (UMB) at Ås. The Adamstuen Campus covers approximately 6 hectares close to the centre of Oslo. The Norwegian Veterinary Institute (NVI) and the Norwegian Food Safety Authority (NFSA) share the site. At the Adamstuen Campus, the academic departments and teaching facilities of the establishment are housed in about twenty buildings, which include the national veterinary library, which is part of the establishment and student and staff welfare facilities.

The establishment has six auditoria of 68 - 90 places equipped with modern data projection and audiovisual equipment and shares the use of a modern 180 places auditorium with NVI and NFSA.

The establishment has a large laboratory that can accommodate 70 students (practical training in histology, embryology, microbiology, parasitology and histopathology). A smaller teaching

laboratory has a capacity for 34 students working in pairs (17 workstations; practical training in biochemistry, pharmacology and toxicology, cell biology and physiology). Other lab rooms, such as the blood chemistry room, can also be used for practical teaching. Eyes washes are installed in the smaller teaching laboratory.

For student seminars and group work, the establishment has several blocks (portakabins) of seminar rooms placed adjacent to the building. There are two more seminar rooms in the Library (Auditorium 8). Three rooms for group work have recently been built in connection with the Equine clinic. There are also rooms for practical work within the various departments and sections.

The establishment has two computer rooms with computers and printer/copier options. A wireless network (WiFi) is available for students across the establishment. Students have access from 08:00 – 23.00.

There are two anatomy dissection rooms with eyes washers: one is about 80 m² with stainless steel tables and is joined by a further dissection room of similar size. There is a cool room adjacent to this dissection room. A spiral staircase leads up to a similar space on the floor above, which houses an anatomy museum and student study area. A separate student changing room is connected to the dissection rooms. A camera can take images, which appear on large screens so that students can follow the dissections. A lift has been installed between the two floors to improve movement of specimens and equipment. The necropsy facilities comprise a student changing room, a staff changing room, a demonstration room with 70 seats and a necropsy room of about 150m². The necropsy room contains a rail hoist, fixed and moveable stainless steel tables and a cool room for carcasses. The staff and student changing room is shared with the veterinary institute which necropsy facility adjoins that of the establishment.

Since the buildings were originally constructed for 30 students per year, extra facilities to house 70 students per year had to be added later on. For practical trainings, smaller groups are sometimes formed. There is sufficient place to train the students for the time being, but the ceiling has been reached as far as training and housing is concerned.

The establishment does not have internal facilities for meat inspection and for food hygiene practical training, besides laboratory facilities, which are used for food control training. There are abattoir facilities at the Sandnes campus where also the Norwegian Food Safety Authority is located. Furthermore there is cooperated with at least 6 abattoirs so covering food hygiene and food safety of different species. Students obtain a paid return train ticket from the establishment to travel to the campus and back. Traveling to the abattoir is done by bus or by car depending on the group size.

The student facilities are very well developed. There is a range of rooms available for small group work including student self-directed studies such as the anatomy museum and the histopathology group room. There are 5 students' reading rooms with places for about 200 students. Access to these rooms and the PC rooms is based on swipe cards and/or numeric keypads. There is a student canteen where lunch and dinner are served on weekdays, a bar, a training room and changing rooms with showers and a sauna. The students have their own office for the activity groups in the establishment. There is a sports pitch and a separate student gym on campus and 8 kindergarten places.

The buildings that house the teaching facilities vary considerably in age and quality.

At the Sandnes campus there are student facilities (two apartments with 19 beds in total, one house with 16 beds and one student office) and teaching facilities (an auditorium with 45 places, two group rooms, necropsy rooms and laboratories for pathology, molecular biology, bacteriology and parasitology with eye washes).

General practices concerning personal protective clothing and quarantine procedures have been established. Students are given a lecture in Biosecurity early in the first semester with emphasis on how to behave at Campus Adamstuen in general and in the Microbiology and Microscope laboratory in particular. Pathology section rooms are considered as BSL2. Safety in general is also sufficiently taught to students at the beginning of their studies and, when necessary, at the beginning of practical trainings.

Within the laboratories, anatomy section rooms and necropsy facilities sufficient equipment is available to train students in all aspects of basic sciences and non-animals clinical sciences (skeletons in the anatomy museum, microscopes, incubators, centrifuges, freezers and refrigerators, fume hoods in the lab rooms, computers on which software is reinstalled every year to keep them up-to-date). WiFi is available.

6.1.2 Comments

Investment in new buildings at the Adamstuen campus will not occur given the decision of the Norwegian Government to fund the building of new veterinary facilities at Campus Ås in association with the establishment of the Norwegian University of Life Sciences. However necessary adaptations may still occur on a very small scale.

Despite the age and design of premises the overall presence of biosecurity is in place and integrated in the daily work life. It appears that biosecurity is a natural and integrated part of the teaching and clinical training over all at the campus, Sandnes and Ås, as well as in the Mobile Practice.

The staff demonstrates a way to find extra space and creative solutions to get the old housing to fit to today's demand.

The student is central in every aspect of training and the establishment does everything to make the students feel comfortable. This can be seen in student facilities and also in training facilities. The staff is creative to find solutions if logistic problems might occur and student find an open ear at all levels of the establishment to adapt facilities, if needed.

Rooms to do group work are sometimes too small for groups of 6 students and some of the rooms, being in containers, have no air conditioning.

E-learning will be more and more important in training students. WiFi was not available at all locations where students get practical training or can study.

It is the opinion of the team that the requirements regarding General Aspects of Physical Facilities and Equipment as they are laid down in Annex I of the SOP are met

6.1.3 Suggestions

Although in most places eye washers are available, it is important that this is the case in all labs and in the section rooms.

Air conditioning should be foreseen in portakabins in which it becomes too warm due to the sun.

There should be enough student rooms for group work. Perhaps walls can be removed to increase the dimension of some of the rooms so that groups of 6 to 8 students can easily sit together.

WiFi should be accessible throughout the establishment especially from student facilities, seminar rooms and labs.

6.2 CLINICAL FACILITIES & ORGANISATION

6.2.1 Findings

Regarding hospital facilities, they are not in the same building, but located close by in different buildings. There is, in general, a need for more space, which is most likely one of the reasons to move to the new buildings. As an example, the small animal clinical hospital and the radiology section are located separately. Likewise, there are different labs within the clinics, and some disciplines are performed in a different place (dermatology, oncology and reproduction). Nevertheless, all the facilities are clean, well maintained and work properly.

The facilities are structured in separated Hospitals as follows:

-) The Equine Hospital, which is mainly a referral hospital, with 90% of referral cases, with a few research and teaching patients. The hospital runs a 24-hour service, and had 1200 visits (journals) during 2013.

-) The Small Animal Hospital consists of a first opinion practice ("Poliklinikken") and a referral hospital, both sharing the facilities. The hospital has two sections: Internal Medicine and Surgery. The Small Animal Hospital had 15.000 visits in total in 2013 (including 1678 in surgery; 1364 in internal medicine and 7536 outpatient visits). Anaesthesia and imaging (radiology) are common services for all species on campus and are located separately. Both section departments are well equipped.

-) The Production Animal Medicine, Surgery and Obstetrics Clinics have approximately 200 cattle, 200 pigs and 50 small ruminants of all ages available for teaching purposes. The cattle and small ruminants are referred from neighbouring veterinarians and the ambulatory clinic.

-) The Reproduction Clinic houses 15 healthy cows, 2 rams and 7 mares for teaching in reproductive techniques. The clinic also provides services for reproduction in dogs dealing with 600 cases a year.

-) Sandnes Campus is used for teaching herd health management in small ruminants, in pigs and in other farm animals. The section receives 400-500 animals from the neighbouring area for necropsies as service to the regional farmers and veterinarians, and there is a very good cooperation with the farmers, farmers' associations and industries.

In addition, as extramural facilities, the establishment has a research farm at 40 km south of Oslo, with cattle, small ruminants, pigs and other species and a Research/Teaching farm at Sandnes, Rogaland County on the south-west coast of Norway, about 600 km away from Oslo with small ruminants and abattoir facilities. Also, they use the sea farm services at Frøya on the west coast and Hjelmeland on the southwest coast, for aquaculture and aquatic medicine teaching

6.2.2 Comments

The establishment is facing a transition period and the old premises need to be maintained during this period and the necessary finances must be in place. The facilities at Sandnes are crucial for teaching small ruminants disciplines and have to be well kept and in close connection to the Veterinary Institute and the regional Food and Health Authority to ensure the successful integration and to demonstrate VPH.

The establishment had made improvements in buildings and did implementation of protocols for students and staffs and guidelines for visitors/owners. Despite the fact that facilities are not adequate, clinical activities at the establishment and at extramural facilities are adequate to provide ample clinical training, due to the efforts of the staff. More space and a better organisation of the clinical activities will improve the quality of the activities in the future.

The staff demonstrates a way to find extra space and creative solutions to get the old housing to fit to today's demand.

The barn for pregnant ewes at Campus Sandnes is not adequate, needs to be updated or reconstructed to fit to modern standard, so that this facility can demonstrate housing of farm animal containing the best animal welfare.

Despite the age and design of premises the overall presence of biosecurity is in place and integrated in the daily work life. It appears that biosecurity is a natural and integrated part of the teaching and clinical training over all at the establishment, Sandnes and Ås, as well as the Mobile Practice.

It is the opinion of the team that the requirements regarding Clinical Facilities and Organisation as they are laid down in Annex I of the SOP are met.

6.2.3 Suggestions

A reorganisation of the activity within the facilities and the staff as is suggested in chapter 5 (teaching) will improve the quality of clinical activities and practical teaching.

There is a deep insecurity concerning access to patients after moving to the new facilities (As), and thus, the development of a referral hospital with an increase in qualified staff and case load is suggested.

For the near future, when the hospital will be moved to As facilities, a re-organisation of the hospital administration and of clinical activities is needed.

It is suggested, as an example, an organisation structured in two main sections (equine or large animals and small animal's hospital sections), and common services for both areas as: a centralised laboratory (clinical pathology), anaesthesia, imaging, as well as other additional services (pathology laboratory, infectious/parasitology labs).

This system must include in each section (large and small), different disciplines as internal medicine (including cardiology, oncology, endocrinology, ..), surgery, reproduction, emergency services/ intensive care unit). An organisation similar to this has to be planned in advance, and it will be easily developed when the new facilities are available. An integrated system of all the disciplines in clinical science will increase the knowledge and skill of students, especially of those students of the differentiation tracks.

A centralised system to record the clinical activity is also suggested: all the clinical information (history, exam, diagnostic plan, treatments, imaging, laboratory results) should be located into a computerised system (similar to the actual one, but including all the data from different laboratories). This system must be easy to use by all staff and students throughout the campus.

An increase in the caseload in both small and equine animals is desirable. Especially in small animals, not only an increase in the caseload, but in the proportion of referred cases (nowadays is 30%) is highly recommended. No exotics are seen in the clinics, and this activity should be introduced.

The facilities and staff needed for the 24h services both in small animal and equine will be maintained and promoted, since they are essential for an adequate training of students.

An increase and re-organisation of the staff is also needed (see chapter 10).

In order to maintain the adequate case load for teaching activities in the future, the establishment is also evaluating the possibility to purchase a clinic situated in Ski, which might be a good tool. However, this measure will never replace the development of a good referral hospital.

Cooperation with external partners to establish small groups around a specific species or subject (ex. Sandnes and Centre of Epidemiology and Biostatistics). Sandnes gives a unique possibility to establish cooperation with other research areas and student as well as staff will benefit from common projects, ex. Sandnes Education and Research Centre Høyland (SEARCH).

7 ANIMALS & TEACHING MATERIALS OF ANIMAL ORIGIN

7.1 Findings

The stationary clinics for Production Animals accept only patients half the year. Nevertheless the Ambulatory Clinic is running the whole year.

There is a 24/7 service for Production Animal (outgoing) and an Equine Hospital (on call for referrals).

The very good relationships to outside practitioners are used for a 2 week mandatory 'seeing practices' in large animals, nevertheless the initiative to find the practices to visit are given to the students.

Other findings are mentioned in Chapter 6 and in Annex 1.

7.2 Comments

The quality of the 2 weeks extramural 'seeing practice' varies in quality and relay depending on the actual standard in the practice and does not always has a well-defined standard.

Caseloads of farm animals are always at risk to become scarce for a veterinary institution located near a capital.

There is the fear that the small animal caseload will decrease substantially when moving to Ås.

In the team's opinion the requirements regarding Animals and Teaching Material of Animal Origin as they are laid down in Annex I of the SOP are met.

7.3 Suggestions

Extramural work in clinical practice must fulfil a given standard, include a mutual feedback and learning should be integrated in the clinical training.

Buying a local practice near the campus at Ås is one way to keep the caseload sufficiently high in the new premises and to ensure sufficient access of the students to everyday clinical practise.

In order to have sufficient first line small animal practice and sufficient small animal caseload when moving to Ås, the establishment could try to obtain an agreement with the city of Oslo to have a location in the city (a ground floor apartment or house) where first line practice can be performed by a veterinary surgeon of the establishment.

8 LIBRARY & EDUCATIONAL RESOURCES

8.1 Findings

The library provides an area of 660 m² plus additional meeting rooms for students and closed stack rooms, which represent an excellent working environment.

The library is open all weekdays and closed on the weekends. The opening hours are 8.00 to 18.00, except on Monday, on Friday and during the vacations when the closing time is 15.45.

Additional student's rooms are provided in the campus. Most of them are in agreement with the student's expectations, except for rooms in portakabins with rather poor ventilation in summer for some of them.

There are in theory 2,9 EFT librarians with a specific bachelor education. In fact, only two EFT are available so far, since the others are on long-term sick leave.

The relevant journals, periodicals, textbooks and bibliographic databases are available in the library. The library also provides access to approximately 5212 e-journals and 45 veterinary e-books. It continuously evaluates new offers from publishers, in cooperation with the teaching staff.

Students can borrow books and are offered guidance in searching literature and in how to set up reference lists.

Few computers are available in the library but most students use their own PC.

WIFI connections are currently available in most rooms devoted to the students, except in auditorium 3 and in one student's room (Bodega). However the University has recently decided to install a new modern fibre-net and to provide full WIFI connection inside the entire campus (a budget around 250.000 € has recently been allocated by the University for this purpose).

Via the IT-learning platform Class Fronter, the students have currently access to all power point presentations presented as lectures, relevant articles, pictures, videos, assignment tasks and cases for colloquium discussions, as well as interactive communication with their teachers.

An IT unit is available on site but, because of several sick leaves and translocation, the current staff can only do the basic duties and maintenance, which leaves little time for developing further the e-learning.

8.2 Comments

The facilities and the services provided by the library are appreciated by all the users.

Concerning the educational resources, the only complaint concerns the current lack of VPN (Virtual Private Network, in order to allow students and staff to securely access the establishment Intranet from home and abroad) and the insufficient availability of the IT unit for further developing the e-learning.

The library is closed during the evening and the weekends but most students are happy with it and there are no complains.

Currently, the collaboration with the libraries of the University of Oslo is excellent. In the context of the new structure, the fact to merge the current facilities with other libraries of the NMBU provides major opportunities to reduce the costs of the subscription fees and to improve the services to staff and students.

It is the opinion of the team that the requirements regarding Library and Educational Resources as they are laid down in Annex I of the SOP are met.

8.3 Suggestions

Since one member of staff of the library will retire soon, it is suggested to recruit a librarian with up to date IT know-how and, if possible, with some scientific background in order to adequately support students for the completion of their thesis.

It is also suggested to provide VPN facilities to both staff and students, to further develop the e-campus platform and to better inform the students about the potentialities of e-learning, e.g. in the context of continuing education.

9 ADMISSION & ENROLMENT

9.1 Findings

Students applying to the establishment must fulfil the requirements of Higher Education Entrance Qualification in Norway, including the language skills in Norwegian and English. Further extended courses in mathematics and chemistry are needed for admission in the veterinary studies. The overall student admission is coming from two groups: half of student's intake refers to students with higher marks in the secondary school completion certificate; the other half, is reserved to more mature students with further education or other matters gaining them additional points. Admission of foreign students (European and Non-European) has to comply with different special requirements described in SER 1. Application files have to be accessed on-line and need to be documented with education certificates. Most of the admitted students (80%) have their fees full financed by the state and the remaining students are partly financed.

The establishment has established a yearly intake of 70 students. Each year, over 1,000 (average of 1233 in the last five years) candidates apply to veterinary studies. There is a waiting list to cope with any drop out of the admitted candidates.

Veterinarians from abroad, who are not authorised to work in Norway by the Norwegian Food Safety Authority, may apply to the establishment to take additional courses that qualify for professional duties. These additional courses take 2 years.

There is a significant underrepresentation of male students in the establishment's admission, which has been cause of concern as it leads to 12.4% (1:7 ratio) male students. One tries to improve this ratio by giving two additional points to the male candidate certificate classification for admission which leads to a higher admission ranking of males (positive discrimination).

The minimum number of years allowed to complete successfully the veterinary curriculum at the establishment is 5.5 years. The overall drop out rate for the period 2008-2012 is of 16.4% but it is offset by additionally admitted students.

One third of the students are able to complete the course in 5.5 years and 80% obtain the course certificate in 6 years. The remaining 20% (10 students graduating in the academic year 2011-2012) need between 7 and 11 years to complete their degree.

The failure rate at the establishment has shown a significant improvement since 2007 and for the academic year 2012 is well under (5.8 %) the average failure rate of all Norwegian universities (7.3%).

9.2 Comments

For the Norwegian context, the establishment performance shown in relation to the standard of admitted students, to the degree of study progression and to the completion rate seems to be very good.

The reasons for the registered overall dropout rate in the last six years are probably related to the overload of the veterinary curriculum and personal difficulties of some students. There are also some students who change to another establishment (e.g. human medicine) which had been their first choice, and for which they did not obtain an admission before.

The establishment Study Department monitor and follow-up system addressed to students with study problems has been very successful in the last six years.

The establishment is starting a graduate thesis on the problem of insufficient male student intake.

The student intake of 70 students each year is the maximum the establishment can master without decreasing teaching quality. When moving to the new facilities in Ås, expected for 2019, the Ministry for Research and Education wants to increase the student intake to 90. When increasing the student intake, the establishment should bear in mind that all ratios of SER1 should be kept satisfactory.

It is the opinion of the team that the requirements regarding Student Admission and Enrolment as they are laid down in Annex I of the SOP are met

9.3 Suggestions

The decrease in male student intake in studies of veterinary medicine is occurring throughout Europe. It would be advisable to try to study this phenomenon in a joined effort (project) with other European Faculties of Veterinary Medicine.

10 Academic and support staff

10.1 Findings

Teaching staff is recruited through an elaborated administrative and academic process, based on the “Norwegian Act Relating to Civil Servants” and the “Norwegian Act Relating to Universities and University Colleges”, which is clearly described in SER1.

Competence in relevant educational theory and practice based on training or on teaching and supervision is a criterion for employment.

Selected candidates are interviewed and might be asked to perform trial lectures.

The number of academic teaching staff and the allocation into the 4 different departments are summarised in table 2. The total numbers of personnel in academic and support staff positions at the establishment are satisfactory. The establishment has built up large robust research groups among its teaching staff. Ratios of staff/students are adequate considering the actual number of students.

Table 2: Academic teaching staff and the allocation into the 4 departments

Department name	Academic teaching staff										Support (see	staff table	10.1)
	Full	Prof.	Associate	Prof.	Assistant	Prof.	Assistant	Other ¹⁾		Technical	Animal carers	Admin/	
	VS ²⁾	NVS ³⁾	VS	NVS	VS	NVS	VS	NVS	VS	NVS	(b+d+e)	(a)	(c)
BasAM	7.6	2.0	7.3	2.6	0	0	0	0	5.0	0.5	24.4	0	6.0
MatInf	10	2.5	5.5	4	0	0.8	0	0	4.25*	0	22.6	0	13.1
ProdMed	5.7	1	11.5	1.2					8.25		15.8	22.53	11.8
SportFa	2	0	15.0	0	6.75	0	3.0	0	7.0	0	0	32.1	4.4

Norwegian law obliges the development of teaching staff to be up to date. At the establishment, this responsibility lies at the department level. Annual appraisal meetings are conducted between the teachers and the leader of the Section. These discussions include the evaluation of teaching, scientific production, external funding, career development and plans for the coming year.

The Head of the Department is responsible for following-up individual teachers to convey both praise and criticism that emerge from student evaluations.

Students are able to comment anonymously on the performance of teachers at the completion of each block. Only each individual teacher and the Head of the Department have access to the student's comments. Follow-up initiatives to solve any existing problem are dealt by the Head of the Department.

Poor student evaluation or high failure rate (over 15%) of a block gives the opportunity for actions being taken at departmental level proposing measures to improve the teaching performance of the block or clinical rotation.

10.2 Comments

During the visitation, the team noticed that the teaching environment is excellent and the cooperation between teaching and technical staff is very high in all departments. Students are heavily supported by the staff. Teachers are very committed to teaching, research and, in the departments to clinical activities, with clinical duties. The proportion of recognised diplomates in all departments (n=41) is elevated, and should be encouraged. In Departments as SportFaMed where the clinical activity is elevated, the implication of teachers in the clinical activities, reduces the time to do research. Nevertheless, the research production of the teachers in the four departments is very good and similar (from 1,1 in the SportFaMed-1,7 MatInf publication per academic staff/year).

Technical staff in the hospital is highly qualified; they are very proactive, implicated in teaching and clinical activities.

During the last 4 years and due to the necessity of more trained staff, the departments with clinical activities have created the position denominated "interns". Interns are veterinarians who work in the hospital for a period of 18 months or 24 months, depending on the department. They have responsibilities in clinical teaching, clinical activities, and they are absolutely necessary for the 24h clinic services.

In addition, there are PhD students and residents in approved residency programs (3 in SportFaMed department) in the departments, who are involved in teaching, research and clinical activities.

In the team's opinion the requirements regarding Academic and support Staff as they are laid down in Annex I of the SOP are met.

10.3 Suggestions

Before moving to the new facilities, it will be necessary to reorganise the clinical activities, and such a re-organisation will be prepared in advance. A plan to organise the clinical activities including teaching and technical staff, administrative support and students has to be prepared in advance.

A reorganisation of the staff is suggested for the near future, which comprises teaching as well as technical staff. It will be desirable that technical staff will be distributed over the different clinical activities; for example sections as anaesthesia and radiology should have their own qualified technical staff. After this distribution, a deficiency in the technical staff might be detected, which then should be solved.

An increase in the number of interns and a reorganisation of the internship system is also needed; in all clinical facilities, but especially in the companion animal clinical sciences. It should be desirable to have a common system of internship for all the services (or even the departments at the establishment). In this system, the main tasks, responsibilities and duration of the internship should be common for all the interns in the establishment. Nowadays, interns are dealing with a large number of clinical and teaching tasks, and in some cases, also research. These responsibilities should be adequately supervised by the staff. When moving to the new facilities, both an increase in the number of interns and, to a lesser extent, in teaching staff to supervise them will be needed.

One of the most important aspect is the 24-hour service in the small animal clinic, which has started in April 2013. This service is absolutely necessary for the adequate care of patients, but also, improves the caseload, the complexity of cases, the number of referrals, the practical training of students, and it is necessary to develop recognised residency programs. This system needs to be continued and potentiated with well-trained staff; at least one trained veterinarian, one nurse, and two on-call specialist (anaesthesia and surgeon). Without these minimum requirements, an adequate 24h service of a Veterinary Teaching Hospital will not be reached.

The 24h services in the equine clinic is working adequately for many years; which should be maintained and potentiated with adequately trained staff.

The trend for increased competition for veterinarians with postgraduate professional qualifications should be encouraged, particularly to increase the number of referral cases specially in the small animal clinic. This strategy includes the education of diplomats in selected fields; nowadays there are several diplomats working in the hospital. This tendency should be potentiated in all fields, but especially in the clinical areas. In this sense, there are only 3 positions for the development of recognised residency programs at the Companion Animal Clinical Sciences; an increase in this number is recommended.

The administrative support for the future hospital should be also restructured. It should be desirable that the administrative staff will be organised under a scheme directed by a manager. This structure will have to manage the economical and administrative system, since it will have to face different areas as small and large animals, anaesthesia, imaging, laboratories, etc. This staff should also be involved in the computerised facilities of the hospital.

11 CONTINUING EDUCATION

11.1 Findings

The legal basis and official requirement for continuing education in Norway are set by the Ministry of Education (KD), which has the statutory authority to require that all universities offer

continuing education for their professional groups. The establishment's Board established the Centre for Further Education (SEVU) in August 2006. A continuing education programme is organised by the SEVU and conducted in cooperation with the Norwegian Veterinary Association (DVN). The programme is mostly designed for and market to the clinical practice and mostly in subjects related to companion animal practice. The programme is based on a demand from the market and there is no line or objective in general for the continuing education. The different academic Departments at the establishment play a crucial role in initiating the specific fields and subjects of further education. Every further and continuing educational course arranged by SEVU has a responsible scientific coordinator from the respective Department.

The Faculty is helping with speakers who mostly come from the establishment, or with contacts to speakers from abroad, but does not have the lead in the continuing education programme. However, each continuing education undergoes quality assurance by the Veterinary Undergraduate and Continuing Education Programmes Committee, which approves allocation of ECTS points. Most courses are small animal subjects and only one is on an equine subject. Other species are not yet involved in the Continuing Education. The continuing education is not mandatory for veterinarians and there is no official supervision of veterinarians in general. There is only intervention from the authorities if there are complaints from some customers, related to specific veterinarians.

11.2 Comments

Continuing Education is extremely important for the veterinary profession and the Faculty can benefit from taking the lead. The profession is getting more and more advanced, specifically concerning companion animals and horses and introduction of new diagnostics, treatments, equipment and surgery techniques call for continuing education organised by an independent institution and not only by private companies marketing advanced equipment or new drugs.

Continuing education should be mandatory for the profession and available for veterinarians working in all species.

Long distant E-learning seems to be absent, although it should be a standard to use it in continuing education in Norway.

In the team's opinion the requirements regarding Continuing Education as they are laid down in Annex I of the SOP are met.

11.3 Suggestions

By taking the lead in continuing education the establishment can improve the goodwill on one hand and get in contact with a number of small animal and equine veterinarians cases on the other hand. By that way the establishment could increase the number of referrals to the clinics.

Cooperation with external partners (Tine, Geno, Norsvin, Kennelclub's, ..) can increase the number of relevant subjects for the courses and will bring in actualities.

The profession is under transformation and new subjects as communication, practice management, marketing and project management will be a valuable offer for the customers in the target group.

Internet and streaming should be implemented in continuing education together with a credit system for veterinarians, which oblige them to obtain a number of ECTS points each year. Streaming will make it possible for veterinarians far from Oslo to follow the courses via computer, to ask questions to the lecturers while being home and even to answer questions of a test on the PC to see if they followed and understood the lecture.

12 POSTGRADUATE EDUCATION

12.1 Findings

At the establishment, there are two main types of postgraduate education: clinical specialty training (interns and residents) and research education programs (Ph.D. and Dr.Philos.)

There are 9 interns and 14 residents working presently in the establishment. Most of the interns are allocated to horse and small animal medicine.

Candidates participating in the residency programs are required to have an undergraduate veterinary degree equivalent to the 'cand.med.vet.' degree. The establishment offers three ECVS certified training programs (veterinary pathology, clinical pathology and small ruminant health management) and approved residency training programmes in Anaesthesiology, Ophthalmology, Diagnostic Imaging and Equine Surgery. Remaining residency programs are also referred to European Specialisation Colleges.

Residents and Ph.D. students are considered regular employees during the residency or the doctorate period and have the same rights as other academic employees.

Ph.D. positions are annually announced and admission criteria do not discriminate between national or foreign candidates. SER 1 refers 127 Ph.D. and 2 Dr.Philos. students. The candidate selection starts at Department level by the evaluation of the applicant's competences and a recommendation by the Head of Department. The final decision is taken by the establishment's Appointments committee. A three years' contract is offered to each selected Ph.D. candidate.

The establishment has 40 Ph.D. positions funded by governmental sources and the other positions have to be funded through external research grants (Norwegian Research Council and European Union). Most (64%) of the Ph.D. students are veterinary graduates and 65% of them have obtained the veterinary degree at the establishment.

Distribution of Master- and PhD-students March 2014:

Department of Food Safety and Infection Biology:

Section for Food Safety: 10 PhD and 1 Master

Section for Microbiology, Immunology and Parasitology: 14 PhD

Section for Pharmacology and Toxicology: 4 PhD and 3 Master

Department of Production Animal Clinical Sciences:

Section for Stationary Clinics: 9 PhD

Section for Herd Health and Field Service: 4 PhD

Section for Experimental Biomedicine: 2 PhD, 4 Master

Department of Companion Animal Clinical Sciences:

Section for Anaesthesia and Radiology: 2 PhD

Section for Equine Medicine and Surgery: 2 PhD

Section for Small Animal Medicine and Surgery: 3 PhD

Department of Basic Sciences and Aquatic Medicine:

Section for Anatomy and Pathology: 6 PhD

Section for Biochemistry and Physiology: 6 PhD

Section for Genetics: 4 PhD

Section for Aquatic Medicine and Nutrition: 13 PhD, 5 Master

Section for Clinical Pathology: 1 PhD

12.2 Comments

Postgraduate students seem to have a very stable and good environment at the establishment.

The conditions offered at the different clinical sectors allow for the training of a greater number of interns.

There are a significant number of veterinary candidates in research training programs referred to the four Departments.

The establishment is having an increased demand from its graduates to obtain a double-competence by overlapping a Ph.D. with a Diploma from the European or American College.

In the team's opinion the requirements regarding Post Graduate Education as they are laid down in Annex I of the SOP are met.

12.3 Suggestions

None.

13 RESEARCH

13.1 Findings

The School's strategy states that the establishment will provide research-based educational programs that meet the Norwegian and European accreditation requirements and qualifications framework. In the establishment document "Research-based education", the School presents its understanding of the term and how education and teaching are research-based. Active researchers, who divide their time between teaching and research, conduct the majority of the establishment's teaching. The students are exposed to research methods from early in the veterinary curriculum and throughout the curriculum and are taught from updated and evidence-based knowledge. The Board determines strategies for research. There is a Research and Ethics Committee (UFE) that advises the Rector in matters relating to research, research politics, research education and research ethics. In this committee representatives from each of the Departments (4) and two PhD students are present. The Rector appoints the committee for a period of four years.

In 2012, a Project-related track was installed into the last curricular year directed towards students interested in a career in research. This Project-related track involves thesis work for 40 ECTS and the students are integrated into one of the active research groups at the establishment or at the Norwegian Veterinary Institute. This track has encouraged veterinary students to plan for a career in research. The establishment believes that veterinarians can contribute to research at the university but also in other life science arenas both nationally and internationally.

In 2013, the establishment received financial support from the Ministry to establish a full-time research year after the 4th semester for 7 students each year. The goal for the programme will be to stimulate veterinarians to choose a career in research. Veterinary students admitted to the research programme will be integrated into the best research groups at NVH. During the remainder of their veterinary studies, the student will engage in a part-time research activity. At the end of their veterinary studies, the student will have completed 2 years of research work but will only have extended their studies by one year. It is envisaged that newly graduated veterinarians with this research background will be attractive for and competitive in other research environments and will contribute to cross-disciplinary contact with a larger portion of research environments in Norway.

Also in the other tracks students have to write a graduation thesis in their last year. In this year they also contain the course "Research methodology and scientific writing". Research workers can pursue the course "Laboratory Animal Science for Research Workers" which is organised two to three times every year.

The evaluations of research activity in the departments and centres (MatInf 2005; BasAM 2006; ProdMed 2007; SportFaMed 2008; Centre for Epidemiology and Bioinformatics 2010; Section of Arctic Veterinary Medicine 2011) and the Norwegian Research Council's Evaluation of Biology, Medicine and Health research in Norway 2011 have given good feedback on the quality of the research groups at the establishment and provided valuable guidance for strategic research initiatives and resource allocations. There has been a consistently good increase in the production of PhDs. The establishment's research commitment particularly in aquatic medicine has been a strength for the research-based education of veterinarians to service the large Norwegian aquaculture industry.

The establishment's research is strongly dependent on the production of PhDs. The establishment has 32 PhD positions funded by the Ministry (KD) through its core allocation of funds and 8 PhD quota grants funded by the Norwegian quota-program. The Committee for Research and Ethics (UFE) allocated these positions to research groups. The other PhD positions at NVH are funded by external research grants.

The research farm at Sandnes and farm facilities on the campus of the University of Life Sciences (UMB) at Ås present an extra advantage for the development of research activities at the establishment. There are facilities for experimental animals and dedicated staff.

There are several incentives to perform research at high level. Publishing activities are rewarded based on the type of publishing (book, paper, etc.) and publishing channel. EU-funded research projects are rewarded with credits for each Norwegian krone (NOK) paid for by the EU. Norwegian-funded research projects are rewarded with credits for each Norwegian krone (NOK) paid for by the Norwegian Research Council. PhDs completed in the last measured year are rewarded. In 2013, the reward for a completed PhD was about 46,835 Euro. Furthermore, research output is one of the criteria taken into consideration during salary negotiations.

There is high competition with other universities and institutions. This results in the research project portfolio at the establishment getting smaller. In recent years, less national research funds have been awarded to the veterinary disciplines in the fields of food safety and animal

health. The establishment has not been effective enough in repositioning itself to be competitive for EU research funds.

There is also a group of PhD-students that are not employees at the vet establishment, but are employees at the Veterinary Institute or other research institutes for example or are employed by collaborating organisations or industry. They are, however, still enrolled as PhD-students at the vet establishment.

13.2 Comments

The establishment is aware of the importance of research in veterinary education and tries to find ways to direct veterinary students toward a research carrier.

Currently students come in a late phase of the curriculum in contact with active research. This is one of the reasons why students still doubt about choosing the research tract. This is not unique for Norway.

Whereas a lot of different biomedical institutions can perform research on mice, cell cultures etc., a veterinary establishment is unique in its research on veterinary species. The establishment uses this uniqueness to stimulate research in Aquatic medicine, which is excellent. However, also animal production and the companion animals as model for human diseases have great potential.

Even though the establishment has facilities for experimental animals and dedicated staff, this facility is strongly underused.

The research in the faculties depends on staff employed by the establishment, but also to a large extent on PhD students. Some departments employ university graduated students until the age of 35 for PhD research.

13.3 Suggestions

Since the establishment performs efforts to increase the number of veterinary students choosing for research, more recently graduated veterinary surgeons will choose a PhD program. It would be ideal that they can become post-docs. So the establishment should make an effort to exchange some of the PhD positions for post-doc positions. Post-docs cannot only perform more independently research, but can also lift research of the establishment to a higher level.

EXECUTIVE SUMMARY

The visitation to the Faculty of Veterinary Medicine and Biosciences of Oslo was well prepared, well organised and carried out in a cordial and professional atmosphere. The SER produced by the establishment was written in accordance with the SOP. During the visitation, the team was given full access to the information, facilities and individuals they asked for.

The visitation was a challenging exercise for the team, since the establishment is in the transition period between two rather different organisational structures, since the new authorities have been appointed recently and since the Oslo campus will move to new facilities in Ås in the near future. However, the team has been fully reassured that, despite the incorporation of the veterinary school in a large university, the ability of the establishment to provide excellent veterinary education and research remains a top priority and its policy remains student-oriented.

The team has identified several areas of excellence to be especially mentioned:

-) quantity, quality and motivation of the staff who is highly dedicated;
-) student-oriented policy which is highly appreciated by the students;
-) cooperation between departments, sections and national institutes;
-) teaching of courses in integrated blocks, although time-consuming for the staff;
-) Aquatic Veterinary Medicine which is a unique feature of the establishment;
-) training in small ruminant medicine in the Sandnes campus;
-) teaching and hands-on training in animal production;
-) practical training in meat inspection, food hygiene practices and food safety assurance methodologies;
-) research-based teaching.

The team has also identified several suggestions for improvement to be mentioned:

-) development of a strategy plan for the future and a procedure to evaluate the suitability of new organisational structures;
-) development of a transversal multidisciplinary research centre in biosciences to stimulate research in veterinary medicine and to implement the one-health concept;
-) further development of IT-services and E-learning;
-) earlier exposure of students to animals/clinics, aquatic medicine, food safety, health management and research;
-) increase of the adequately trained staff in the 24-hour emergency service;
-) more formal organisation of the internship system and further increase of the number of residencies in clinical departments;
-) further increase of the clinical case load;

-) further development of herd health management, veterinary public health and animal welfare.

It is the opinion of the team that the requirements as they are laid down in Annex I of the SOP are met.

In conclusion, the Stage 1 team didn't identify any major deficiency and therefore unanimously recommends full approval of the Faculty of Veterinary Medicine and Biosciences of Oslo.

ECOVE DECISION:

No major deficiencies or serious shortcomings have been found.

The status of the establishment is: APPROVAL/ACCREDITATION

Annex 1: Main indicators (ratios) in the evaluation of the establishment

R1:	nº. undergraduate veterinary students	=	388	=	2.741	GUIDELINES
	nº. total academic FTE in veterinary training		141.55			<8.381
R2:	nº. undergraduate veterinary students	=	388	=	1.085	GUIDELINES
	nº. FTE total Faculty		357.58			<9.377
R3:	nº. undergraduate veterinary students	=	388	=	3.578	GUIDELINES
	nº. VS FTE in veterinary training		108.45			<11.057
R4:	nº. of students graduating annually	=	56	=	0.516	GUIDELINES
	nº. VS FTE in veterinary training		108.45			<2.070
R5:	nº. total FTE support staff in veterinary training	=	210.03	=	1.484	GUIDELINES
	nº. total FTE academic staff in veterinary training		141.55			0.505-1.907

	Total training incl. Prod Anim & Pub Health track n = 18	Total training incl. Small Anim Med track n = 21	Total training incl. Equine Med track n = 11	Total training incl. Aquatic Med track n = 5	Total training incl. Research Project track n = 5	Total cumulative weighted training ¹⁾ Σ n x hours	GUIDELINES
Ratio R6							
Total supervised practical training (D+E+F), hours	2166	2299	2223	2174	2530	135240	
Total theoretical training (A+B+C), hours	2996	2944	3004	2772	2794	176626	

Supervised practical training	0.723	0.781	0.740	0.784	0.906	0.766	>0.602
<u>Theoretical training</u>							

Ratio R7							
Lab work and desk-based work (D) + non-clinical animal work (E), hours	708	622	618	869	1182	42859	
Total clinical work (F), hours	1458	1677	1605	1305	1349	92386	

Laboratory and desk based work + non clinical animal work	0.486	0.371	0.385	0.666	0.876	0.464	<1.809
<u>Clinical Work</u>							

	Total training incl. Prod Anim & Pub Health track n = 18	Total training incl. Small Anim Med track n = 21	Total training incl. Equine Med track n = 11	Total training incl. Aquatic Med track n = 5	Total training incl. Research Project track n = 5	Total cumulative weighted training ¹⁾ Σ n x hours	GUIDELINES
Ratio R8							
Total teaching load (A+B+C+D+E+F+G), hours	5206	5266	5251	4970	5348	313645	
Self-directed learning (C), hours	1074	1024	1064	888	987	61915	

<u>Teaching load</u>	4.847	5.143	4.935	5.598	5.418	5.066	2.59-46,60
Self-directed learning							

	Total training incl. Prod Anim & Pub Health track n = 18	Total training incl. Small Anim Med track n = 21	Total training incl. Equine Med track n = 11	Total training incl. Aquatic Med track n = 5	Total training incl. Research Project track n = 5	Total cumulative weighted training ¹⁾ Σ n x hours	GUIDELINES
Ratio R9							
Total nº. hours vet. Curriculum	5206 ¹⁾	5266	5251	4970	5348	313645	
Total nº. curriculum-hours Food Hygiene /Public Health	595 ²⁾	402 ³⁾	402	402	402	27594	

Total nº. hours vet. curriculum

8.750 13.100 13.062 12.363 13.303 **11.36** 8,86-31,77

Total nº. curriculum-hours Food Hygiene /Public Health

Ratio R10							
Hours obligatory extramural work in veterinary inspection	27 ⁵⁾	27 ⁶⁾	27	27	27	1620	
Total nº. curriculum-hours Food Hygiene /Public Health	595 ²⁾	402 ³⁾	402	402	402	27594	

Hours obligatory extramural work in veterinary inspection

0.045 0.067 0.067 0.067 0.067 **0.059** 0.074-0.556

Total nº. curriculum-hours Food Hygiene /Public Health

					GUIDELINES
R11:	$\frac{\text{n}^\circ. \text{ of food-producing animals seen at the Faculty}}{\text{n}^\circ. \text{ of students graduating annually}} = \frac{517}{56} = \mathbf{9.232}$				>0.758
					GUIDELINES
R12:	$\frac{\text{n}^\circ. \text{ of individual food-animals consultations outside the Faculty}}{\text{n}^\circ. \text{ of students graduating annually}} = \frac{4273}{56} = \mathbf{76.30}$				>8.325
					GUIDELINES
R13:	$\frac{\text{n}^\circ. \text{ of herd health visits}}{\text{n}^\circ. \text{ of students graduating annually}} = \frac{47}{56} = \mathbf{0.839}$				>0.326
					GUIDELINES
R14:	$\frac{\text{n}^\circ. \text{ of equine cases}}{\text{n}^\circ. \text{ of students graduating annually}} = \frac{1757}{56} = \mathbf{31.37}$				>2.700
					GUIDELINES
R15:	$\frac{\text{n}^\circ. \text{ of poultry/rabbit cases}}{\text{n}^\circ. \text{ of students graduating annually}} = \frac{95}{56} = \mathbf{1.696}$				>0.407
					GUIDELINES
R16:	$\frac{\text{n}^\circ. \text{ of companion animals seen at Faculty}}{\text{n}^\circ. \text{ of students graduating annually}} = \frac{15616}{56} = \mathbf{278.87}$				>48.06
					GUIDELINES
R17:	$\frac{\text{Poultry (flocks)/rabbits (production units) seen}}{\text{n}^\circ. \text{ of students graduating annually}} = \frac{7}{56} = \mathbf{0.125}$				>0.035

					GUIDELINES
R18:	$\frac{\text{n}^\circ. \text{ necropsies food producing animals + equines}}{\text{No. of students graduating annually}}$	=	$\frac{775}{56}$	=	13.83 >1.036
					GUIDELINES
R19:	$\frac{\text{No. of poultry/rabbits}}{\text{No. of students graduating annually}}$	=	$\frac{208}{56}$	=	3.714 >0.601
					GUIDELINES
R20:	$\frac{\text{Necropsies companion animals}}{\text{No. of students graduating annually}}$	=	$\frac{192}{56}$	=	3.429 >1.589