Appendix SER 2:

Appendix 1: Strategic plan 2011-2013 ........................................................................................................ 1
Appendix 2: Strategy for study quality work at NVH 2013-2014 and Quality system structure .............................................................. 8
Appendix 3: Study quality report academic year 2012-2013 ................................................................. 34
Appendix 4: Report from the formal meeting once a year between the school leaders and the Ministry of Education and Research. (Management and dialogue meeting) ................................. 71
Appendix 5: Study plan and subject description June 2013 ............................................................... 74
Appendix 6: Mandate for Curriculum development .............................................................................. 183
Appendix 7: Manual for Block Leader .................................................................................................... 184
Appendix 8: Mandate for the Study Committee for the Veterinary Medicine and Veterinary Nurse Program and School Director .................................................................................. 204
Appendix 9: Researched based education .......................................................................................... 208
Appendix 10. List of publication ........................................................................................................ 213
Appendix 1: Strategic plan 2011-2013

The Norwegian School of Veterinary Science (NVH) is the only institution in Norway to offer higher education in veterinary science and has in this capacity a national responsibility for the development of medicine, research and education in the field of veterinary science. This in turn means that NVH acts as a national knowledge centre for veterinary medicine for the whole country. The quality of NVH’s activities must be compared to that of equivalent educational institutions abroad and NVH must therefore be an internationally orientated institution.

The Ministry of Education and Research’s status report for the higher education sector in 2009 describes NVH as follows: *The Norwegian School of Veterinary Science is in a class of its own when it comes to student progression. Together with NHH, NVH is the most attractive institution of higher education in Norway. Furthermore, NVH achieves high scores for all the research indicators used in the classification.*

The purpose of this strategic plan is to establish a common framework for NVH’s different areas of activity and to inform students, employees and society at large of NVH’s intended development plans. In addition, it focuses on NVH’s designated tasks and chosen courses of action.

In the period 2011-2013, NVH will prepare the establishment of the new university at Ås, in collaboration with the Norwegian University of Life Sciences (UMB) and NVH/UMB’s Joint Board. The new university will take over responsibility for veterinary medicine and it is important to continue and further improve NVH’s qualities within the framework of the new university. The strategic plan will ensure that the various disciplines in the field of veterinary science are strengthened by the establishment of new, functional buildings in a modern and progressive university environment.

**Vision**

The need for new knowledge and the requirements candidates in veterinary medicine are expected to fulfil are changing. We are facing national and international challenges as regards both animal health (land animals and fish) and animal welfare. Threatening, serious and infectious animal diseases and diseases that can be transmitted from animals to humans are on the increase, also in our part of the world. The supply of safe food is a precondition for good public health.

In order to help meet these challenges, NVH’s vision is to be counted amongst the leading and most progressive institutions of veterinary medicine in Europe as regards research, education and the distribution of knowledge.

**Fundamental values**

NVH’s fundamental values are based on the Norwegian acronym "RAUS", meaning “generous”, where the four letters stand for the following values:

**R** Respectful
We shall always strive to see the value of others' experience, work and professional point of view. We shall respect the intrinsic value, character and needs of animals. We shall be generous in all our internal and external communication.

A Ambitious

Our activities shall be clearly targeted, defined and open to new impulses and thinking. Society at large shall never be in doubt as to what NVH stands for and works for. In all our fields of activity, we shall set ourselves high objectives and standards of quality and ethics.

U Independent

Research, teaching and all other activities at NVH shall be free and independent. Our knowledge shall contribute towards the promotion of good health and a high standard of welfare for both animals and people – unaffected by political and economic interests.

S Collaboration

Collaboration presupposes a high degree of openness, tolerance and interaction between colleagues and the outside world. NVH shall motivate skilful employees and students. A spirit of common commitment paves the way for a vibrant working environment, exciting research findings and fruitful interpersonal relations.

Academic profile

Due to the high quality of its educational programmes and research, NVH has a key role in addressing and solving important social challenges related to animal health and welfare, both as regards animals bred for food and animals used in sports and as pets. Another of NVH's major roles is to help to promote good public health by means of research and education in the field of zoonoses (diseases transmitted between animals and humans), food safety and related environmental issues.

Aquaculture (aquafarming) is by far the most important field of animal production in Norway. NVH has a special responsibility for maintaining good levels of health among fish and for helping to promote a sustainable aquaculture. Since Norway is a leading international aquaculture nation, NVH aims to be the international leader in the field of medical research and education related to aquaculture.

We are facing a high global growth in population and in order to produce enough food and necessary proteins for the earth's population, it is expected that the number of domestic animals will double during the next decades. Increased trade in animals and animal products, population mobility and climate changes will pose great challenges when it comes to the spreading of animal diseases, zoonotic diseases and food safety. As many as 75% of new infectious diseases in humans are thought to come from either wild or domestic animals. In order to face these challenges, interaction between medicine, veterinary medicine, agriculture and social science will be essential – a so-called "one world – one health" approach. NVH will play its part in solving these global issues by collaborating with other national and international educational and research institutions.
**Education**

Objectives

- NVH aims to educate candidates to a high international level of competence so that they are able to address national and international tasks in the fields of veterinary and biomedicine and animal care.
- NVH shall offer research-based study programmes which comply with Norwegian and European accreditation requirements and qualification standards.
- NVH shall provide students with a good physical and mental learning environment.
- NVH shall, in connection with the establishment of the new university at Ås, plan buildings and facilities which will allow the veterinary study programme to acquire American accreditation.
- Educate diplomats at international level in the field of veterinary medicine.

NVH is especially committed to:

1. Drawing up good descriptions of learning outcomes for the various disciplines and for the whole veterinary and animal care study programme, in line with national and international professional requirements (day-one skills).
2. Adjusting the content of the study programmes and their corresponding teaching and evaluation methods so that these promote and make sure candidates acquire a good level of competence beneficial to society (day-one skills).
3. An on-going dialogue with the authorities, the animal trade sector and animal owner and consumer organisations in order to ensure that our study programmes meet current needs.
4. Establishing biomedical research as an integral part of the study programme in veterinary medicine.
5. Continuing plans to develop the animal care programme into a bachelor degree programme.
6. Exploiting the potential for establishing interdisciplinary and progressive study programmes within the field of aquaculture, in collaboration with UMB.
7. Recruiting students from a wide sphere of interests, from all parts of the country and from both genders.
8. Educating international diplomats in prioritised areas and drawing up an escalation plan for recruitment in these areas.

In addition, NVH will continue to work to achieve the following:

1. International student mobility based on bilateral collaboration agreements with prestigious education institutions.
2. Further and continuing education programmes in NVH's field of activity, which will enable participants to acquire up-to-date knowledge so that they are able to undertake the tasks that need to be addressed.
3. Improvement of the learning environment and ongoing evaluations.
**Research and postgraduate education**

Objectives

- NVH aims to conduct veterinary and biomedical research of a high quality and high ethical standard.
- NVH aims to educate PhD candidates of a high international calibre.

The research carried out at NVH shall be:

- internationally leading in the field of aquamedicine
- of a high international standard in NVH's other disciplines:
  - Food safety in the production chain/veterinary community medicine
  - Animal health and animal welfare
  - Causes and mechanisms of diseases pertaining to veterinary medicine and comparative medicine
  - Preventive medicine

NVH's clinical activities shall be conducted in such a way that they can contribute towards research projects.

NVH is especially committed to:

1. Working to establish a new Centre for Advanced Research in Aquamedicine.
2. Developing "Life Science" and "One world – one health" as a common area of investment for NVH, UMB and the University of Oslo (UiO).
3. Improving the quality of postgraduate education and student supervision.

In addition, NVH will continue to work to achieve the following:

1. Strong research groups with inspiring and lucid project leaders.
2. A larger number of research projects financed externally by business and national and international sources of financial support. NVH will focus especially on acquiring more financial support from international, and in particular, European arenas.
3. NVH's research groups shall participate in national and international fora where professional priorities for the future are determined.
4. NVH's research groups will listen to, and collaborate with, the business sector in order to achieve progressive and relevant research collaborations and knowledge development.
5. Develop animal testing at NVH with a greater focus on research and in compliance with the three R's: (Reduction, Refinement, Replacement).

**Innovation**

Objectives

- NVH shall utilise the innovation potential of research results in order to further develop knowledge applicable to business development and added value for the benefit of society at large.

NVH is especially committed to:
1. Strengthening the culture and motivation for innovation.
2. Encouraging collaboration with relevant business partners.
3. Collaborating with the best TTO (technology transfer office) in the region.

Dissemination
Objectives

- NVH aims to be a visible and well-respected disseminator of useful research-based knowledge which arouses curiosity and promotes understanding for veterinary and biomedicine.
- NVH also aims to arouse the general public's interest in, and understanding for, animals.

NVH is especially committed to:

1. Drawing up a communication strategy.
2. Improving know-how as regards dissemination.
3. Creating a profile for NVH so that we can recruit students with a wide sphere of interests, from all parts of the country and from both genders.

In addition, NVH will continue to work to achieve the following:

1. Dissemination activities such as Research Days, Researchers' Night, Open Day etc
2. The use of channels targeted at young people, such as TV, film and social media
3. Play an active role in the public debate related to our fields of interest.

Clinical operations
Objectives

- In order to be able to offer a good education in veterinary science, NVH shall offer high-quality diagnostic and clinical services that comply with international accreditation requirements in the field of teaching and research.

NVH is especially committed to:

1. Assessing and determining an efficient clinic organisation.
2. Developing a clinical service and planning clinical facilities that will heighten NVH's competitive strength when it moves its operations to Ås. These activities must to a greater extent be developed as a referral hospital, but must also provide teaching in:
   1. Primary cases
   2. Acute medical cases
   3. Referred patients
3. Drawing up a long-term plan for acquiring state-of-the-art diagnostic equipment.
4. Developing a service-oriented culture vis-à-vis animal owners and referring veterinary surgeons.
In addition, NVH will continue to work to achieve the following:

1. Clinical training shall be a closely integrated part of the teaching and research programme.
2. A diagnostic service that will increase the quality and expertise of the clinic.

Management, organisation and infrastructure

Objectives

- NVH aims to have an efficient management and administration that supports and promotes a progressive development of the core activities of the School.
- NVH aims to be a safe workplace with a good psychosocial working environment.

NVH is especially committed to:

1. Evaluating its managerial structure and implementing management courses for all staff managers.
2. Giving higher priority to the development of ICT with a view to supporting the core activities of the administration.
3. Providing its employees with access to necessary infrastructure of an international standard.
4. NVH's management shall be proactive with regard to providing adequate internal information and participation until the merger with UMB has been completed. NVH will consistently seek to find solutions to future organisational challenges after discussions with our partner, the NVH/UMB Joint Board, and with the employee organisations.
5. NVH will give higher priority to financial management and draw up longer-term budgets and plans.

In addition, NVH will continue to work to achieve the following:

1. A clearly defined HR policy that safeguards each individual employee's competence and development potential. During the whole strategic period, NVH will address the issues facing employees as a result of the move to Ås.
2. Ensure that the working environment is safe by means of HSE (health, safety and environment) work and that NVH's operations are carried out in an environment-friendly way. Particular attention will be paid to the working environment in connection with the move to Ås.
3. Increase the proportion of women in professorships by means of a moderate use of gender quotas.

NVH's regional activities

Objectives

- NVH shall further develop activities at the Høyland Field Station, in line with the Parliamentary Report, and develop a Section for Arctic Veterinary Medicine at the High North Research Centre for Climate and the Environment (Fram Centre) in
Tromsø, in collaboration with the Norwegian Veterinary Institute. These regional operations must be based on NVH's core areas of activity and be an integrated part of NVH's teaching and research programmes. NVH's regional operations must be rooted in the strategy of the NVH/UMB Joint Board.

Sandnes

NVH is especially committed to the following in the Sandnes region:

1. Establishing teaching and research activities in the field of livestock medicine and livestock hygiene at Høyland, in collaboration with the relevant academic departments in Oslo.
2. Carrying out a large proportion of the clinical teaching at Høyland, in line with the increase in the number of students to 70.
3. Building a hall of residence for students at Høyland.
4. Actively participating in the work involved in establishing an experimental surgery department, in collaboration with the University Hospital in Stavanger.

In addition, NVH will continue to work to achieve the following in Sandnes:

1. Further develop NVH's collaboration with the Norwegian Veterinary Institute.
2. Exploit the potential of regional opportunities for collaboration and financing.

Tromsø

NVH is especially committed to the following in the Tromsø region:

1. Working to move the Section for Arctic Veterinary Medicine to the Fram Centre, in close collaboration with the Norwegian Veterinary Institute.
2. Increasing teaching and supervision tasks in collaboration with relevant academic departments in Oslo.
3. Evaluating the activities of the Section for Arctic Veterinary Medicine in 2011.

In addition, NVH will continue to work to achieve the following in Tromsø:

1. Increase externally financed research activities linked to High North Research relating to animal health, climate and the environment.
2. Further develop collaboration with research groups in the region, especially with other academic communities seeking to establish themselves at the Fram Centre.
Appendix 2: Strategy for study quality work at NVH 2013-2014 and Quality system structure

Strategy for study quality work at the Norwegian School of Veterinary Science 2013-2014

Approved by the Board 13.02.2013

Introduction

NVH’s quality system was adopted by the Board in 2004. In 2007, the system for quality assurance of education was reviewed and approved by NOKUT. However, such approval is not a final sentence for a completed process, but is rather to be regarded as a starting point and guideline for a process that requires continuous development and work with academic quality.

NVH received an exemption from the Department of Education (KD) for a 6-year cycle for the NOKUT evaluation based on the fact that NVH and UMB will merge to one organization in 2014. The new institution's quality system will then be evaluated as quickly as possible.

NVH has applied for re-approval & accreditation of EAEVE in 2014. To be fully accredited must also NVH now undergo a Stage 2. Stage 2 evaluates the quality assurance of educational activities.

NVH's strategy for study quality work (2007-2011), referred to how NVH should actively use the quality system to increase the quality of their studies. The new strategy builds on this, and also demonstrates how NVH works both within the framework of the requirements of NOKUT and EAEVE requirements for monitoring and content of the system.

How NVH is working specifically to increase the quality of education every year is stated in the study quality report. The study quality report is then followed up through the budget and plans of action, and provides goals and measures in future strategies.

Definitions

At NVH these expressions are defined as followed:

Quality of education: How the quality appears to the student, how it meets recognized academic goals, and the way it provides education relevant to the society in the broadest sense.

Quality work: How NVH is working to achieve good quality of education.
Quality system/quality assurance system: The system that documents the quality work and may reveal declining quality, that is then acted upon.

Vision for NVH (Strategic Plan 2011-2014):

“To help solve these challenges, NVH’s vision is to be among the best and most advanced veterinary medical institutions in Europe in research, education and communication of knowledge.”

The mission of study quality work is to contribute to achieving the School’s vision of quality, and contribute to achieving the goals of the strategic plans.

The quality system shall secure and develop the quality of education.

NVH has the following strategic plans:

Strategic Plan (superior to all the other plans)

Strategy for Study Quality Work
Research Strategy
Strategy for Internationalization
Communication Strategy

Quality Assurance Systems:

NOKUT / EAEVE’s opinion of what distinguishes a good quality system

Stimulus to quality work and quality culture

NOKUT shall assess whether the quality assurance system promotes broad participation in the quality work among staff and students and their democratic bodies, if it stimulates to quality work that is characterized by transparency, commitment and improved will, and whether information and assessments are documented and available.

EAEVE: Faculties shall have a policy and associated procedures for the assurance of the quality and standards of their programmes and awards. They shall also commit themselves explicitly to the development of a culture which recognizes the importance not only of quality, but also quality assurance.

Goals, planning and management support

NOKUT assesses whether the quality assurance system is described so that it specifies the objectives, processes, actors and forums which are included, if it is anchored in the management and decision-making bodies at various levels, if the division of labor and responsibilities in the quality assurance are provided, and whether the quality assurance system is to be subject to regular evaluation and development with the aim of the institution’s own needs.
EAEVE: To achieve a quality culture, faculties must develop and implement a strategy for the continuous enhancement of quality. The strategy, policy and procedures shall have a formal status and be publicly available. They shall also include a role for students and other stakeholders.

Collection of documented information about the quality of education - Analysis, assessment and reporting - The use of knowledge for quality enhancement.

NOKUT shall consider whether safety and assessment of each initiated study is based on information collected systematically and from multiple sources, and if the system has specific processes to ensure the quality of the establishment of new studies.

NOKUT shall consider whether the information the system generates is analyzed, assessed and presented to the responsible forums and management levels.

NOKUT shall consider whether improvement measures are assessed and implemented based on the quality analyzes that have been done. This applies to both measures in cases of failure in relation to the accreditation requirements, and measures to further develop the quality of education.

EAEVE:
In particular it must become obvious how the Faculty collects, analyses and uses relevant information for the effective management of its study program and other relevant activities, such as residency programs, continuing education, research and research education, and how the public (stakeholders) is informed.

NVH’s Quality System:
How NVH has built up their system and included requirements relating to contents and assessments of good quality systems based on NOKUT and EAEVE, is described in italics below. Next, the quality system’s structure, goals (quality requirements), organization, responsibility and follow-up are accounted for. Finally, the quality system is portrayed visually from different angles.

NOKUT’s requirements relating to contents of the quality assurance system:
- The quality assurance system shall generate the knowledge that the institution needs to assess the quality of studies.

  NVH shall gain knowledge through student evaluations, the blocks self-evaluation, committee work and student bodies, connection with society both in and outside Norway, international accreditations (EAEVE and ACOVENE) and analysis of key figures and statistics. This will be analyzed and evaluated and new measures will emerge through annual study reports (see figure at the back).

- Quality assurance shall include all educational provision that an institution provides, internally and externally, all parts of the education program and all forms of dissemination.

  The structure of NVH’s quality system is among other things divided into these areas; undergraduate education (currently veterinary and veterinary nurse studies), PhD and European specialist graduate programs, and continuing and further education.

- The institution shall have regular routines and processes that in an annual cycle produces, assess and applies information about each program and about the educational activities in general.
The Quality Circle shall be an established mindset both among students, educators, leaders and support systems.

NVH will have an annual process with broad participation that collects, processes, presents, analyzes and proposes improvements through the work of the annual study report. The report will be considered by the Board simultaneously with next year's action plan and budget.

- The system shall ensure that the institution assesses the results of the educational activities, reveals weaknesses, implement improvement measures and undertakes continual review with the aim of quality improvement. Essential information and assessments shall be sufficiently documented.

The Board has the responsibility of allocating sufficient resources and ensuring that key challenges are addressed. This is followed up administratively, through committee work and implemented through the line of the departments.

NVH will make evaluation results available to students and staff. NVH’s system, study documents and reports will be publicly available on the Internet (transparent).

EAEVE’S requirements to the contents in the system, and how NVH will meet these:

1. Policy statement
   The policy statement is expected to include the:
   - Relationship between teaching and research so that research education and research quality can be distinguished
   - Faculty’s strategy for quality and standards
   - Organisation of the quality assurance system
   - Responsibilities of organisational units and individuals for the assurance of quality
   - Involvement of students in quality assurance
   - Ways in which the policy is implemented, monitored and revised

- NVH shall have strategies adopted by the Board with ambitious goals in all core areas.
- NVH shall have their own strategy for how the School is working with quality work.
- The quality system shall provide an overview of objectives, organization, follow-up and responsibilities in the quality work.
- NVH’s quality work shall be transparent and community oriented.
- The Quality Circle shall be a basic principle in NVH's quality thinking. Organization of the quality work should ensure broad involvement of staff, students and "stakeholders". Responsibilities shall be clearly defined at all levels at NVH. Information retrieval, assessment and follow-up shall occur within all of NVH's quality areas. This will be accounted for in the annual study report to the Board, and followed up the upcoming year (see figure).
- NVH shall, through programme descriptions and notes on research-based education, account for how NVH ensures connection between teaching and research.

2. Assessment of students, post graduate education and student welfare
   Undergraduate education
   Admission of national and foreign students:
   - Enrolled students must be assessed regularly using published criteria, regulations and procedures which are applied consistently.
Student assessment procedures are expected to:
- Be designed to measure the achievement of the intended learning outcomes and other programme objectives, e.g. day 1 competencies
- Have clear and published criteria;
- Where appropriate, not rely on the judgments of single examiners;
- Results of assessment must be documented properly;
- Be subject to administrative verification checks to ensure the accuracy of the procedures.
- In addition, students should be clearly informed about the assessment strategy being used for their programme, what examinations or other assessment methods they will be subject to, what will be expected of them, and the criteria that will be applied to the assessment of their performance.

Undergraduate education:
- NVH shall be included in the national system of Universities and Colleges Admission Service (Samordna Oppptak (SO)) and follow the rules at the national admission regulations for all students applying undergraduate education. Information on applying for admission shall also be available on the School's and SO’s website.
- NVH shall have regulations concerning admission, studies and examinations. In case of audit, the Regulation shall be processed by the Academic Affairs Committee, sent for hearing among students and staff and passed by the Board. The Regulation shall be publicly available on the web.
- Local admission (admission replacement and additional education) shall have clearly stated rules laid down in the School's own regulations for admission, studies and examinations.
- Learning outcomes and how these are tested through the examination system shall be described in the Study plan. How the various disciplines contribute to "day one skills" should also be accounted for in Study plan.
- School's examination system shall follow the rules of the Norwegian Act Relating to Universities and University Colleges and the School's own Regulations for Admission, Studies and Examination.
- NVH’s criteria in order to pass the examination shall be embodied in the Regulation and in Study plan.
- NVH shall have procedures that assure the quality of examinations and examination results embodied in the regulation, the Manual for Block Leader and the Study Committee’s own Quality System procedures. Examination results will be announced through the Norwegian national student administrative system: National Student administrative system (Felles Studentsystem (FS)). The Office of the Auditor General’s (Riksrevisjonen (OAG)) quality assurance requirements must be followed.

Post-graduate student education; academic track

Information on the following topics is required:
- Admission of national and foreign students
- Underlying study programmes, requirements and programme-assessment
- Student assessment procedures and results

PhD education:
- NVH shall have regulations for the PhD programme. In case of audit, the regulation shall be processed by the Committee for PhD and Residency Programmes, sent to hearing among PhD students and staff and passed by the Board. The Regulation shall be publicly available on the web.
- NVH shall have procedures for announcing PhD positions and the employment of PhD students. NVH shall have procedures that ensure admission to PhD programs, ensuring
progression and that the PhD student has completed regulatory requirements for academic training and research projects in a positive manner. The thesis will be evaluated according to recognized international professional standards and the public defense shall be carried out in accordance with the Regulation.

- School's rules for examination, National Student administrative system (Felles Studentsystem (FS)) and OAG’s requirements for quality assurance of data are also used in PhD education.

**Post-graduate student education; professional track**

Information of the following topics is required:
- Types of programmes offered and admission procedures for national and foreign students
- Cooperation with other institutions
- Student assessment procedures and results

Diplomat Education:
- NVH will further educate candidates through the European Board of Veterinary Specialization (EBVS) according to their own strategies.
- NVH shall have guidelines to ensure a good implementation at NVH.

**Student welfare**

Information of the following topics is required:
- Measures taken to prevent zoonoses
- General and specific student counselling

Student Welfare:
- NVH shall, throughout the programme, emphasize the students' Health, Environment and Safety (HMS), undertake the necessary training and have systems to prevent accidents and zoonoses. NVH shall have an HMS system with clear procedures and responsibilities.
- NVH shall offer students the opportunity to use welfare services both locally at NVH and through its membership with the Student Welfare Organization in Oslo and Akershus (Studentsamskipnaden i Oslo og Akershus (SiO)).
- NVH shall offer students information orally and in writing throughout the programme, and give students who need it, individual consulting both internally at NVH and through the specialist and student counseling service at SiO.

3. *Assessment of teaching staff*

Institutions should ensure that their teaching staff recruitment and appointment procedures include a means of ensuring that all new staff have at least the minimum necessary level of competence.
- Teaching staff should be given opportunities to develop and extend their teaching capacity and should be encouraged to improve their skills.
- Opportunities for didactic and pedagogic training and specialization should be available.
- The institution should describe any systems of reward for teaching excellence in operation.
- A system for assessment of teaching staff must be in operation and should include student participation.
• NVH shall have appointment procedures to ensure that we get the best qualified applicants, and employ the one with the best professional and educational qualifications for vacant teaching positions.
• NVH shall have educational training of all newly appointed teachers within two years and ensure all teachers an academic and educational development.
• The Study Committee (SU) shall set pedagogy and subject didactics on the agenda through seminars and meetings.
• NVH shall have an award for teaching and dissemination (Pegasus Prize).
• School's student evaluation system shall give students the opportunity to bring up issues concerning teaching and individual teachers. The Head of Departments are responsible for the follow-up on these comments.

4. Assessment of learning opportunities

The Faculty must provide proof of a quality assurance system that promotes and monitors the presence of an academic environment highly conducive to learning including self-learning.
Type, provision and updating of appropriate learning opportunities for the students should be clearly described as well as the involvement of students.
The institution should also describe how it manages the promotion of up to date facilities for supervised and self-studies and the promotion of lifelong-learning.

• NVH shall have a Learning Environment Committee (LMU) consisting of students and staff who evaluate and work to develop the physical and mental learning environment. LMU reports directly to the Board and assignments are regulated by the Norwegian Act Relating to Universities and University Colleges.
• NVH shall have a library, a training clinic, multimedia room, computer room, group rooms and reading rooms that promote student learning.
• NVH shall have schedules and educational programmes that promote individual initiative and encourage lifelong learning.

5. Assessment of training programmes and the award of the title of veterinary surgeon

Assessment is expected to include:
-Development and publication of explicit intended learning outcomes, including a description of essential competences required at graduation (the so-called "day one skills") as listed in procedures for formal curriculum and teaching programme approval and regular reviews procedures monitoring delivery of the curriculum and teaching programme.
-Assurance concerning the participation of students in quality assessment activities.
-Parameters assessed and procedures to monitor regular feedback from stakeholders and graduates
-Provision of a structure that promotes life-long learning

• NVH shall have a curricula laid down in the Regulation for all studies. In case of larger audits, the Study Plan will be sent out to students and staff for hearing before being passed by the Board. It will then be publicly available on the internet. Annual audits are treated in the Study Committee (SU), following a hearing process with teachers and students.
• All academic environments should draw up learning outcomes descriptions and these shall be made publicly available through the Study Plan. Learning outcomes descriptions shall be approved by the Study Committee and will be subject to annual audits.
• The Study Committee is responsible for the integrity of the Study Plan and that the curriculum work helps to improve student achievement (learning outcomes and "Day one skills").
• NVH shall, through their student evaluation system and the departments’ self-evaluations, get regular feedback regarding the Study Plan and teaching programme. The School's annual work with the Study Quality Report shall ensure broad participation at all levels of the organization, followed up through relevant forums and measures stipulated in the action plan. The Board is responsible for, through the budget process, to allocate sufficient resources.

• Students shall participate in quality work through web-based student evaluation, the election of an employee representative, reference groups, the student’s political union (VSU), representation in all decision-making councils and committees, regular meetings with the management, central management team and departments when matters concerning students are subject. Student representation in collegiate bodies is authorized by the Norwegian Act Relating to Universities and University Colleges.

• The Council for Cooperation with Stakeholders (RSA), Candidate surveys, as well as departments, as direct participant and partners with social partners, should provide NVH with feedback from the society. This information is assessed and followed up through the annual Study Quality Report.

• Through study programs, teaching and other ongoing activities, NVH shall encourage students to lifelong learning.

6. Assessment of quality assurance systems for clinics, laboratories and farm

The Faculty should describe the system(s) of quality assurance it possesses to monitor and assure clinical, laboratory and farm services

• The School's clinics shall operate professionally, have good routines and practice good service for clients.

• NVH's laboratories and analysis procedures shall be certified in accordance with good academic standards, and SOPs and regulations regarding the students shall be drawn up where necessary.

7. Assessment of continuing education

The Faculty should describe the system of quality assurance it possesses to monitor and promote the design, implementation and quality control of its own, or joined Continuing Professional Development (CPD) programmes in specific areas of practical veterinary medicine.

• The Centre for Further and Continuing Education (SEVU) shall arrange for continuing and further education in line with the School's strategies.

• The same principles as for the approval of undergraduate education's curriculum will also apply to SEVU’s course activities. This means that all course arrangements must first be approved by the Study Committee. Examination Regulations principles regarding quality assurance are template for the SEVUs activities.

• National Student administrative system (FS) and OAG’s requirements for quality assurance of data are also used for continuing education.

8. Assessment of research

The institution should describe the system of quality assurance it possesses to develop and maintain and audit research programmes. Of particular interest is how research provides opportunities for student training, staff promotion, and how research methods and results are conveyed into basic veterinary training.
• NVH shall implement national and international evaluations of its research. This will be followed up through strategies, Committee for Research and Ethics (UFE) and their priorities and annual budget and action plans.

• NVH shall have appointment procedures to ensure that we get the best qualified applicants, and employ the one with the best research and teaching expertise for vacant academic positions.

• The teaching shall be based on research, and through the curriculum students will be introduced to scientific thinking and gain experience about research principles through working with a thesis. Selected veterinary students, with particular interest in research, should be given the opportunity to have a research year and / or an extended depth in their differentiation year.

9. Assessment of internationalization of education and research

The institution should describe the system it possesses to promote and assess the development of international post-graduate education and of co-operating research projects with other countries, including developing countries. Of particular importance is description of the measures of encouragement applied to engage veterinary students and newly graduates in international mobility of training (e.g. EU programmes such as Erasmus, Socrates, Tempus, Marie Curie etc) as well as the effectiveness of the activities.

• NVH shall have an internationalization strategy that focuses on both research and teaching collaboration.

• NVH will participate in international mobility programs, NOVA (Nordic Forestry, Veterinary and Agricultural University Network) cooperation and other relevant joint projects described in the International Strategy.

• NVH will have cooperation agreements with good veterinary medicine institutions.

• NVH shall ensure the quality of bilateral student exchange.

10. Assessment of cooperation with stakeholders and society

- The institution should provide proof that it regularly publishes up to date, objective and accurate information, both quantitative and qualitative, about the study programme.
  - Published information might also include the views and employment destinations of past students and the profile of the current student population.
  - This information should be readily accessible and should not be used simply as a marketing opportunity.
  - The institution should describe to what extent it meets its own expectations.

• School's Study Quality Report shall be publicly available on the internet.

• All the School's documents shall be publicly available on the internet.

• NVH's Board business and minutes shall be publicly available on the internet.

• NVH shall have regular meetings with the Council for Cooperation with the Stakeholders (RSA) and other stakeholders and partners.

• NVH shall, as a direct operator and service provider to society, improve its services on the basis of feedback.
Structure of the Quality Areas

The Board at NVH has the overall responsibility for the School’s quality system and quality. The Rector and Director are responsible for the different quality areas delegated by the Board. During each activity, operational responsibility is provided. This person/committee is responsible in order to initiate processes delegated by the Rector or Director. In activities that take place on several different levels and locations the Rector or General Director will be listed.

NVH’s six quality areas are:
1. Policy and Relevance for Society (compared with EAEVEs Chapter 1, 5 and 10)*
2. Basic Studies (compared with EAEVEs Chapter 2 and 5)
3. Further and Continuing Education (compared with EAEVEs Chapter 7)
4. Research, PhD and Diplomat education (compared with EAEVEs Chapter 2 and 8)
5. Internationalization (compared with EAEVEs Chapter 9)
6. Framework Quality (compared with EAEVEs Chapter 2, 3, 4 and 6)

* In parentheses is where the 10 Chapters evaluating by EAEVE are recovered in the School’s structure.

<table>
<thead>
<tr>
<th>Quality area 1: Policy and Relevance for Society</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goals:</strong> NVH's management systems shall ensure a good quality of education and contribute to continuous quality improvement and good social relevance.</td>
</tr>
<tr>
<td><strong>Overall responsibility:</strong> General Director and Rector</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Element/quality requirements</th>
<th>Activity (Operational responsibility)</th>
<th>Documents that sets standards or describes procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality system for academic quality. Quality requirements: The quality system is maintained and further developed in line with NVH’s strategic plans.</td>
<td>1. Develop long-term strategies regarding work with study quality. (Rector) 2. Further develop the quality system in line with NOKUT - EAEVE,- and ACOVENE’s recommendations. (General Director)</td>
<td>Act Relating to Universities and University Colleges Regulations for Quality Assurance and Quality Improvement in Higher Education and Tertiary Vocational Education. Regulations for the Supervision of Educational Activities (NOKUT) Strategic Plan Strategy for Study Quality Work</td>
</tr>
<tr>
<td>1.2 Organization of quality improvement. Quality requirements: Responsibility for quality work is rooted in management at all levels, the participation of all staff and students are facilitated.</td>
<td>1. Have clear roles and division of responsibilities regarding the quality work. (General Director)</td>
<td>Organization Chart Organization of NVH's Quality System. Instructions for the Board Instructions to the Rector Instructions for the Director General Regulations for Internal Board Members Regulations for Election of the Rector and Prorector Rules for Selecting Leaders at Subsidiary Unit</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1.3 Strategy and planning documents. Quality requirements: Strategies, planning documents and budget processes shall be effective instruments in quality work.</td>
<td>1. Use the annual cycle in quality work. (General Director) 2. Develop strategic plans (General Director) 3. Prepare annual budget and action plans that will be monitored through the annual cycle. (Financial Director)</td>
<td>Allocation and Directive Letter Budget Document Strategic Plan NVHs annual cycle Budget and Action Plan</td>
</tr>
<tr>
<td>1.4 Regulations. Quality requirements: The School's regulations shall be effective instruments in quality work.</td>
<td>1. Have regulations that set the standard for the business. (General Director)</td>
<td>Act Relating to Universities and University Colleges Study Documents</td>
</tr>
</tbody>
</table>
### 1.5 Relevance for Society.

**Quality requirements:** NVH shall have systems that ensure the programme relevance for society.

| 1. Maintain regular contact with national authorities. (Rector)  
2. Be a major provider of veterinary and biomedical services in accordance with policies and planning documents. (Rector)  
3. Collaborate with national and international academic environments, business organizations and stakeholders. (Rector)  
4. Implement and monitor national and international evaluations and at all times being accredited by EAEVE and ACOVENE cf. Chapter 3.2. (Rector)  
5. Use the Council for cooperation with the working life, Candidate surveys and other feedback from society actively in quality improvement. (Rector) | Strategic Plan and other Strategies  
Cooperation Agreements  
Exchange Agreements  
EAEVE Self-Evaluation  
EAEVE Evaluation Results  
EAEVE Action Plan for Follow-up  
ACOVENE Reports  
Candidate Studies |  |
---|---|---|

### 1.6 Student participation.

**Quality requirements:** Student participation in quality improvement will contribute to high quality.

| 1. Facilitate participation in assessments, Councils and committees. (Rector)  
2. Participate in quality work and studies in accordance with the Service Declaration and agreement between VSU and Management. (Student)  
3. Have a functional and engaged student democracy. (VSU)  
4. Have high participation in the web-based student evaluation system and in the reference groups. (Head of Studies) | Service Declaration for Students  
Students Manual  
VSU, Regulations  
VSU, General Meeting  
VSU, Agreement with Management  
VSU/Management Minutes  
VSU Minutes |  |
---|---|---|

### 1.7 Reputation.

**Quality requirements:** NVH will provide an accurate and positive image of NVH as a study site.

| 1. Conduct information campaigns in accordance with the current Strategy for Communication and annual action plans. (Head of Communication) | Strategy for Communication |  |
---|---|---|

### 1.8 Annual report.

**Quality requirements:** The annual report regarding the quality of education will provide an overview of programs and initiatives in quality improvement.

| 1. Conducting the annual process of drawing and following up the Study Quality Report. (Head of Studies) | Student Evaluation and Reporting  
Study Quality Reports |  |
Quality area 2: Basic Studies

**Goals:** NVH will admit the best qualified students and complete admission in a qualitative manner. The educational programs at NVH should be based on research and maintain high academic and educational quality. Graduates will be well trained and well prepared for social tasks within the School’s disciplines.

**Overall responsibility:** Rector

<table>
<thead>
<tr>
<th>Key Element/Quality requirements</th>
<th>Activity (Operational responsibility)</th>
<th>Documents that sets standards or describes procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Applicants. Quality requirements: NVH will provide potential applicants with good and correct information about the studies and future career opportunities.</td>
<td>1. Promote NVH’s studies in line with the School’s plans and provide services to potential applicants. (Head of Studies) 2. Implement and monitor recruitment and reception studies with the new students at least every 3 years. (Head of Studies)</td>
<td>Admission Brochure for Veterinary Medicine and Veterinary Nursing Web Pages</td>
</tr>
<tr>
<td>2.2 Admission. Quality requirements: NVH shall have a fair and proper admission of students.</td>
<td>1. Conduct admissions in accordance with applicable regulations and structures and provide services to other institutions participating in the Norwegian Universities and Colleges Admission Service (SO). (Head of Studies) 2. Maintain good information and systems to ensure the admission of the best students at local admissions. (Head of Studies)</td>
<td>Act Relating to Universities and University Colleges Regulations Concerning Admission to Higher Education Regulation for Joint Appeals Committee Regulations for Admission, Studies and Examinations at NVH</td>
</tr>
<tr>
<td>2.3 Study Information/management. Quality requirements: Students must at all times have access to the necessary information regarding the studies and career opportunities. Study Management should be apparent and most predictable.</td>
<td>1. Have good web solutions and up to date published materials available, as well as good routines for the audits. (Head of Studies) 2. Have a clear academic management and anchor decisions within the academic environment and among students. (Head of Studies)</td>
<td>Quality System on Internet Students Manual Study Plan</td>
</tr>
</tbody>
</table>
### 2.4 Study Quality

Quality requirements: NVH will offer programmes of high academic and educational quality.

1. Conduct study programmes in line with current goals and plans. (Rector)
2. Have clear goals for studies and specify this through learning outcome descriptions for each block. (Rector at SU)
3. Have an advisory Study Committee working continuously with academic and educational programme quality and quality assurance programmes. (Rector)
4. Creating arenas where teachers, students and leaders can come together to develop studies and the educational programme. (Rector at SU)
5. Evaluate and follow up on evaluation results concerning the departments' subjects. (Head of Department)
6. Annually rate adjustments/audits in the study programmes at the aggregated level on the basis of evaluations, experiences and development of the needs of the society. (Rector at SU)
7. Annually revise the Study Plan and Term Schedules. (Rector at SU)
8. Have research-based educational programmes and curricula that give students insight into the research and the opportunity for selected students for a research year or a differentiation year. (Rector).

### 2.5 The study’s assessment and grading system

Quality requirements: The study’s assessment and grading systems shall ensure high-quality graduates.

1. Have academic requirements, assessment and grading systems in accordance with applicable guidelines and regulations. (Rector at SU)
2. Recommend authorization in accordance with the regulations. (Rector)
3. Have certification schemes to pass clinic periods. (Head of Department)
4. Have certification schemes to use external clinics in teaching. (Head of Department)
5. Evaluate the use of assessment and grading systems at the aggregate level (Rector at SU)

---

<table>
<thead>
<tr>
<th>Strategic Plan</th>
<th>Study Plan and Term Schedules</th>
<th>SU, Mandate</th>
<th>SU, Minutes</th>
<th>Student Evaluation and Reporting Procedures</th>
<th>Evaluation Results and Reports</th>
<th>Notes on Research-Based Education</th>
</tr>
</thead>
</table>
| **2.6 Teaching Quality.**
| **Quality requirements:** Information, teaching, academic supervision, assessment and grading should be of high quality. |
| 1. Implement the departments teaching periods and assessments (exams) in accordance with plans and regulations. (Head of Department) |
| 2. Teaching shall facilitate the achievement of the learning outcomes, and selected academic requirements and assessment systems shall test the extent of achievement. (Head of Department) |
| 2.a) Follow up the quality deficiencies at the lowest possible level in the organization through the line. (Head of Department and Head of Section) |
| 2.b) Follow up indication of serious quality deficiencies (Rector and Director General) |
| 3. Implement and follow up on student evaluations, self-evaluations and reporting in accordance with the established schedule. (Head of Department) |
| 4. Assessing and monitoring the quality of teaching at the aggregate level. (Rector at SU) |
| **Act Relating to Universities and University Colleges Regulations, Examinations, Admission and Studies Study Plan and Term Schedules Manual for Block Leader Student Evaluation and Reporting Procedures Evaluation Results and Reports** |

| **2.7 Clinics and laboratories.**
| **Quality requirements:** The School’s clinics and laboratories shall be of such quality that student teaching is adapted to the demands of society and its needs. |
| 1. Ensure that clinics and laboratories meet the academic requirements for modern operations. Implement approved accreditations. (Head of Department) |
| 2. Have a special focus on implementing infection control and good training practices in HMS. Evaluate this through the student evaluation system. (Head of Department) |
| **Local Descriptions of Procedures and Accreditation Study Plan** |

| **2.8 Result Quality.**
| **Quality requirements:** The studies should be completed within stipulated time with qualitatively good results. |
| 1. Assess and monitor student performance, results, the use of grading, progression and execution. (Rector) |
| **Strategic Plan Manual for Block Leader Study Quality Report** |
### 2.9 Ethical use of animals in teaching.

**Quality requirements:** The use of animals in teaching shall follow the highest ethical standards.

| 1. Use animals in teaching in line with established ethical standards. (Rector)  
3. Assess whether the departments’ use of animals are within the highest ethical standards, including through information from evaluations. (Head of Department) | Act Relating to Animal Protection  
Regulations for Animal Experiments  
Action Plan for Animal Welfare |
|---|---|

### 3.0 Development of new programmes.

**Quality requirements:** New studies shall be of high quality and help meet the needs of society regarding veterinary and biomedical expertise.

| Initiate work on new programmes and major audits of existing studies through assignments to SU. (Rector)  
Submit proposals for new programmes and major audits of existing programmes to the Rector. (SU)  
Regulation for Requirements for Master's Degree  
Regulations for Admission, Studies and Examinations at NVH |
|---|---|

### Quality area 3: Continuing and Further Education

**Goals:** NVH shall provide good and relevant continuing education courses

**Overall responsibility:** General Director and Rector

<table>
<thead>
<tr>
<th>Key Element/quality requirements</th>
<th>Activity (Operational responsibility)</th>
<th>Documents that sets standards or describes procedures</th>
</tr>
</thead>
</table>
| 3.1 Development of course portfolio.  
Quality requirements: SEVU will develop socially beneficial and good courses. | 1. Given NVH strategies, develop a long term plan for the School’s courses to ensure that our alumni have access to accurate, relevant continuing and further education courses. (Head of SEVU)  
2. Discuss course portfolio with RSA (Council for Cooperation with Stakeholders) and SU. (Head of SEVU) | Strategic Plan and other Strategies |
3.2 Marketing, admission and course certificates. Quality requirements: Relevant users shall receive information easily about relevant courses. Registration procedures shall be user friendly, and documentation on completed courses must be a requirement.

1. Use numerous forms of marketing and have simple electronic systems for registration. Provide customers with excellent service. (Head of SEVU)
2. Using the National Electronic Student Administrative System (Studieadministrative systemet (FS)) to ensure registrations and follow the principles enshrined in the basic studies’ Regulation for Admission and Approval of Courses. (Head of SEVU).

3.3 Implementation. Quality requirements: The courses should be of good quality and performed professionally.

1. Have qualitatively good and relevant courses and get these courses quality assured through SU (Rector at SU).
2. Have a professional conduct of the courses. (Head of SEVU).

3.4 Evaluation. Quality requirements: Evaluations should ensure good and relevant courses, and also ensure that veterinarians and veterinary nurses take continuing and further education courses.

1. Evaluate courses and user satisfaction after each course, and check interest and participation in continuing and further education among graduate students. (Head of SEVU).

**Quality area 4: Research, PhD and Diplomat education**
**Goals:** Research, PhD and Diplomat education shall be of high quality.
**Overall responsibility:** Rector

<table>
<thead>
<tr>
<th>Key Element/ quality requirements</th>
<th>Activity (Operational responsibility)</th>
<th>Documents that sets standards or describes procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 4.1 Policy

**Quality requirements:**
The School’s research, PhD education and International Diplomat education should be of high quality and be part of the School’s strategies.

1. Have overarching strategies that provide a framework for research and recruitment positions. (Rector)
2. Have Committee for Research and Ethics (UFE) and Committee for PhD and Diplomat Education that are advisory to the Rector. (Rector)
3. UFE and the Committee for PhD and Diplomat Education shall play a key role in quality assurance of PhD study, European Diplomat education at NVH and the academic quality of student work in research. (Head of the Committees))
4. Implement and monitor internal-initiated evaluations of the School’s research and national evaluations in line with strategy and use the results in strategic activities. (Rector)

### 4.2 Appointment and admission to PhD education or International Diplomat education at NVH

**Quality requirements:**
Ensure the proper appointment and admission to a research project or European Diplomat education which results in an academic thesis at a high professional level, or a successfully completed Diplomat education at a recognized college.

1. Have at any given time correct student data within this area entered into the National Electronic Student Administrative System. (Head of Section at SFA)
2. Hire and conduct admission in accordance with applicable regulations, and process this in the correct forums and committees (Prorector)

---

<table>
<thead>
<tr>
<th>Strategic Plan</th>
<th>Research Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>UFE Mandate and Minutes</td>
<td>Committee for PhD and Residency Programmes, Mandate and Minutes</td>
</tr>
<tr>
<td>Budget and Action Plan</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Staff Manual</th>
<th>PhD Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidelines for European Diplomat Education at NVH</td>
<td></td>
</tr>
</tbody>
</table>
### 4.3 Implementation

**Quality requirements:**
Conducting a PhD or European Diplomat education in accordance with legislations and regulations.

| 1. Ensure that the described learning outcomes are achieved. (Rector) |
| 2. Have systems described in the regulations that ensure that PhD students’ or European Diplomats’ work leads to a thesis or an exam of high quality within stipulated time. (Rector) |
| 3. Have systems that ensure high supervisor qualifications and further develop these qualifications. (Head of Department) |

**Quality requirements:**

**Goals:**
- Conducting a PhD or European Diplomat education in accordance with legislations and regulations.
- Ensuring that described learning outcomes are achieved.
- Having systems described in the regulations that ensure that PhD students’ or European Diplomats’ work leads to a thesis or an exam of high quality within stipulated time.
- Ensuring that high supervisor qualifications are achieved.

**Overall responsibility:**
- Rector

<table>
<thead>
<tr>
<th>Activity (Operational responsibility)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ensure that the described learning outcomes are achieved. (Rector)</td>
</tr>
<tr>
<td>2. Have systems described in the regulations that ensure that PhD students’ or European Diplomats’ work leads to a thesis or an exam of high quality within stipulated time. (Rector)</td>
</tr>
<tr>
<td>3. Have systems that ensure high supervisor qualifications and further develop these qualifications. (Head of Department)</td>
</tr>
</tbody>
</table>

**Documents that sets standards or describes procedures**
- PhD Regulation Guidelines for European Diplomat Education at NVH

### 4.4 Completion

**Quality requirements:**
Completion of PhD or European Diplomat education at NVH shall include an approved thesis at a high academic level or a passed Diplomat exam at a recognized college.

| 1. Implement the submission and implementation of the public defense in accordance with the Regulation. (Prorector) |
| 2. Create worthy candidates for the doctoral degree in line with the Regulation. (Rector) |
| 3. Have a high degree of implementation of the Diplomat Education. (Rector) |
| 4. Have a dignified ceremony of graduation at NVH. (Head of Section at SFA) |

**Quality requirements:**

**Goals:** NVH will be an internationally oriented school, and an active promoter of student and teacher mobility.

**Overall responsibility:**
- Rector

<table>
<thead>
<tr>
<th>Key element/quality requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1. International policy. Quality requirements: NVH should be internationally oriented and use this, among other things, to enhance the quality of studies.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity (Operational responsibility)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have long term strategies for internationalization. (Rector)</td>
</tr>
<tr>
<td>2. Have committees that are advisory to the Rector regarding questions about internationalization. (Rektor)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Documents that sets standards or describes procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Plan Strategy for Internationalization Action Plan</td>
</tr>
</tbody>
</table>
| 5.2 International cooperation. | 1. Have attractive agreements with other schools/faculties of veterinary medicine at approved and well-renowned institutions. (Rector and IU)  
2. Participate in qualitatively good exchange programmes. (Internationalization Adviser) | Exchange Agreements  
Exchange Programmes  
NOVA network |
| Quality requirements: NVH's agreements and participation in programs shall contribute to good international cooperation and facilitation of mobility. | | |
| 5.3 International mobility. | 1. Give good and correct information to NVH’s potential students, foreign students and current students about the student exchange programmes at NVH. (Internationalization Adviser)  
2. Manage time, academic portfolios and necessary documentation to get the exchange stay approved, and assure that studies can be carried out within the prescribed time. (Internationalization Adviser)  
3. Welcome exchange students at the institutions so that they receive academic provisions of high quality, the documentation requested and the experience of feeling welcome. (Head of Studies /International Adviser)  
4. Welcoming exchange students so they can participate in the student social life. (Internationalization Adviser)  
5. Implement conversations with all exchange students, both foreign and Norwegian, regarding the stay, as well as encourage students to use the on-line evaluation system: Student Report Database, IRIS, and follow up these results. (Internationalization Adviser)  
6. Follow up the learning environment survey regarding internationalization. (Internationalization Adviser). | Out into the World/”Ut I verden”  
Manual for Mobility Evaluation and Reporting Procedures |

**Quality area 6: Framework Quality**

**6.1 Academic Resources**

**Goals:** At NVH, students should have access to academic resources that keep good academic and educational standards.

**Overall responsibility:** General Director and Rector

<table>
<thead>
<tr>
<th>Key Element/Activity (Operational responsibility)</th>
<th>Documents that sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality requirements</td>
<td>Standards or describes procedures</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td><strong>6.1.1 Qualifications of teaching staff.</strong>&lt;br&gt;Quality requirements: The teaching staff must have high academic and educational qualifications.</td>
<td>1. Appoint applicants for positions in line with the guidelines of the School’s Staff Manual, so that employment can be handled by the Appointments Board. (Head of Department)&lt;br&gt;2. Follow up on requirements for formal educational qualifications of employment regarding permanent positions. (Head of Department)&lt;br&gt;3. Encourage further development of academic and educational competence of personnel involved in teaching. (Head of Department)&lt;br&gt;4. Facilitate educational expertise through organizing seminars. (Rector at SU)&lt;br&gt;5. If needed, use the annual work plans as tools for assigning tasks and development of staff. (Head of Department)&lt;br&gt;6. Conduct performance assessment interviews in line with HMS’s guidelines. (Rector)&lt;br&gt;7. Evaluate and follow up individual teachers when especially necessary. (Head of Department)&lt;br&gt;8. Evaluate academic resources on the basis of information obtained through EAEVE and ACOVENE accreditations and research evaluations. (Head of Department)&lt;br&gt;9. Award the annual PEGASUS-award to encourage excellence in teaching and dissemination. (Information Director)</td>
</tr>
<tr>
<td><strong>6.1.2 Library’s academic content and services.</strong>&lt;br&gt;Quality requirements: NVH shall have a library of high quality with easy access to relevant literature and information sources both in print and electronic form, as well as AV media.</td>
<td>1. Perform library services in accordance with the applicable Service Declaration. (Head Librarian)&lt;br&gt;2. Follow up user studies that are part of the School’s learning environment surveys. (Head Librarian)</td>
</tr>
</tbody>
</table>

**Quality area 6: Framework Quality**
### 6.2 Learning Environment

**Goals:** NVH’s learning environment shall ensure the students a good learning situation.

**Overall responsibility:** General Director

<table>
<thead>
<tr>
<th>Key Element/ quality requirements</th>
<th>Activity (Operational responsibility)</th>
<th>Documents that sets standards or describes procedures</th>
</tr>
</thead>
</table>
| 6.2.1 Students social life. Quality requirements: NVH shall facilitate activities that contribute to students’ welfare. | 1. Facilitate student activities at NVH by making suitable premises available, provide financial support and maintain good contact with student bodies. (General Director and Rector)  
2. Facilitate a good reception at the start of studies and activities throughout the academic year. (VSU) | Students Manual  
VSU, Regulations  
VSU, General Meeting, Regulations  
VSU, Deal with Management  
VSU/Management Minutes  
VSU Minutes  
Budget and Action Plan |
### 6.2.2 Surroundings

**Quality requirements:**
NVH shall have an environment that secures the students’ welfare, health and safety and that facilitates learning.

1. Allocate resources for necessary maintenance of the School’s teaching facilities in anticipation of new buildings at NMBU. (General Director)
2. Ensure that the central teaching facilities (auditoriums, training rooms, examination halls, reading rooms, computer rooms, colloquium rooms and related inventory and equipment) have sufficient capacity and quality. (Technical Manager)
3. Keep up the necessary movable property (e.g. furniture, boards) to central teaching facilities, and for use by the students, with the exception of IT and AV equipment. (Technical Manager)
4. Perform structural upgrades and maintenance of the permanent installations. (Technical Manager)
5. Provide the necessary overall training in safety procedures regarding fire and more. (Technical Manager)
6. Keeping IT and AV equipment, including PCs for the auditoriums and printer with copy function for the students, and maintain this equipment. (IT Manager)
7. Provide accessible library services for students. (Head Librarian)
8. Keep opening hours that make NVH available to the students. (General Director)
9. Have teaching facilities, clinics, ambulatory operations and equipment suitable for the teaching purpose at the institute. (Head of Department)
10. Provide necessary training in safety procedures, fire protection and use of protective equipment in teaching situations at the institute. (Head of Department)
11. Manage the Reading Room Requirements. (VSU)

### 6.2.3 Student Welfare

**Quality requirements:**
NVH will contribute to providing good welfare services.

---

<table>
<thead>
<tr>
<th>Students Manual</th>
<th>Manual for HMS</th>
<th>Contingency Plan</th>
<th>Computer Regulations</th>
<th>Instructions for class rooms</th>
<th>Reading Rooms Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daycare Facility, Briefing House Board, Regulations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Quality area 6: Framework Quality

#### 6.3 Student Administrative Services

**Goals:** NVH’s student administration will ensure students a good learning situation.

**Overall responsibility:** General Director

<table>
<thead>
<tr>
<th>Key Element/quality requirements</th>
<th>Activity (Operational responsibility)</th>
<th>Documents that sets standards or describes procedures</th>
</tr>
</thead>
</table>

#### 6.2.4 Equality

**Quality requirements:**
School’s learning environment will be characterized by equality and respect of each individual.

| 2. Follow up the Action Plan for Students with Disabilities. (General Director) |
| 3. Follow up the Action Plan against Sexual Harassment and the Action Plan for Equal Opportunity. (General Director) |

#### 6.2.5 Learning Environment

**Quality requirements:**
NVH will continuously strive to improve the learning environment.

| 1. Evaluate the learning environment through student evaluations at least once every two years. (LMU) | LMU Briefing and Mandate LMU Annual Report LMU Minutes HMS Committee AMU’s Annual Report |
| 2. Working continuously with the learning environment. (LMU) |
| 3. Follow up internal/external reports/evaluations at the aggregate level. (General Director) |
### 6.3.1 Student Service.
**Quality requirements:** The School’s student services shall be user-oriented and functional.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Provide students with good guidance and information on the implementation of the programmes, the State Educational Loan Fund and SiO (Student Welfare Organization in Oslo and Akershus County). (Head of Studies)</td>
</tr>
<tr>
<td>2.</td>
<td>Initiate training in the use of computer systems at NVH. (Head of Studies)</td>
</tr>
<tr>
<td>3.</td>
<td>Making adjustments for students in line with policies and regulations. (Head of Studies)</td>
</tr>
<tr>
<td>4.</td>
<td>Develop education plans in line with regulations. (Head of Studies)</td>
</tr>
<tr>
<td>5.</td>
<td>Follow up on students with special needs for a personalized study plan. (Head of Studies)</td>
</tr>
<tr>
<td>6.</td>
<td>Follow up on students who according to the regulations do not follow the normal progression. (Head of Studies)</td>
</tr>
<tr>
<td>7.</td>
<td>Have good procedures for the processing of student affairs. (Head of Studies)</td>
</tr>
</tbody>
</table>

### Regulations for Admission, Studies and Examinations
Service Declaration for Students
Students Manual

### 6.3.2 Administration of studies.
**Quality requirements:** School’s student administration services shall be user-oriented and functional.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Develop and provide updated information about curricula, term schedules, exam schedules and plans for room distribution. (Head of Studies)</td>
</tr>
<tr>
<td>2.</td>
<td>Updating year group lists, making groups, allocating seats on differentiation directions and optional courses in accordance with the regulations. (Head of Studies)</td>
</tr>
<tr>
<td>3.</td>
<td>Registering, holding the examination and managing grading and complaints in accordance with the regulations. (Head of Studies)</td>
</tr>
<tr>
<td>4.</td>
<td>Draw up the diploma, transcript and Diploma Supplement in accordance with the regulations. (Head of Studies)</td>
</tr>
<tr>
<td>5.</td>
<td>Follow up tasks related to the granting of authorization for animal health personnel. (Head of Studies)</td>
</tr>
</tbody>
</table>

### Regulations for Admission, Studies and Examinations
The Board’s Appeal Committee
Manual for Block Leader
| 6.3.3 Development and control of student administrative services. Quality requirements: NVH will continuously implement and enhance the administrative services and at all times maintain appropriate student data. | 1. Revise the study programmes’ regulations, procedures and forms continuously and assess annual needs. (Head of Studies)  
2. Coordinate and manage the daily operations of School’s quality system. (Head of Studies)  
3. Carry out routine self-evaluation and internal control of the student administration services. (Head of Studies)  
4. Evaluate student administration services through receiving and learning environment studies (cf. Chapter 2.2. and 5.2.5). (Head of Studies)  
5. Conduct internal control of data to the Database for Higher Education. (DBH). (Financial Director) | Act Relating to Universities and University Colleges Regulations, Examinations, Admission and Studies Service Declaration SFA Manual Regulations, Master’s Degree Programmes |
Appendix 3: Study quality report academic year 2012-2013

The Norwegian School of Veterinary Science

Annual Report on the Quality of Study

Academic year 2012/2013

Approved by the Board 21.11.2013

Oslo, November 2013, Ann Kristin Egeli
**List of abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACOVENE</td>
<td>A European accreditation system for veterinary nurse training colleges</td>
</tr>
<tr>
<td>BasAm</td>
<td>Department of Basic Sciences and Aquatic Medicine</td>
</tr>
<tr>
<td>DBH</td>
<td>Database for Statistics on Higher Education</td>
</tr>
<tr>
<td>DNV</td>
<td>Norwegian Veterinary Association</td>
</tr>
<tr>
<td>EAEVE</td>
<td>European Association of Establishments for Veterinary Education</td>
</tr>
<tr>
<td>ENQA</td>
<td>European Association for Quality Assurance in Higher Education</td>
</tr>
<tr>
<td>Fronter</td>
<td>E-learning platform</td>
</tr>
<tr>
<td>Hippocampus</td>
<td>Old NVH student website</td>
</tr>
<tr>
<td>HMS</td>
<td>Health, Safety and Environment</td>
</tr>
<tr>
<td>KD</td>
<td>Ministry of Education and Research</td>
</tr>
<tr>
<td>LMU</td>
<td>Learning Environment Committee</td>
</tr>
<tr>
<td>MatInf</td>
<td>Department of Food Safety and Infection Biology</td>
</tr>
<tr>
<td>MCQ</td>
<td>Multiple choice test</td>
</tr>
<tr>
<td>FSA</td>
<td>Norwegian Food Safety Authority</td>
</tr>
<tr>
<td>NMBU</td>
<td>Norwegian University of Life Science (merger NVH and UMB)</td>
</tr>
<tr>
<td>NOKUT</td>
<td>Norwegian Agency for Quality Assurance in Education</td>
</tr>
<tr>
<td>NVH</td>
<td>Norwegian School of Veterinary Science</td>
</tr>
<tr>
<td>OPAD</td>
<td>Project for coordination of the administrative systems at NVH and UMB before the merger</td>
</tr>
<tr>
<td>ProdMed</td>
<td>Department of Production Animal Clinical Sciences</td>
</tr>
<tr>
<td>QuestBack</td>
<td>Electronic student evaluation system</td>
</tr>
<tr>
<td>RSA</td>
<td>Council for the Cooperation with Stakeholders</td>
</tr>
<tr>
<td>SEVU</td>
<td>Center for Further and Continuing Education</td>
</tr>
<tr>
<td>SFA</td>
<td>Department of Academic Affairs and Research Administration</td>
</tr>
<tr>
<td>SiO</td>
<td>Student Welfare Organization in Oslo and Akershus</td>
</tr>
<tr>
<td>SportFaMed</td>
<td>Department of Companion Animal Clinical Sciences</td>
</tr>
<tr>
<td>SU</td>
<td>Committee for Undergraduate and Continuing Education Programmes, “Study Committee”</td>
</tr>
<tr>
<td>TimeEdit</td>
<td>Electronic planning tool</td>
</tr>
<tr>
<td>UFE</td>
<td>Committee for Research and Ethics</td>
</tr>
<tr>
<td>UHR</td>
<td>Norwegian Association of Higher Education Institutions</td>
</tr>
<tr>
<td>UMB</td>
<td>University of Life Science</td>
</tr>
<tr>
<td>Vectar</td>
<td>Pilot project and electronic system (STARtool) to ensure the quality of internal and external practice</td>
</tr>
<tr>
<td>VSF</td>
<td>Students’Social Organization</td>
</tr>
<tr>
<td>VSU</td>
<td>Students’Political organization</td>
</tr>
</tbody>
</table>
Introduction

This is NVH’s tenth study quality report.

The structure of the quality system was in this academic year revised and the Board approved the changes in March 2013. This was done in order to better adapt the stucture to EAEVE’s requirements for a quality insurance system. The quality system at NVH is now devided into six quality areas, with their own overall goals and responsibilities. Each quality area is then divided into key elements. For each key element quality requirements that describe the goal or standard are defined, and for each quality requirement core activities are specified as well as who is responsible for carrying out the activities. This will form the basis for our study quality system and help develop the system further.

The report for the academic year 12/13 describes the activities in the academic year, from autumn 2012 to spring 2013. In some cases, the work that continued in the autumn semester 2013 has been included in the report. A brief summary of measures for each area is presented in the beginning of each chapter. These measures provide guidelines for the plan of action. Established routines and continuous monitoring are only described in the reports from the departments.

A strong emphasis has been put on documenting the situation from August 2012 until June 2013. The report is based on the results of the student evaluations, reports from meetings, key figures and reports from the departments. The reports from the departments are based on aggregated data for relevant areas at the departments. The report from the departments is found as an Appendix at the end of this report. The departments are responsible for following up on their own goals.

Drafts reports on internationalisation and PhD education have been prepared by the respective advisors, and presented to the International Committee and the Committee for PhD and diplomatic education at NVH. A draft report on further education was prepared by the Head of SEVU. The main report is written by the Head of Studies and has been further processed by the Study Committee. VSU was also asked to comment on the report. The feedback from VSU is found as an Appendix at the end of the report. The final report was then presented to the Board by the School leadership.
Summary: Study quality 12/13

The study quality report shall be followed up through measures in the plan of action and budget.

There is an extensive quality work at NVH. There are efforts made to ensure that students learn in order to then provide expertise to the broader community on many levels.

The following section provides a summary of the most important quality measures for the academic year 2012/2013, which should be implemented on the basis of the status and assessments in the report. It must be noted here that these are measures that should be implemented, but whose realization will require an extensive work effort. In 2014, NVH will merge with UMB and this, in addition to the goals listed below, will require much work and resources. It is therefore unclear how many of the measures we are able implement in 2014. Some of the measures are also to be implemented over a longer period of time.

Quality control and relevance for society

• Conduct a post-graduation survey for the veterinary nurse program, create and implement QuestBack forms for the tracking year and conduct a dropout survey of students who have quit their studies (all postponed from last year).
• Make an evaluation of how the quality system should be implemented at Campus Adamstuen in NMBU.
• Review the regulations in light of the new NMBU regulations and organizational changes.
• Revise the evaluation forms (QuestBack) if they are still to be used.
• Work to secure student scholarships for students in the research year.

The veterinary medicine and veterinary nurse programs

• Work with a new curriculum for the veterinary medicine programme. This work starts with a kick-off seminar in the autumn 2013.
• Consider measures to improve student performance
• Continue the work with developing the veterinary nurse programme into a bachelor degree programme.
• In the current curriculum the focus should be on:
  - Follow-up on population medicine in the veterinary medicine programme and integrated anatomy and physiology in the veterinary nurse programme
  - Evaluate the composition of the 8th and 9th semester in the veterinary programme and the examination arrangement
  - Implement the course in professional ethics and facilitate interdisciplinary case reviews in the veterinary programme
  - Implement internal practice in the veterinary nurse programme
  - Revise the four-week animal husbandry practice in the veterinary medicine program to also include fish health, and also revise criterias for this.
  - Work with the research year in the veterinary medicine programme

Further and continuing education

• UMB-SEVU is seven times larger than NVH-SEVU with far better routines and systems. The veterinary academic portion of NMBU-SEVU will therefore integrate with them. This will make SEVU more easily identifiable both academically and financially for academic communities we cooperate with.
• Create a structure for FSA’s experience-based master’s degree and develop further education in food safety, animal welfare, animal diseases, plant diseases and fish health. After the merger, the current department of NVH-SEVU will have more time for this, as several of the current tasks will be moved to UMB-SEVU. NMBU will hold all the disciplines where there is need.

• Over the next academic year, NMBU-SEVU will provide education within the farrier profession. In parallel, they will work on establishing a claim for farrier authorization from FSA to exercise the farrier profession. It is not expected that FSA will have this on their agenda for the next academic year.

• Courses in rehabilitation and physical therapy for companion animals which leads to an NVH-certification will be completed during 2014. A total of 30 veterinary nurses and veterinarians are expected to be certified in 2014.

• Focus on establishing courses in swine, sheep and poultry.

Research, PhD and specialist graduate programs

• Continue pursuing duplicating competence (research and specialist education) and that it will be facilitated implementing specialist education at NMBU.

• Clarify what is needed for the courses on the veterinary PhD education, and whether this should be handled at university or department level.

• Follow up on the career survey.

• Work to ensure that there will still be a strong focus on quality and completion of the PhD program, and the possibility of establishing a PhD selection at NMBU to address this.

Internationalization

• Continue efforts to facilitate exchange.

• Continue efforts to prepare agreements and develop new good deals.

• Initiating staff- and teacher mobility in 2014/15.

Frame quality

• Finding ways of cooperating with the academic department at UMB in NMBU.

• Develop Fronter (E-learning platform).

• Facilitate electronic delivery of forms on Fronter.

• Implement «TimeEdit» (time planning system) at Campus Adamstuen.

• Follow up on HMS data from the study quality report.

• Change microscopes in the course auditorium.

Report on measures proposed last year:

Administrative quality

• Prepare EAEVE Stage 2 (completed)

• Focus on education leadership (started)

• Establish systems to monitor RSA (started)

• Complete the OPAD project: Community regulations for studies (started and finished autumn 2013)

• Started working with OPAD quality assurance (not completed)

• Conduct a candidate research on the veterinary nurse program (not completed)

• Evaluate the first implementation of the tracking year (not completed systematically, but qualitative feedback from the students is obtained and is being followed up)
Admission quality
• Investigate the reasons for drop-outs in both programs and take possible actions (started)

Program and result quality
Veterinary medicine program
• Start the work on a new study plan (started)
• Prepare EAEVE Stage 1 (started)
• Follow up the research year to KD (finished; we were granted money in autumn 2013 for seven places in 2014)
• Focus on fish in the pre-clinical subjects (started)
• Implement changes in the 6th semester spring 2013 (completed)
• Implement changes in the teaching plan and complete the work with changed examination forms in 7th semester autumn 2013 (completed)
• Assess the examination methods in 8th and 9th semester and the tracking year (is evaluated, but postponed)
• Consider adding incentivized for more inter-institute cooperations at NVH on the thesis (has been considered, but it was decided not to create incentives)
• Assess the criteria’s for assigning a track in the tracking year (completed; changes adopted by the Board in autumn 2013)
• Reconnect with DNV regarding career paths (started, career day spring 2013)

Veterinary nurse program:
• ACOVENE accreditation autumn 2012 (completed)
• Follow up a bachelor degree program to KD (completed, but not followed up by KD)
• Complete the Vectar project and consider using it (completed)

General:
• Arrange seminars with a pedagogical content (completed)
• Expand the arrangement with colleague guidance (not completed)
• The departments follow up on their reports (completed)

Internatinalization
Department cooperation, agreements, programs and projects
• Continue to expand services to students by making more good exchange agreements – preferably with schools where the education is offered in English (completed)
• Evaluate whether certain contracts should be terminated (completed)
• Evaluate whether certain agreements should be earmarked for differentiation students (completed)

Student exchange
• Continue to help our students to be better prepared:
  a) Inform of the possibilities in the multi-media library and training clinic (completed)
  b) Make 7th semester more preparatory for work in clinics (completed)
• Continue to provide pathology in English and encourage our exchange students to take pathology abroad (completed)
Framework quality

- Complete the OPAD project: Shared student system (started)
- Implement structural upgrades and maintenance, especially in terms of HMS (started)
- Introduce good HMS routines for the students (started)
- Start renewal of microscopes in the course auditorium (not completed)

PhD program

On the basis of status and assessment we propose the following goals for the PhD program:

- Work on competence for supervisors (started)
- Review agreements at NVH in light of UHR’s revised terms of admission to the PhD program (not completed)
- Cooperate with UMB on courses and training (started)
- Contribute to the merger process on the PhD program at NMBU (started)
- Develop guidelines for the third opponent (coordinator) (postponed)

Further and continuing education

- Continue the collaboration with SEVU-UMB (started)
- Continue to work on an experience-based master’s degree in cooperation with the FSA (started)
- Work on offering courses for equine veterinarians (started)
1. Quality control and social relevance

*The management systems at NVH shall ensure a high quality of education and contribute to continuous quality improvement and a high social relevance.*

1.1 Quality system for academic quality

*The quality system is maintained and further developed in line with NVH’s strategy.*

The veterinary medicine program will be evaluated and accredited by EAEVE in 2014. To gain full accreditation NVH must pass both Stage 1 and 2. Stage 1 concerns the academic quality of veterinary program, whereas Stage 2 has to do with how NVH’s quality system ensures this quality. The quality assurance system, which is to ensure the quality of all educational activities at NVH, was evaluated by the national quality assurance organ NOKUT in 2007 with good results. The requirements NOKUT and EAEVE set for a quality management system for educational activities are almost identical and are both based on the requirements laid down by the European Association for Quality Assurance in Higher Education (ENQA). The requirements of the national system (NOKUT) and the veterinary medicine system (EAEVE stage 2) differ slightly in that EAEVE is more specific and directed towards the veterinary profession.

In the preparatory project for EAEVE, which was commenced in spring 2012, it was proposed that the existing committees should be in charge of further developing their areas of responsibility in accordance with the Stage 2 requirements. This is to ensure that the system is anchored in the bodies responsible for quality assurance and the study quality report in these areas.

The PhD committee was given the responsibility for assuring the quality of the European specialist education. This Committee was given a new mandate and was also renamed to "PhD and diplomatic education at NVH." The Committee established a working group with a mandate to make an overview of the system of quality assurance concerning the specialist education at NVH. The group began its work in autumn 2012.

In spring 2012, the Study Committee began to develop system specifications and work on a new strategy for study quality work. The revised Strategy and Structure Description was adopted by the Board in March 2013. This report follows the template of the new structure. The departments have also used the new template in their reporting.

The quality system and all documents and reports related to this are publicly available on the NVH website.

1.2 Organization of the work

*Leaders at all levels of the organization are responsible for the quality work, and the participation of all staff and students shall be accommodated for.*

The procedures for reporting to the head of department and routines for working with the department reports function well. The various teaching blocks are firmly rooted in the department leadership. The students are active in the quality improvement work. Committees at NVH that give advice to the leadership and the Board have a central role in ensuring that the study quality report is being followed at the highest level. They also act as a motor for initiating change in their respective fields. This system will be continued.
The OPAD working group for coordinating the two quality assurance systems at NVH and UMB before the merger in 2014 has not been started. A seminar to start the work was held in autumn 2012 but the work was not followed up after this. UMB had the responsibility for leading this work.

1.3 Strategy and planning documents

Strategies, planning documents and budget processes shall be effective instruments in the quality work.

The implementation degree of goals from last year's report indicates that NVH works well with implementing the proposed measures. However, the merger process and the replacement of staff meant that some unurgent tasks have been postponed at the Department for Research Administration and Academic Affairs.

The goals from the study quality report were taken into the plan of action, but due to the narrow economic frames last year, no action that required large amounts of money was prioritised in the budget. This concerns for instance investments in upgrading the buildings and equipment related to educational activities. However, that this has been given a low priority for a number of years is cause for concern, given that there will be educational activities at Adamstuen until 2019.

1.4 Regulations

NVH's body of rules shall be an effective instrument in the quality work.

VSU suggested changing the criteria for the awarding differentiation in the spring 2013 so that the differentiation should be awarded through lottery as from the class of 2013. The proposal was also considered by the SU. The Board decided in August 2013 that the allocation should be based on lottery from the class of 2010. This provoked reactions among the students.

In relation to OPAD, a working group working on a common regulation for the two merging institutions has been appointed. The group submitted its proposal in June 2013. This work was then continued by the joint Board Secretariat and the new regulation is expected to be adopted by December 2013.

The study plan will be available in English by the end of 2013. Several other key documents will be translated into English in connection with the EAEVE accreditation. This will also benefit NVH in the future.

The rector has, following the recommendation of the SU, adopted new criteria for passing the clinical training periods at the veterinary nurse programme, as well as the revised criteria in the veterinary medicine program. New guidelines for the work of students in the companion animal and equine clinics outside the normal working hours and standard academic year have also been created. The students have through VSU participated actively in the work with these guidelines.
A working group submitted its report in February 2013 on the quality assurance of the specialist candidate program. Guidelines for quality assurance of the specialist candidates were approved by the Rector in June 2013.

In spring 2013, SU decided to revise the guidelines for the husbandry practice.

There were plans to revise the guidelines for thesis and project direction during spring 2013, but this was postponed due to other more urgent tasks.

1.5 Relevance for society

*NVH shall have systems that ensure the education’s relevance to society.*

The departments have through their own activity a lot of contact with their stakeholders (See the department reports).

The Committee for cooperation with the working life (RSA) enters its second year. Routines for writing a summary of the meetings, which are then discussed in SU and VSU, have been implemented. A meeting was held in September 2012. This meeting focused on generic skills, ethics and communication. Following this meeting, SU began working on including the subject professional ethics in the veterinary medicine curriculum. No meeting was held in spring 2013. Another meeting will be held in November 2013, where the new study plan for the veterinary medicine program is on the agenda.

In autumn 2011, NVH received signals from the Ministry of Education and Research that a research programme would be established at NVH following the same model as the medicine program. However, no funds were awarded to this in the budget presented in autumn 2012. NVH therefore brought this up with the Ministry in an management and dialogue meeting in June 2013, and funding for seven places was subsequently granted in the state budget for 2014. This will further improve the situation for students with a particular interest in research.

Table 1: Selection of differentiation

<table>
<thead>
<tr>
<th>Class</th>
<th>Class of 2006 (old system)</th>
<th>Class of 2007</th>
<th>Class of 2008</th>
<th>Class of 2009</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Companion animals</td>
<td>24</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Equine</td>
<td>13</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>ProdMat</td>
<td>-</td>
<td>19</td>
<td>22</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>Aqua</td>
<td>8</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Project</td>
<td>-</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Production animals</td>
<td>16</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Food Safety</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

After the re-organization of tracks, the numbers indicate that the equine and companion animal tracks are always full. The rest of the class is divided on the other tracks with most students in production animals and food safety (ProdMat). For the class of 2009 there was one student who did not receive his or her first choice of track. After the restructuring of the tracking year, significantly more candidates with an expertise in food safety are trained.
1.6 Student participation

*Student participation in the quality work will contribute to a high quality.*

The Students' Political organization (VSU) at NVH is an active body and from the management perspective, it is easy to get students to take on positions of trust. VSU, however, works hard to achieve this. The response rate on the student evaluations is also a very high at NVH. The electronic evaluation tool QuestBack has now been fully implemented.

| Table 2: Response rate of the student course evaluations |
|---------------------------------|-------------|
| **Veterinary medicine program** | **Response rate (%)** |
| Animal biology                  | 83          |
| Cell biology                    | 73          |
| Population medicine             | 87          |
| Anatomy and physiology          | 79          |
| Animal nutrition                | 92          |
| Principles of immunity and disease | 78        |
| Veterinary microbiology and parasitology | 86 |
| Pharmacology and toxicology     | 80          |
| Food safety                     | 78          |
| Animal welfare, animal housing and laboratory animal sciences | 80 |
| 7th semester                    | 80          |
| 8th semester                    | 67          |
| 9th semester                    | 83          |

<table>
<thead>
<tr>
<th><strong>Veterinary nurse program</strong></th>
<th><strong>Response rate (%)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory animals</td>
<td>92</td>
</tr>
<tr>
<td>Communication between animals and humans</td>
<td>98</td>
</tr>
<tr>
<td>Anatomy and physiology</td>
<td>98</td>
</tr>
<tr>
<td>Infection biology</td>
<td>83</td>
</tr>
<tr>
<td>Final evaluation. Candidates from class 2011 (spring 2013)</td>
<td>100</td>
</tr>
</tbody>
</table>

The revision of the evaluation forms has been put on ice for the time being, as it is unclear how this will be done after the merger. If the work is to be done by the Department for Academic Affairs and Research Administration using the forms of today, there is a need to review the forms. Some questions must be taken out, errors must be corrected and the forms must to a greater extent be adapted to the individual subjects.

VSU was very active in working with the departments’ reports on the quality of study this year, and they were well-prepared and took an active part in discussion in the section management meeting in ProdMed and BasAM regarding the report. It remains to implement this routine at MatInf.

1.7 Reputation

*NVH shall provide an accurate and positive image of NVH as a place of study.*

NVH has carried out many activities that will help to provide an accurate and positive image of NVH as a place of study. NVH offers very popular studies that are very difficult to get admitted to. One of the challenges this entails is that recruitment has a skewed gender balance.
with that over 80% of the students in veterinary medicine program and almost 100% of the students in the veterinary nurse program are female. Through examining the tracking year choices we see that about half of the veterinary students are most interested in companion animal and equine medicine. At the same time we see an interest in aquatic medicine and research that we assume they acquire through the program.

NVH has therefore through using the internet, media and fairs focused more on factors that may give a broader recruitment and a more nuanced picture to the average person on what the education at NVH entails. This includes:

- Present with a stand at “Forskningstorget” [the annual research fair] in Oslo, 21-22 September 2012
- Open day 8 March 2013
- Many articles in media related to the studies
- New study brochures
- NVH finishes in 4th place in Synovate’s reputation survey among all universities and colleges in Norway. This means that NVH is one of the best known colleges in Norway.

Many veterinary colleges in Europe are taking various measures to admit the "right" students, while the trend in Norway is moving away from special admission arrangements towards a more grades-based admission. However, the implementation of measures in this area requires more knowledge about the long-term effects of the various models of admission and knowledge of how this can be done under Norwegian conditions. It also requires increased resources for admission work. Another variation is to reserve seats / lines to selected groups of students. This should be considered when working with a new curriculum. A third approach is to look at the effect of different recruitment methods at different student groups. How do we get the "right" candidates? NVH currently has no resources/expertise to implement this, but it will be a challenge for NMBU.

2. The veterinary medicine and veterinary nurse programs

NVH shall admit the best students to their programs and have a high standard in the admission work. The educational programs at NVH shall be research based and maintain a high academic and educational quality. Graduates shall be well trained and well prepared for the greater social tasks within NVH’s disciplines.

2.1 Applicants

Table 3: Total number of applicants. Source: DBH.

<table>
<thead>
<tr>
<th>Program</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veterinary Nurse Program</td>
<td>1 596</td>
<td>1 613</td>
<td>1 601</td>
<td>1 479</td>
</tr>
<tr>
<td>Veterinary Medicine Program</td>
<td>1 336</td>
<td>1 313</td>
<td>1 152</td>
<td>1 148</td>
</tr>
</tbody>
</table>

In 2002 the veterinary medicine program admission requirement of six months continuous practice was removed. In the period prior to 2002 the number of applicants annually was around 650-750.
2.2 Admission

*NVH shall have a fair and proper student admission process.*

At national admission to higher education (samordna opptak) 78 new students were admitted to the veterinary medicine program class of 2013, 13 of which were men. This is a relatively high share of men compared to previous years. To accommodate 78 students is overbooking compared to the admission frame of 70. The reason behind this is the expectation of student dropout based on previous experiences (see student results below).

34 new students (one male) were admitted to the veterinary nurse program class 2013.

There was no replacement admission in the academic year 2012/2013.

No students were admitted to the two-year training for veterinarians with a foreign education in the autumn of 2012.

2.3 Student information and administration

*Students shall at all times have access to the necessary information about their studies and career opportunities. The administration of the studies shall be clear and as predictable as possible.*

During the summer 2013, 50 teachers attended a course in the use of Fronter. This enabled the new e-learning tool and information channel to be implemented from August 2013. The transfer to Fronter is to be completed during the academic year 2013/2014.

Students will have direct contact with the working life in their studies through activities at NVH and student placement arrangements.

Veterinary students also receive information about career paths in among other the subjects Aquatic medicine and Food safety as well as during the information meeting about the tracking year. A career night for all veterinary medicine and veterinary nurse students was held in April 2013. 124 students attended.

The Ministry of Education and Research called for clearer program management at NVH during the management and dialogue meeting. Autumn 2012 the Board at NVH created a new position of Head of Studies.

The Department of Academic Affairs and Research Administration works continuously to achieve even better routines for assisting students with problems. The Department also attempts to hold a meeting with each class at the start of the semester. This is somewhat difficult to implement in the clinical part of the study.

The Head of Studies and SU have a central role in the efforts to improve the quality of the studies. There has been much activity in this area in the past year and this will continue next year (see below).

2.4 Study program quality

*NVH shall offer programs with a high academic and educational quality.*
Veterinary medicine program

Content and emphasis in the curriculum and teaching, academic profile:
For more detailed information on individual courses, please see the department reports. In particular, the clinical courses report on the challenges experienced due to an increasing number of students and the measures taken to offer teaching of the highest quality possible within the existing framework. At the same time, there is not much time available in the clinics.

The following changes were made in the curriculum in 2012/2013:

- The academic profile in general pathology was changed to include more pathophysiology (spring 2013, class of 2011)
- Pilot projects with interdisciplinary case review begun in spring 2013, to become a permanent feature with presentations four times per semester from autumn 2013. Efforts are made to adapt the schedules to this. About 90 people were present during the first case review autumn 2013.
- More focus on clinical teaching in the 6th semester by moving topics that were formerly taught in the 7th semester (spring 2013, class of 2010)
- More time in 7th semester and better clinical preparation. Introduce a program of surgery training on dead animals, clinic preparatory week, the topic treatment and new examination methods (autumn 2013, class of 2010)
- Change rotation plans for the 8th and 9th semester for companion animals and equine medicine. It is especially important for the companion animal clinic to have fewer students at the same time and spread them out as much as possible throughout the year and a day. This will also ensure more emergency training and the utilization of the full professional range in the companion animals section (spring 2013, class of 2009). The academic days for companion animals are developed further.
- Better coordination of clinical training in various stages in the education in production animal medicine (autumn 2012, class of 2008).
- Stronger emphasis on poultry in production animal medicine.
- Introduce new courses in clinical nutrition and fish welfare (due to budget constraints, this possibility will be reduced autumn 2013)
- Change in the tracking year: the infection control course will be held in one week in stead of over two weeks. The extra week will be used for more clinical training in companion animals and equine medicine, while in production animals and aquatic medicine there is an increased emphasis on the thesis (autumn 2013, class of 2008).

In the spring of 2013 the planning of the course in professional ethics began. Each student receives nine lessons (in groups) and is also assigned homework. This course is to be implemented (spring 2014, class of 2010).

In the spring of 2013 the process of developing the new curriculum also began. The plan for this was approved by the Board in spring 2013. The first students following the new curriculum are to be admitted in 2016.

EAEVE preparation
In the spring of 2012, the preparatory project group proposed to get a paid project manager who will lead the work on Stage 1. This work was implemented in the autumn 2012 and spring 2013.

**Veterinary nurse program**
The veterinary nurse program was accredited by ACOVENE for one year in the autumn of 2012.

A project for better quality assurance of internal and external practice using a new online evaluation tool (VECTAR) was started. This project was then completed in the spring of 2013, with the goal to implement the instrument permanently from autumn 2013.

After a process at NVH, it was proposed to the Ministry of Education and Research to expand the veterinary nurse program to a bachelor’s degree of 3 years. This will allow for the inclusion of new professional fields, such as rehabilitation, infection hygiene and clinic administration, into the degree. There is a demand for knowledge in these fields in the wider society. Within the existing framework there is no room for new subjects. However, this was not included in the budget proposal by the Ministry this autumn.

In spring 2012, SU worked with an evaluation of how more of the external clinical training could be done internally at NVH in the future. A proposal was later adopted by the Rector in autumn 2013 and will be implemented by spring 2014 (class of 2013).

**In 2013/2013 the Study Committee worked on:**
- A revision of the strategy and the structure of the quality system adopted by the Board in March 2013.
- Adopting a plan for working with a new curriculum for the veterinary medicine programme, adopted by the Board in June 2013
- Planning a seminar on the new curriculum autumn 2013. Stephen May and Peter Van Beukelen were invited.
- Annual reviews of curriculum and semester plans, and SEVU courses.
- Adjustments to next year’s study plan for the veterinary medicine and veterinary nurse program (see above)
- Appointing a working group for the exam in the 7th semester, and the creation of a new examination routine.
- Giving a task to the departments regarding the 7th semester as well as making decisions about changes.
- Treating the proposal to change the internal/external practices in the veterinary nurse program.
- Treating the proposal to change the four-week husbandry practice to include training with fish.
- Processing all proposed changes to the guidelines (see regulations)
- Treating the proposal by VSU on amending the criteria for the assignment of tracks.
- Discussing the new common regulations for NMBU. Had a meeting with UMB.
- Monitoring RSA and decision to introduce professional ethics into the veterinary program.
- Processing the ACOVENE report.
• Discussing the report on the candidate survey (see previous study quality report)
• Proposed changes to the criteria for the Pegasus prize
• Budget initiatives

With the exception of the work on the four-week husbandry practice that SU is continuing during the autumn 2013, all proposals have been implemented.

**RSA**
The topic for the Council for Cooperation with Stakeholders (RSA) was changing requirements for competences for veterinarians and veterinary nurses in the future labour market. Participants in the Council were preoccupied with the professional ethics, animal welfare, attitudes and communication skills of the new graduates. SU decided to introduce the subject professional ethics and has worked to get this in place. The course is to be taught the first time in spring 2014 (class 2010).

### 2.5 Assessment and grading system
*The assessment and grading systems of the studies shall ensure a high standard of graduates.*

This academic year the exam in Introduction to diagnostic work (7th semester) was decided to be changed. No other changes have been made.

### 2.6 Teaching quality
*Information, teaching, supervision, evaluation and assessment should be of high quality.*

For a more detailed account and description of measures taken in individual courses, please see the department reports. The reports clearly show that student evaluations are read carefully and followed up and a lot of work is done in the individual blocks to increase the quality.

The table below gives an overview of how satisfied students have been overall with the blocks in the programs. Such a table can be used for monitoring the quality and as an indicator if the rating of some blocks/topics remains low over time. It gives a better picture of the problems with the study plan as a whole. The higher the number, the more students are satisfied or very satisfied (grade 5 or 6 out of 6 on the evaluation scale). For most blocks with a low score in the table, the grade 4 was prominent, thus indicating an above average rate of satisfaction. For blocks marked with a *, over 15 percent of respondents gave the grade 3 or lower. This indicates that there are challenges in this area (see discussion below).

<table>
<thead>
<tr>
<th>Veterinary medicine program</th>
<th>% that gives the grade 5 and 6 as an overall assessment of the block</th>
<th>Motivation for further studies at NVH (%)</th>
<th>Well-being at NVH (%)</th>
<th>High rate of failure (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This is a measure of whether the students found the block interesting, how they found the organization within the</td>
<td>Based on students’ comments this is also an indication of how the course meets the student’s professional</td>
<td>This gives an indication of the student’s well-being at NVH. The social aspects of student life and student community are</td>
<td></td>
</tr>
</tbody>
</table>

**Table 4:** Summary of student evaluation results.
block and program composition. A high failure rate usually correlates with a lower score. (Figures from the previous academic year 2011/12 are listed first in gray.)

<table>
<thead>
<tr>
<th>Course</th>
<th>1st semester</th>
<th>2nd semester</th>
<th>3rd semester</th>
<th>4th semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal biology</td>
<td>65,2</td>
<td>84,5</td>
<td>77,6</td>
<td>86,2</td>
</tr>
<tr>
<td>Cell biology</td>
<td>62,9</td>
<td>58,8</td>
<td>58,9</td>
<td>84,3</td>
</tr>
<tr>
<td>Population medicine - breeding</td>
<td>32,7</td>
<td>44,2*</td>
<td>32,8</td>
<td>77,0</td>
</tr>
<tr>
<td>Population medicine - statistics</td>
<td>38,9</td>
<td>39,4*</td>
<td>11,9</td>
<td></td>
</tr>
<tr>
<td>Population medicine - epidemiology</td>
<td>27,9*</td>
<td>13,9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animal nutrition</td>
<td>40,0</td>
<td>50,0</td>
<td>58,6</td>
<td>81,0</td>
</tr>
<tr>
<td>Anatomy og physiology</td>
<td>55,9</td>
<td>76,0</td>
<td>62,0</td>
<td>70,0</td>
</tr>
<tr>
<td>Principles of immunity and disease</td>
<td>65,4</td>
<td>61,2</td>
<td>71,5</td>
<td>71,5</td>
</tr>
<tr>
<td>Veterinary microbiology and parasitology</td>
<td>37,9</td>
<td>53,6</td>
<td>58,9</td>
<td>75,0</td>
</tr>
<tr>
<td>Pharmacology and toxicology</td>
<td>96,1</td>
<td>82,7</td>
<td>78,8</td>
<td>78,8</td>
</tr>
<tr>
<td>Food safety</td>
<td>60,0</td>
<td>54,0</td>
<td>46,0</td>
<td>80,0</td>
</tr>
<tr>
<td>Animal welfare, animal housing and laboratory animal science</td>
<td>22,2*</td>
<td>46,1</td>
<td>55,8</td>
<td>71,1</td>
</tr>
<tr>
<td>Introduction to diagnostic work (7th semester)</td>
<td>46,0</td>
<td>16,7*</td>
<td>54,2</td>
<td>54,2</td>
</tr>
<tr>
<td>8th semester</td>
<td>Low response rate</td>
<td>17,5*</td>
<td>-</td>
<td>60,0</td>
</tr>
<tr>
<td>Heard health</td>
<td>66,7</td>
<td>-</td>
<td>67,0</td>
<td></td>
</tr>
<tr>
<td>Sheep and goats, Sandnes</td>
<td>40,0</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poultry</td>
<td>60,0</td>
<td>37,5**</td>
<td>42,5</td>
<td></td>
</tr>
<tr>
<td>Pathology, theory</td>
<td>33,4</td>
<td>42,5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pathology, practical</td>
<td>60,0</td>
<td>72,5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic medicine at NVH</td>
<td>33,3</td>
<td>60,0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic medicine, Hjelmeland</td>
<td>86,7</td>
<td>82,5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diseases in wildlife and semi-domesticated reindeer</td>
<td>26,7*</td>
<td>30,0*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9th semester (overall evaluation)</td>
<td>Low response rate</td>
<td>17,5*</td>
<td>-</td>
<td>60,0</td>
</tr>
<tr>
<td>ProdMed: Stationary clinic</td>
<td>36,5</td>
<td>28,0*</td>
<td>-</td>
<td>74,0</td>
</tr>
<tr>
<td>ProdMed: Ambulatory</td>
<td>65,4</td>
<td>48,0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9th semester (overall evaluation)</td>
<td>76,9</td>
<td>90,0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Veterinary nurse program

<table>
<thead>
<tr>
<th></th>
<th>% that gives the grade 5 and 6 as an overall assessment of the block</th>
<th>Motivation for further studies at NVH (%)</th>
<th>Well-being at NVH (%)</th>
<th>High rate of failure (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication between animals and humans</td>
<td>-</td>
<td>64,1</td>
<td>87,1</td>
<td>76,9</td>
</tr>
<tr>
<td>Laboratory animal science</td>
<td>30,3*</td>
<td>81,1</td>
<td>59,3</td>
<td>97,3</td>
</tr>
<tr>
<td>Anatomy and physiology</td>
<td>30,3*</td>
<td>30,8*</td>
<td>59,0</td>
<td>82,1</td>
</tr>
<tr>
<td>Infection biology</td>
<td>58,3</td>
<td>78,8</td>
<td>78,8</td>
<td>78,5</td>
</tr>
<tr>
<td>Final evaluation spring 2013, class 2011</td>
<td>-</td>
<td>35,0*</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* Over 15% gave the grade 3 or lower.

** The lecturer was sick, so students only got half of the course in spring 2013. The rest was given in autumn 2013 after the evaluation.

For examination in Epidemiology and Introduction to diagnostic work required a second censoring. The failure rate as it was before the second censoring is indicated in brackets (see below).

When combining the scores above and see the numbers on against the background of the students’ process in the study and look at the comments that students have given, the following picture emerges:

Both student groups began their studies at NVH in a bliss. They are very positive after the first block and score very highly of satisfaction and motivation and many give the grade 6.

### Veterinary medicine program

The satisfaction remains high, indicating a good learning- and student environment. Students say that the lecturers are nice, the student life is very good and that they are happy at NVH. The motivation has the highest score in the first block; animal biology. In particular, the dissection is seen as a motivating factor. After population medicine the students are very demotivated. There is a high failure rate, they do not see the relevance of the subject and they find it difficult to understand. After the summer holiday in their second academic year, right after animal nutrition, student well-being rises again. They are then in the middle of
mentoring the new students. After that, there are three heavy theoretical blocks and well-being falls slightly, while motivation has picked up slightly again. They see the relevance of the subjects. Students indicate that they are generally satisfied with the education and the lecturers. Anatomy and physiology get a high score despite the fact that students think that the amount of work in the subject is insurmountable. A general trend for all subjects at NVH, with some exceptions, is that the the students find the curriculum too large and the time too short. This is supported by the departments reporting that all block leaders want more time. The subject of pharmacology and toxicology has always had high scores on all parameters. This course is clinically oriented and the content is adapted to the available time. Students understand the relevance and one student writes that she/he for the first time experienced a sense of mastering the education. We see the same trend in food safety. Satisfaction increases. They think the educational program is good, they have time for the subject content and some say that a new world opened up. Students also find the subject interesting, but not for their own future career. Therefore the motivation decreases. They do not plan to work in this area.

Additional comments through the study plan indicate that students experience a low sense of achievement and self-esteem falls during their education. The satisfaction for class 2009 in the 7th semester and 8th semester is lower than at any other time. The comments indicate a tear on the students. They give very low scores on these semesters, although some subjects in 8th semester achieve higher scores. For instance the placement in aquatic medicine receive many 6’s.

The low scores are because of the composition of the study plan and that they do not have time to learn what they are supposed to. In addition, there are given a difficult and obscure exam in 7th semester this year. A short summary of the feedback from the 7th semester (Same kind of comments is given in several subjects previously, but is more prominent for the clinical subjects):

"We are experiencing a minimal sense of achievement, the confidence decreases and motivation disappears when you never feel that you are sufficient."
"Clinical Veterinary Medicine is a practical profession - now we are tired of this power point marathon! Veterinary Medicine this far could just as well have been a correspondence course!!"
"Not enough time, a little too much helter-skelter."
"A lot of information in a short time"
"The block was informative, but also very tightly packed. It is a pity that you do not have sufficient time to read the syllabus that is so relevant for future career."

A returning comment is that the lecturer goes way over time to cover everything and that there are minimal breaks. Students are then asked to read the rest. For example a student gave an example of the 100 pages in a textbook the lecturer attempted to cover in 90 minutes. The rest they were told read themselves after a day full of lectures. If you multiply the number of pages with a full day's teaching there are not enough hours in the day.

For the clinical subjects in the 8th and 9th semesters where the score is low students indicate in their comments that there are too few patients, absence of staff and too much downtime. In particular, they point to the organization of the day in the stationary clinic in production animals, as well as the medical clinic and the surgery clinic in companion animals. Equine clinic, however, is given as an example of a clinic that has the ability to organise the day in a good way. Companion animals has introduced training days that students are happy with, but
because of the absence of teachers they did not get what they expected and this creates a lot of dissatisfaction. See the departments’ report for more details.

The mixed rotation in 9th semester, with the exception of meat inspection, is given a very low score. Students now want to learn clinical skills and feel that they are wasting their time with other subjects.

The students indicate the the time spent on student activities is very high in the feedback for the 7th, 8th and 9th semesters.

The tracking year is only evaluated qualitatively. Feedback from the class of 2008 has been followed up so that changes in the infection control course can also apply for them.

**Veterinary nurse program**
The veterinary nurse students also start with very high scores in motivation and satisfaction. Anatomy and physiology has despite efforts last year persistently low scores. Students report of too much required reading in a short time. Too many details. A small amount of lessons means that lecturers go far beyond the set time. The lecturers receive good feedback. Infection biology was also a subject that struggled in relation to these matters, but a revision of the block has led to a different emphasis and satisfaction increases. Exam results have as a result of the audit also increased significantly.

The total score in the final evaluation has a somewhat low satisfaction. This is according to the comments on organization of the curriculum and of great fragmentation of content (a bit of everything). They want that the program to last three years to go more in depth in the topics. Students are largely satisfied with the lectures.

**Examination routines and censoring**
There have not been any complaints on formal errors on this year’s exams handled by the Committee of Appeals. But both the exam in Population medicine and Introduction to diagnostic work went to a second censoring because of the difficult exam questions, errors, vagueness and a very high failure rate. The result was that more students passed the exam after the second censoring. NVH has re-organized the work with the 7th semester exam after this and has also changed the censoring rules for Population medicine (statistics and epidemiology shall now be considered as a whole).

During the course of the year we have received 14 complaints about the grading. Two grades were raised after complaining and none were graded lower than the original grade.

**2.7 Clinics and laboratories**
*NVH’s clinics and laboratories shall be of have a standard where the teaching is adapted to society’s demands and needs.*

It is here referred to the report by the departments. See also Section 6.2.2 on HMS.

**2.8 Quality of results**
The studies shall be completed within the prescribed time with qualitatively good results.
This year NVH has gone deeper into the dropout problem in the veterinary medicine program, as the number from DBH in 2012 indicate a decrease in performance. This topic is therefore more emphasized in this year's report.

The following figures from DBH indicate this:

Failure percentage in the veterinary medicine program:

<table>
<thead>
<tr>
<th>Year</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program</td>
<td>11.2%</td>
<td>7.7%</td>
<td>6.0%</td>
<td>4.8%</td>
<td>3.5%</td>
<td>4.4%</td>
<td>5.8%</td>
</tr>
</tbody>
</table>

Registered students:

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program</td>
<td>372</td>
<td>400</td>
<td>396</td>
<td>400</td>
<td>413</td>
</tr>
</tbody>
</table>

Total credit production (in units of 60 ECTS):

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program</td>
<td>319.4</td>
<td>324.4</td>
<td>334.9</td>
<td>342.3</td>
<td>325.1</td>
</tr>
</tbody>
</table>

Credit produced per student:

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program</td>
<td>51.5</td>
<td>48.9</td>
<td>50.5</td>
<td>51.1</td>
<td>47.0</td>
</tr>
</tbody>
</table>

Degree of completion in accordance with the study plan for the veterinary program:

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program</td>
<td>97%</td>
<td>93.5%</td>
<td>92.9%</td>
<td>94.9%</td>
<td>90.8%</td>
</tr>
</tbody>
</table>

All these figures indicate a decline in performance in 2012. When the number of students goes up so should the total production of credits. If we look at student dropout there is also cause for concern:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Admitted students*</td>
<td>57</td>
<td>56</td>
<td>58</td>
<td>56</td>
<td>60</td>
<td>61</td>
<td>72</td>
<td>49</td>
<td>64</td>
<td>76</td>
</tr>
<tr>
<td>Adopted admission frames</td>
<td>56</td>
<td>56</td>
<td>56</td>
<td>56</td>
<td>56</td>
<td>60</td>
<td>48</td>
<td>70</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Graduates**</td>
<td>59</td>
<td>67</td>
<td>42</td>
<td>51</td>
<td>59</td>
<td>47</td>
<td>45</td>
<td>61</td>
<td>60</td>
<td>53</td>
</tr>
</tbody>
</table>
* These are the DBH numbers and they are normally somewhat higher than the number of students who actually started, as students who later did not meet at the start of the academic year are included in the figure. However, every year applicants on the waiting list were called to meet the admission goals. Until 2003, the goal was to have 56 students in each class. From 2004 this was increased to 60 and in 2005 to 70 students. In 2005, the Ministry of Education and Research capped the number of fully-funded students to 48. From 2006, 70 students were admitted.

** Because some students have a prescribed time of 5.5 years and others 6 years, the numbers for each year are not directly comparable.

Other things that occurred during this period:

In the admission 2002, the previous admission requirement of six months' practice was removed. This led to an increase in the number of applicants, but at the same time there were more applicants who had NVH further down on their priority list and we get applicants without any previous experiences.

From 2004: Two additional points were given to the underrepresented sex in the admission process.

In 2004 many candidates following the old study plan graduated. The last opportunity to take the clinical examination in the old way by four exams arranged yearly was in 2005. In 2007 the first students following the new curriculum graduated.

In 2004, the first replacement admission was announced with students competing for the vacant places for the first time. The replacement students are not included in these figures.

**Analysis of the figures**

Looking at the admission framework, ideally 58 students have been graduated annually during the last 10 year period. In this period, 54 students graduated per year. In the old study plan the difference is 56/55. In the new study plan it is 60/54. Despite the replacement admission the rate of student dropouts seems to be higher now.

Overview of the number of students, students on leave and student dropouts in the classes starting 2008-2012:

<table>
<thead>
<tr>
<th>Class</th>
<th>Active students per 10.10.2013</th>
<th>Leave of absence per 10.10.2013*</th>
<th>Drop out in the academic year 2012/2013*</th>
<th>Drop out previous academic year*</th>
<th>Total dropout per class*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class of 2012</td>
<td>72</td>
<td>4</td>
<td>8</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Class of 2011</td>
<td>63</td>
<td>4</td>
<td>8</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Class of 2010</td>
<td>65</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Class of 2009</td>
<td>60</td>
<td>3</td>
<td>0</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Class of 2008</td>
<td>70**</td>
<td>0</td>
<td>15</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

* Numbers indicate the class the students were following when they dropped out/went on leave. This it not necessarily the class they were initially admitted to.

** The number includes students from older classes who have not graduated.
In total, 20 students dropped out in the academic year 2012/2013 and this is a significant increase from the previous year. This indicates that the student results in relation to the admission frames will also go down in 2013.

When we look at gender differences we find:

Gender distribution of the veterinary medicine students (including students on leave) as of 10.10.2013:

<table>
<thead>
<tr>
<th></th>
<th>Class of 2012</th>
<th>Class of 2011</th>
<th>Class of 2010</th>
<th>Class of 2009</th>
<th>Class of 2008</th>
<th>Total number per 10.10.2013 (class of 2013 not included)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>70</td>
<td>58</td>
<td>56</td>
<td>59</td>
<td>60</td>
<td>303</td>
</tr>
<tr>
<td>Men</td>
<td>6</td>
<td>9</td>
<td>11</td>
<td>4</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>67</td>
<td>67</td>
<td>63</td>
<td>70</td>
<td>343</td>
</tr>
</tbody>
</table>

Gender distribution of students who have dropped out of the study while registered in class 2008-2012:

<table>
<thead>
<tr>
<th></th>
<th>Class of 2012</th>
<th>Class of 2011</th>
<th>Class of 2010</th>
<th>Class of 2009</th>
<th>Class of 2008</th>
<th>Total number per 10.10.2013 (class of 2013 not included)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>7</td>
<td>12</td>
<td>6</td>
<td>11</td>
<td>10</td>
<td>46</td>
</tr>
<tr>
<td>Men</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>14</td>
<td>9</td>
<td>15</td>
<td>15</td>
<td>61</td>
</tr>
</tbody>
</table>

According to the number of admitted students, NVh should have 404 students during this period. This means that NVH had a student dropout rate of 15 percent in this period. The gender distribution is 73 percent female and 27 percent male. That means NVH lose relatively more male students in relation to the composition of the student body.

One of the measures from last year’s study quality report was to examine the causes of student dropout. SFA plans to undertake a QuestBack survey that looks at the reasons for dropping out. This work is somewhat delayed. SFA has, however, been working on this problem since January. Mapping and monitoring procedures have been improved this year, but this is time-consuming work that requires a lot of resources at SFA.

Almost half of those who dropped out this year failed at least one exam. Some of these had major academic problems, often combined with personal issues. It must also be assumed that some failed because they already planned to quit. The remaining students are believed to have dropped out due to wrong choice of education, etc.

Many meetings have been held with students who have academic problems. Often these students have many other obligations besides studying, including parenting. Some also have chronic somatic and psychiatric disorders that hinder academic life. Problems begin to occur mainly in the first year. A recurring matter is that students fail to choose study techniques that work in relation to the large syllabus. Some students go in depth and are unable to get through it all or lose track, while others push the issues ahead and postpone reading until the last
minute. It often takes a long time to figure out how to study. This is often dependent on their life outside their studies to fall into place. They often have great motivation for the profession, while they at the same time find the subject difficult and unmanageable.

Population medicine and Cell biology (both class of 2012) had failure rates above the acceptable level (15 %). Population medicine often has a high failure rate and many students struggle to pass the individual components in this subject.

It is a paradox that all student evaluations indicate high well-being and great satisfaction with the block. The failing must then be due to more fundamental issues concerning program structure, curriculum overload and today’s students themselves that cause the dropout and not the quality of teaching as such.

Overall grade distribution in the veterinary medicine program:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vet 2011</td>
<td>8.8 %</td>
<td>34.7 %</td>
<td>28.9 %</td>
<td>14.6 %</td>
<td>5.9 %</td>
<td>6.1 %</td>
</tr>
<tr>
<td>Vet 2012</td>
<td>8.4 %</td>
<td>31.4 %</td>
<td>32.2 %</td>
<td>15.6 %</td>
<td>6.2 %</td>
<td>6.1 %</td>
</tr>
</tbody>
</table>

The highest grade A is less used at NVH than what is normal elsewhere in Norway. The distribution between A and E should be approximating the standard deviation over time. The grade B is relatively speaking overrepresented at NVH.

**Veterinary nurse program**

Four veterinary nurse students have dropped out this academic year. This is a smaller number than the dropout numbers for the first year of class 2011.

However, there has been an increase in the failure rate from 4.2% in 2011 to 5.9% in 2012. Credits production still indicates a good student performance during 2012/2013 in this study.

**2.9 Ethical use of animals in teaching**

*The use of animals in teaching shall follow a high ethical standard.*

The student evaluations confirm high ethical standards, as seen by the high score given in subjects where animals or animal material has been used in the teaching.

All departments report that they have increased the emphasis on animal welfare in their teaching and academic portfolio.

**2.10 Development of new study programs**

*New study programs must be of high quality and help meet society's needs for veterinary and biomedical expertise.*

Besides working for a bachelor's degree in veterinary nursing there has been no activity in this area.
3. Further and continuing education

3.1 Development of the course portfolio

SEVU shall develop socially beneficial and good courses.

The course portfolio is constantly evolving. Some courses have been held several times, which has created an expectation from the customers for the course to be held regularly. This is the case for the course in Anesthesia and analgesia for veterinary nurses (three assemblies, 15 ECTS) and the courses in Laboratory animal science (6 ECTS).

In 2012/2013 the Centre for Further and Continuing Education (SEVU) arranged courses aimed at veterinary surgeons, veterinary nurses, employees of the Norwegian Food Safety Authority and employees at clinics. A total of 10 courses, some with several assemblies and some short courses, were held. Two of the ten courses have been courses in laboratory animal science (Course in Laboratory Animal Science for Research Workers). A short course, “High fertility, the basis for the economy”, had to be canceled due to few participants.

SEVU at NVH has a good working relationship with its counterpart at UMB. The two entities have together been strategically targeting the FSA. In May the management of the FSA gave a green light to a collaboration on education for employees at the FSA which will be given as an experience-based master’s degree offered by the Norwegian University of Life Science (NMBU). NVH and UMB will together be able to offer tuition within almost every field the FSA is responsible for, and is thus in a unique position to provide courses to the FSA. The experience-based master’s degree is still in the planning stage; the structure is planned, but not finally decided upon.

SEVU uses European diplomats and hire the necessary expertise from abroad when this is necessary. NVH currently does not make use of the full potential of training its employees through SEVU courses. Closer cooperation with the departments and the personnel department can help ensure a working collaboration on courses for employees.

The market for courses aimed at companion animal practitioners is big, and there are many providers of further education targeting this group. As a consequence of small clinics merging or being acquired by larger clinics, the demand for further education programs from the private sector increases, both the large clinics and the pharmaceutical industry use courses as part of their marketing and relationship building for practicing veterinarians and veterinary nurses. This makes it even more important that SEVU offers leading courses and provide opportunities for courses with ECTS where it’s possible. NVH employees have over the past year become more positive towards arranging further education courses in the regime of SEVU. They have discovered that the courses help building good relationships with practicing veterinarians, which is important for future referrals when the clinics are moving to Ås. Teaching at the courses can also provide a nice extra income to the clinics. One limiting factor is the availability of extra working hours for the staff, which already has to juggle between shifts at the clinics, teaching and research. When lecturing at external courses, the lecturer receives a wage for his or her efforts, whereas for SEVU courses the profits goes to the department that is responsible for the course. The interest in teaching at SEVU courses will probably increase if some form of personal compensation is provided.
A course specifically for equine veterinarians – dermatology – was held for the first time in February. There was great turnout at the course and the evaluations were good. The lectures were held by an external specialist from the Netherlands. The experience has resulted in an increased interest for SEVU amongst the equine personnel at NVH, who have so far been unwilling to contribute to the further education courses organized by SEVU. We now expect to be able to build a course portfolio also for equine veterinarians.

Every two years SEVU offers courses on the veterinarian and modern cattle care. This is coordinated with other learning course providers such as Geno, the health services and veterinary association. There is no market for offering more courses on cattle since there are many who arrange courses on the subject both at local and national level. SEVU has not yet been able to offer courses on swine, sheep and poultry. This shall be prioritized.

The Study Committee shall approve the course syllabus, programme and course requirements. The contact with SU could be expanded into a closer collaboration so that SEVU could benefit from the input and using the SU as an academic sparring partner. The Head of SEVU is a member of the Council for Cooperation with Stakeholders (RSA). It can also be an advantage to involve the RSA in the discussion on the course portfolio.

3.2 Marketing, admission and course certificates

Relevant users shall easily obtain information on courses relevant for them. The registration procedures shall be user friendly, and participants shall be given proof that they have completed the course.

Further education is marketed on its own e-mail lists, the veterinary association, social media, websites, on campus and in the Norwegian Veterinary Journal all depended on the target audience. Some courses are also advertised in the Swedish and Danish veterinary journals. In addition, the courses are promoted at the “Veterinary days” and other relevant fairs and congresses. It is important to be present at these events as they provide a lot of valuable feedback from various customer groups at the same time give an opportunity to see what your competitors are doing.

All inquiries regarding further education are promptly and informatively replied to. Registration for the courses is mainly electronically via the DNV. All participants are then registered in the administrative system FS, this applies to courses with and without credits. Admissions are made in accordance with the principles laid down in the regulations for admission to the veterinary medicine and veterinary nurse programs. Most courses are aimed at veterinarians and places are allocated on a “first come, first served” basis, but the courses are rarely full.

Anyone who completes a further education course receives a course certificate.

3.3 Course arrangements

The courses shall be of a high standard and be conducted professionally.

Where there already is a portfolio of courses, the courses that have been held before will continue to be developed according to academic updates, and improvements shall be made where it is possible. Evaluations from previous courses are read and taken into account before the next time the course is held. An academic framework shall be created by the subject leader.
for all new courses. The best academics possible will be used for all topics and the schedule shall be set bearing pedagogical concerns in mind. After SU has ensured the quality of and approved the program for the course, the course will be held following the highest possible standards. The emphasis is here on providing excellent service to both participants and lecturers.

Most courses are held at NVH. NVH is not an optimal location for holding courses. The toilet capacity is too low in some auditoriums, and the campus cafeteria provides challenges that are handled continuously.

The Centre for Further Education is assisted by NVH staff on the implementation of a number of courses. In return, employees have been allowed to participate in courses for free.

SEVU is a major employer of European specialist expertise and also hires specialists from abroad where local specialists are not found at NVH. This practice is necessary as long as NVH lacks Diplomats in many fields.

Fronter and QuestBack are used as teaching tools at SEVU courses. These tools are used to distribute notes, photographs, to give messages to participants and to competence tests (MCQ).

### 3.4 Evaluation

*Evaluations shall ensure that good and relevant courses are held and the veterinarians and veterinary nurses attend further education.*

All courses are evaluated electronically using QuestBack. In all evaluations, there are questions about what other course one wish to be held at NVH. Information from these evaluations is then given to the academic communities and the FSA where they are involved. The response rate on the evaluations is high. Feedback from the evaluations provides valuable information that is then to a great extent used in course management and planning.

### 4. Research, PhD and specialist candidate programs

*Research, PhD and international specialist candidate programs shall be of a high standard.*

#### 4.1 Policy

*N VH's research, PhD education and international specialist training should be of high standard and be part of NVH's strategies.*

In the academic year 2012/2013 the PhD committee has had a total of five meetings and discussed among other things:

- The EAEVE report (the part that deals with PhD)
- Guidelines for quality assurance of diplomatic studies at NVH
- Supervisor Forum with UMB/joint lunches at NVH for academic staff
- Criteria for being granted extension of time/extra year
- The organization of DIOV in the future
- Funding of doctoral courses and doctoral education in the new university
- The future of PhD courses at NVH
• Review the mandate proposal for selection of research education at NMBU
• Career survey for PhD graduates of the last five years

The doctoral candidates’ interest organization in the veterinary disciplines (DIOV)
The PhD candidates have their own organization – DIOV. DIOV has two representatives in the Committee for Research and Ethics and two representatives in the PhD committee. The two representatives in the PhD Committee raise issues with the Committee when required. DIOV has prepared its own mandate, which has been reviewed by the PhD committee.

A meeting has been held with the Rector, DIOV and SIOV on the topic of dual competence.

4.2 Employment and admission

*NVH will ensure a correct employment and admission to a research project or European specialist graduate education leading to a scientific thesis on a high professional level or passing specialist undergraduate courses at a recognized college.*

In the academic year 2012/2013 a total of nine candidates have been admitted to the PhD program at NVH. Of these, four PhD fellows are enrolled in the payroll system at NVH as of 22 October 2013.

The PhD committee’s working committee (Prorector and PhD adviser) considers all admission applications, and also includes the UFE representative coming from the applicant's department in this work. By the quality assurance of the applications, emphasis is placed on research, and the feasibility and possibility of fulfillment. The applications with a project description must be submitted to the SFA two months after starting the position. The PhD committee then has one month to process the application. All PhD candidates are registered in the student administrative system FS. In FS there is a separate module for PhD, and reporting to DBH is done in FS.

4.3 Conduction

*Conducting PhD or a European specialist graduate program in according to the rules and regulations.*

Training component

In the academic year 2012/2013 the PhD course "Introduction to biomedical research" was held in both semesters. In the autumn of 2012, eight PhD candidates attended the course. In the spring of 2013, there were seven participants. The course included topics such as ethics and the relationship with the supervisor. In the autumn of 2012, NVH introduced a new mandatory "Midterm course." In autumn 2012 there were seven participants to the course, while in spring there were five participants.

In addition to this, a course in “Scientific writing”, was held in autumn 2012.

Progression

The PhD regulations describe the procedures for handling cases where the candidate has been delayed in the progress. The PhD committee is involved in issues that can not be resolved at lower levels.
4.4 Conclusion

The completion of a PhD or a European specialist education at NVH will be after the candidate has presented and approved dissertation at the highest professional level or passed specialist examination at an acknowledged college.

The Regulation states that the evaluation committee has six weeks to deliver a report.

In the calendar year 2012, there were a total of 22 completed defenses. In 2013, the number will probably reach 31.

As of 22 October 2013, two new Specialist Candidates had passed the exam.

Follow-up of measures from last year’s report:

In the study report last year, it was suggested these simple steps for the PhD program:

- Competence Measures for supervisors (Initiated) - In the academic year 2012/2013 we started cooperation with UMB on arranging a supervisor forum, and a supervisor forum was held at NVH in August 2013. NVH has also initiated joint lunches every first Monday of the month for academic staff in the cafeteria. The lunch includes information and discussion where one addresses topics such as: mandatory PhD training - What is the status as of today and how will it be in 2014?
- Reviewing regulations at NVH in light of the revised terms of admission to PhD programs by the UHR (Not implemented)
- Cooperate with UMB on courses and training. NVH has not started to work with UMB on the PhD courses, but the PhD Committee is about to make a note to the joint secretariat on the organization of PhD in NMBU.
- Contribute to the merger process on the PhD program at NMBU (Initiated)
  The PhD advisor has collaborated with colleagues at Ås on the PhD studies at NMBU in the OPAD group “Doctorate at the New University”. The group has jointly written the mandate “Committee for doctoral education at NMBU”. The group also examined at the similarities and differences between the two institutions’ PhD regulations.
- Develop guidelines for the third opponent (coordinator) - (Delayed) Selection for the PhD and diplomat education decided to wait to undergo NVH agreements and guidelines for the third opponent since we will soon be part of a new university. Campus Ås must prepare this along with Campus Adamstuen.
- In addition, a graduate survey has been conducted (October 2013). NVH has sent out a career survey to everyone who received their PhD diploma from the school 2005-2013. The preliminary results are very positive. About 80 percent of those who responded to the survey are very satisfied or moderately satisfied with the PhD program at NVH.

5. Internationalization

NVH shall be an internationally oriented school, and an active promoter for student and teacher mobility.

5.1 International policy

NVH shall be internationally oriented and also use this to enhance the quality of their studies.
NVH has an international strategy (2010 to 2014), and an international committee that discusses and implements the strategy and evaluates the quality of international mobility and cooperation.

Many student reports mention that it gives a personal added value to go on an exchange, and all reports mention the academic benefits that they have experienced as a student abroad.

Issues regarding being ill-prepared to begin rotations in the clinics, which were reported by exchange students in 2011 (and also raised in LMU), were taken seriously and was an important factor that led to a change in NVH’s curriculum in the 7th semester. Students from autumn 2013 now receive a more thorough introduction to clinical work and a clinical preparatory week in the 7th semester, and will now be better prepared to start work in the clinics. In addition, NVH’s practice clinic (where students can practice the custom made doll animals) has been made more available to students. The practice clinic was moved closer to the companion animal clinics, and opening hours were extended.

SFA has also worked more consistently with information about the challenges the exchange students can face, and what demands they are met with abroad. An example of this is that one day in the clinic can be up to 10 hours in some of NVH’s partner schools abroad, in contrast to about seven hours at NVH.

This year no students aborted their clinical training while they were abroad.

5.2 International collaboration

NVH’s agreements and participation in programs should contribute to good collaboration and facilitating mobility.

NVH has had reciprocal visits by the veterinary faculty at the University of Liverpool in England. A bilateral Erasmus agreement was signed, and student exchange programs were planned for spring 2014.

However, the agreement with the veterinary school at Murdoch University in Australia was dismissed because of poor and late communication that spilled over on to the quality of the exchange deal. Murdoch had no spots for exchange students this year. Information was given at a late stage in the process. There has always been a high degree of uncertainty surrounding this exchange deal, which is stressful for our students. Throughout the duration of the contract (2005-2012) NVH students received very late replies from Murdoch despite repeated reminders. It seemed as if international mobility, which by the way was mostly one-sided, was not taken completely seriously at the Veterinary School at Murdoch. During the contract period only one student traveled from Murdoch to NVH on a short two-week visit. Three students applied to the Swedish University of Agricultural Sciences (SLU) and University of Copenhagen but did not receive an exchange spot. The study plan at SLU is quite different from NVH’s so that 12 weeks of exchange is not possible. Problems in Denmark arose because of the different parts; it is "far" from the veterinary clinics to the central admission office at the University of Copenhagen.

There were no incoming students from Spain and Hungary this year. Possibly a consequence of the unstable economic situation in Europe, but it can also because of the School's stringent language requirements.
NORHED - 2 new projects!
NORHED “Capacity Building for Training and Research in Aquatic and Environmental Health in Eastern and Southern Africa (TRAHESA)”
NORHED “Capacity building in Zoonotic diseases management overusing the integrated approach two ecosystems health that human- livestock - wildlife interface in Eastern and Southern Africa”

The following EXPLORE application is submitted:
ZOOPA: Zoonotic Food/Water-borne Parasites - a combined focus for research and education on One Health and One Planet

5.3 International mobility
*Teacher and student mobility shall help to internationalize NVH while providing the participating teacher and student a qualitatively good experience.*

**Exchange over 4 weeks – to and from clinics**

<table>
<thead>
<tr>
<th>Students out</th>
<th>Students in</th>
<th>Partner university</th>
<th>University without a deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>Baulkham Vet. Hospital, Sydney</td>
<td>Veterinary nurse student</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>Meller-James + Assoc. Vet clinique I USA</td>
<td>Veterinary nurse student</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>University of Edinburgh</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>University College Dublin</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>Lyon</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>University of Pretoria</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>Vienna</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>Univ of Leipzig</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>Brno, Tsjekkia</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Charles Sturt University, Australia</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>UC Davis, USA</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>Iowa State University</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>University of Queensland, Occupational Trainee Placement Agreements</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>Cornell University (USA)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>University of Texas</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>University of Sydney</td>
<td></td>
</tr>
</tbody>
</table>

Total out = 25 Total in = 7

**Staff exchanges**
No employees traveled to other universities abroad with “Erasmus or Nordplus staff mobility” in 2012/2013. To get this started there is a need for more and better information and incentives.

6. Framework quality

6.1 Academic resources
At NVH, the students shall have access to academic resources that meet high professional and educational standards.

6.1.1 Qualifications of teaching staff
The teaching staff should have high professional and educational qualifications.

See the departments’ report.

6.1.2 Library services and academic content
NVH shall have a library of high quality with easy access to relevant literature and information sources in printed and electronic form, and AV media.

The library's collection of books, current journals and AV assets are kept updated and supplemented. The library has taken over the training clinic’s multimedia collection.

The collection of syllabus books is extended and renewed. Electronic journals and literature databases that the library subscribes to are accessible from computers on the campus network. A trial period with access to about 200 of Elsevier’s electronic books is also ongoing.

The library staff provides students and staff with guidance and help to find and obtain relevant literature, and with help to setup literature lists for theses and dissertations. Students frequently use the library for group activities.

At the start of the study the veterinary nurse students and veterinary students from class 2012 got a tour and presentation about the library's offerings. For tracking students we have had courses in literature and reference management (RefWorks) at the beginning of the fall semester 2012 and spring semester 2013.

For PhD students, we offer a voluntary literature search course for those who would like this.

6.2 Learning environment
NVH’s learning environment shall ensure that the students have a good study environment.

6.2.1 Social activities
NVH shall facilitate activities that contribute to student well-being.

The students indicate high levels of well-being in the formal student evaluation system and during an informal meeting with the staff at NVH. This is despite the high workload and outdated facilities.

6.2.2 Environment
NVH shall have an environment where the student are satisfied, take care of the student’s health and safety that facilitates learning.

According to the department’s report the environment is too cramped, the buildings outdated, with ventilation and climate problems and too many students in too small areas. There are too few group rooms and those available have a poor indoor climate. Where possible, an attempt
is made to improve conditions (See the departments’ report). Some of the equipment used for teaching is also outdated and needs to be replaced, e.g. the microscopes.

HMS is still reported to be non-satisfactory in several places because of outdated buildings, lack of wardrobe space and difficulties to get good HMS routines and training. This is very unfortunate as the students shall learn good attitudes put them into practice in the practical part of the studies. However, there have been some changes in the past few years:

A working group was autumn 2012 appointed to examine infection control, structural conditions and routines at NVH. The departments have worked to implement the proposals in spring 2013.

A HMS coordinator, who has also worked closely with the Learning Environment Committee on HMS issues related to students, has been employed. Procedures for HSE are embedded in the curriculum and students are asked questions on this in the student evaluations as of this academic year.

NVH has a system to report defects. It was reported in 9 student injuries in 2012 and 6 per 10.10.2013. The departments report that it is particularly issues concerning transport and handling of animals in which injury occurs. This is followed up at the departments.

It will in autumn 2013 be established a reporting system in which this year results of student evaluations will be reported overall to the HMS Coordinator to be treated in the AMU and LMU. This will provide the tools to follow this up at the system level. Students are everywhere at NVH and is good at giving comments if they react to something.

6.2.3 Student welfare services

NVH shall contribute to securing a high standard of student welfare services.

Students have access to great services through SiO and locally at NVH. This will be maintained after the merger.

6.2.4 Equality

NVHs learning environment shall be characterized by equality and respect for the individual.

The RSA is concerned with the recent graduates’ attitudes and asks NVH to take special care to make sure that our employees are good role models to the students.

6.2.5 Learning environment

NVH will continuously strive for improvement of the learning environment.

LMU has a responsibility to work on this and monitor their learning environment surveys. In autumn 2013, NVH is in a nationwide survey: NOKUTportal. It is therefore not carried out a environment survey at NVH in spring 2013.

6.3 Administrative services

NVH’s student administration shall ensure that the students have a good study situation.
6.3.1 Student service

NVHs student service shall be user-oriented and functional.

SFA employs an open-door policy and try to have a low response times for all inquiries.

6.3.2 Administration of the studies

NVH’s administrative services shall be user-oriented and functional.

SFA is in the process of building a "new student administration", which from the new year will be a section in the central administration of NMBU. This section shall have a special responsibility for the students and programs at Adamstuen.

6.3.3 Development and control of student administrative services

NVH shall continuously implement and improve the student administrative services and at all times have correct student data.

The OPAD working group working on the coordination of the joint student administrative system FS has begun its work. That the system works is crucial in light of the merger and has high priority. The work is led by UMB.

There is an urgent need to introduce the planning tool "TimeEdit." This implementation will be a big step forwar.

Fronter will be introduced during autumn 2013 and spring 2014. Further development of this service will be undertaken when everyone has started using it.
Comments on the Report on the Quality of Study 2012/2013 by VSU

Introduction
In this document are the Students’ Political organization (VSU) comments on certain points in the study quality report for fall 2012 and spring 2013. Any point without a remark, are points on which we agree or have no basis to express an opinion on.

Comments
1.3 Strategy and plan documents
VSU agrees that it is worrying that the maintenance of buildings and equipment is not a priority because the school will be moved to Ås in a few years. It is important that buildings and equipment are kept in a functioning condition, in order for today’s students to continue to have a satisfactory level of their education. This is also important considering this year’s EAEVE accreditation.

1.4 Regulations
VSU must again point out that it is very troubling that the Board changes proposals that have been approved at the students’ general meeting. We find it especially troubling that the new proposal was adopted without it first being sent to the students for a hearing.

VSU expects that the management respects the student democracy, and that similar incidents do not happen again.

1.5 Relevance to society
VSU thinks that it is a pity that no meeting was held in the Council for the Cooperation with Stakeholders (RSA) in the spring of 2013. It is important for the students that what we learn in school is relevant for our future work, and that we are as prepared as possible for the challenges we will face in the workplace.

1.7 Reputation
VSU finds that it is positive for NVH that all future recruitment is carried out by NMBU. This may be particularly helpful for informing future students about what work opportunities that exist after the veterinary studies in addition to clinical work.

Recruitment is also important in terms of informing future students about what a veterinary study of 5,5 years means – which can help you not only to get the best student, but also the right students. This can possibly also help reducing student dropout rates, because many students are not fully aware of what awaits them when they commence their studies at NVH.

2.4 Quality of the study program
VSU is satisfied with the multidisciplinary case reviews. This is a good measure that the students are pleased with.
2.6 Quality of teaching

We note that there are some reoccurring subjects that each year have a high failure rate and get poor reviews. VSU finds there are simple measures that can improve this. Our suggestion is that the various subjects must exchange experiences on what works well. The subjects that receive positive feedback have a good teaching plan with excellent courses and seminars, structured lectures and an orderly compendium. We believe that the structure of subjects that receive a positive feedback can easily be transferred to other subjects. A good compendium can be used for many years, and it contributes to good learning.

As for the statistics, we believe that it provides a good picture of the reality at NVH, and we agree with comments on student well-being, coping and learning outcomes.

When it comes to student dropouts, it would be very interesting to receive more detailed information about why students leave. This information can then be used to evaluate what information to provide future applicants with, admission criteria and the organization of teaching.

When it comes to subjects that have a failure rate above acceptable levels, VSU finds that NVH must consider taking measures to improve the teaching of the program. VSU is of the opinion that it is possible to find teaching- and examination methods that make it possible for students to master these subjects as well.

Students value teaching methods which has a high level of following-up, such as the mandatory study groups used in Cell biology.

We must also take note that the blocks that get bad reviews often are blocks that are very labor-intensive for the students in terms of the size of curriculum.

In subjects/blocks with a very large curriculum it is important to emphasize the topics that are more relevant than others, both in terms of the examination and also later in the working life. It should not be a secret what the students must know when he/she has graduated – and what is more relevant for a specialist – and what is relevant for the exam.

5.1 International policy

VSU finds it is positive that NVH has made efforts to prepare the students better for the clinical practice abroad. Among other things, it is very positive with an open-evening training clinic with a student employee.

Summary

VSU believes this year’s study quality report gives an accurate picture of the actual situation at the school.

Much of the teaching and other learning arrangements have a good quality, and the students are happy at NVH. Yet there is a lot to work on, and room for improvement in some areas.

We see that there are a lot of the same challenges that recur every year. VSU hopes that positive measures will be taken in order to improve the quality of the study programs.
Appendix 4: Report from the formal meeting once a year between the school leaders and the Ministry of Education and Research. (Management and dialogue meeting)

Report from the yearly management and dialogue meeting between the NVH and the Ministry of Education and Research 2013

Management and dialogue meeting

Date and time: 12 June 2013, 9 am
Location: Ministry of Education and Research

Participants from NVH:
- Chair of the Board, Rector Yngvild Wasteson
- Board member Kjersti Brøndbo Wettre
- Board member Trine L’Abée-Lund
- Board member Jonas Einarsson
- Board member Eystein Skjerve
- Prorector Halvor Hektoen
- Director General Birger Kruse

Participants from the Ministry:
- Head of Department Rolf L. Larsen
- Head of Department Lars Vasbotten
- Special adviser Erling W. Wist
- Senior adviser Kristian Hegertun
- Senior adviser Jorunn Nakken
- Senior adviser Erling H. Dietrichson

Feedback on profile, priorities, ambitions and challenges
The Ministry refers to the discussion during the management and dialogue meeting regarding NVH’s profile, priorities, ambitions and challenges. NVH has Norway’s only veterinary medicine and veterinary nurse education, and a marked academic profile with clearly defined activity measures that reflects its social goals. NVH has a clear goal structure which is in line with the institution's uniqueness. NVH shows self-awareness and is critical in its assessment of its goal attainment, both in the report for 2012 and the plans for 2013. This was further emphasized in the dialogue during the meeting.

The Ministry of Education and Research noted that the School Board finds that the most important task in 2013 for NVH is to hand over NVH to NMBU in the best condition possible. The Ministry encourages NVH to actively use their experience with planning and to make use of their own management tools to further work with the NMBU.

The Ministry of Education and Research recognizes NVH’s meticulous work with the quality of education, as further specified in a separate annual report on this.
**Feedback on objectives and results**

**Sector goal 1: Universities and colleges shall provide education of high international quality in accordance with the needs of society.**

The Ministry of Education and Research notes that NVH shows excellent results on the indicators degree of program completion and program completion time. The share of graduates admitted to the doctoral program six years earlier is also on a satisfactory level. The Ministry notes that NVH still has a very good level of student recruitment.

The Ministry of Education and Research notes that the number of drop outs during the first academic year is somewhat larger than before, as well as large differences in the number attending further education courses. NVH should bear this in mind in the future.

**Sector goal 2: Universities and colleges shall, in keeping with their distinct character, conduct research, and artistic and academic development of high international quality.**

The Ministry of Education and Research notes that NVH obtains excellent results on indicators such as number of publications and doctoral degrees, but shares NVH’s concern for the decline in external funding from the EU and the Norwegian Research Council (NRC). The Ministry expects that NVH now, and later as a part of NMBU, works closely with, among other, the National Veterinary Institute and other research institutions in order to produce strong applications, especially for EU funding. The Ministry finds it positive that NVH has been given funding for an EU adviser by the NRC, to be shared with the Veterinary Institute.

The Ministry of Education and Research expects NVH to continue its commitment to a high quality in research and education before the merger and co-location to Ås, but that investment in the structures at the existing premises are limited to what is necessary in order to maintain the accredited study programs and good research.

**Sector goal 3: Universities and colleges should be clear actors in society and contribute to knowledge dissemination, international, national and regional development, innovation and the creation of added value.**

NVH’s online publication degree, including at forskning.no, has increased a lot. The Ministry of Education and Research acknowledges that NVH disseminates results and is visible in various forums.

It is positive that NVH has dealt with the challenges of the increasing the volume of activities related to education beyond qualification, and the Ministry looks forward to the results of this work.

NVH has a significant potential for increasing its activity in innovation and commercialization. The framework of the new university as well as a closer collaboration with the researchers at Ås should provide a good basis for clarifying the ambitions within the disciplines that NVH is responsible for today.

**Sector goal 4: Universities and colleges shall have an efficient management of the activities, expertise and resources in accordance with their role in society.**

The Ministry of Education and Research notes that NVH is aware of its strengths and weaknesses, which measures to take and priorities to make, and what will be difficult to implement. The Board has
predicted the long-term economic development, and shows what NVH can do to improve the situation. The Ministry sees this as important prerequisites for the further development of the field of veterinary medicine.

The pre-contract with the University of Tromsø concerning the transfer of the Section of Arctic Veterinary Medicine (SAV) shows a willingness of both institutions to cultivate their respective fields. It is further positive that the research community in Tromsø sees this transfer as an opportunity. Several user groups involved with the equipment for the new university have already been started and others are being set up. This is an important and crucial factor as it is the main cost unit for the next funding that is needed for NMBU. A commitment to sobriety, sharing and reuse are essential factors and the Ministry of Education and Research expects them to be at the heart of the process.

Other feedback

Working hours and second jobs
The Ministry of Education and Research considers it important and desirable that university- and college staff are allowed to have additional posts and second jobs at other institutions. However, it is necessary that additional posts and proprietary interests do not conflict with the employee’s main position, so that confidence in the employee's independence is impaired. The institutions must consider whether, in addition to ethical guidelines, it is necessary to establish their own guidelines for external work.

Temporality
It remains a goal for the Government to reduce the share of staff on temporary contracts in the higher education sector, see among others white paper St. 18 (2012-2013) “Long lines - knowledge gives opportunities”. In this area, the results of NVH are still not up to par. Several comparable institutions show far better results, and NVH should examine whether there is anything that it can learn from them. Given the poor results the Ministry instructs NVH to prepare an action plan with binding measures that can help reduce the amount of temporary contracts of the institution. One of the measures in the action plan should be to set a specific target for what the institution overall and the individual entity shall achieve in the short and medium term. The plan should be submitted to the Ministry as soon as possible and at the latest by the end of 2013.

Equality
The Gender Equality Act requires all public institutions to work actively with gender equality and to report on the actual state of things in this area.
Study Plan and Subject Description

Veterinary Programme
Norwegian School of Veterinary Science

Academic Year of 2013/14

The veterinary programme is of 5 ½ to 6 year’s duration. It leads to the title of:

*Cand.Med.Vet*

Revised in June 2013

Study Plan of 2002, with later adjustments of 2006 and 2011

The Board 15.12.2011
Definitions:
Block Leader: The person who organizes and manages the blocks from 1\textsuperscript{th} to 7\textsuperscript{th} semester.
Examination Coordinator: The person who organizes and administers the examination subjects in 8\textsuperscript{th} and 9\textsuperscript{th} semester. These may also be called Teaching Coordinator for managing the entire subject area.
Course Coordinator: The contact person for specific courses, modules or periods. They are often teaching coordinators for the key aspects of a subject area.
Hippocampus: Student Intranet Website.

Study Plan

Duration, scope and level
Norwegian School of Veterinary Science (NVH) is a specialized university institution, which works to promote justifiable, ethical animal husbandry, animal health and hygienic and good-quality nutrition for humans and animals.

The veterinary programme is a professional degree programme that leads to the title \textit{Cand.Med.Vet} (Candidatus medicinae veterinariae). The veterinary programme is five and a half to six years in duration, and divided into 11 semesters with a total of 330 ECTS credits. NVH is located in Oslo, but has two sub-units located in Tromsø and Sandnes. NVH is the only institution of veterinary education in Norway.

Admission Requirements
See the brochure for veterinary medicine students.

Recommended previous knowledge
It will be beneficial for students to have knowledge on Biology 1 and 2 levels from high school. In terms of Population Medicine (statistics part), it will be an advantage to have basic skills in mathematics on Math R2 level or equivalent.

Educational + professional goals

Career Opportunities

New goals of the veterinary study:

\textit{NVH will educate veterinarians who}

- 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 programme qualifies candidates for a wide spectrum of jobs within the veterinary profession, and other work requiring competence in medical science and biology - e.g. private practice with production animals, companion animals and horses, and food safety/public health work, fish health, animal welfare, slaughter house management, pharmaceutical industry, teaching, research etc.

Course structure

The first six semesters cover preclinical studies and are organized in blocks. Each block is completed before the next block begins. This allows students to concentrate on the course content of the block, without also having to read parallel courses.

7th semester is an introduction to diagnostic work and propaedeutic clinical work. Students take mixed clinical rotations in semesters 8 + 9 within the fields of Food Safety, Pathology, Professional Ethics, Epidemiology, State Veterinary Medicine and Fish Health.

In semester 10 (11) and 11 (12) students follow one of five differentiations. The admission is at the end of 8th semester. At the same time it is determined when the final clinical exams should be taken (see below). In the differentiation year students will also work with a thesis.

It may be admitted students to the following differentiation directions:
Production Animal Clinical Science and Food Safety: 35 seats
Small Animal Medicine: 25 seats
Equine Medicine: 10 seats
Aquatic Medicine: 12 seats
Research project: Varies with access projects

Students can choose to be autumn or spring graduates within specified limits (the distribution: max 45/25). Those who wish to be spring candidates (getting a diploma after 12th semester) will not take the 2 final clinical exams in 9th semester, but will wait with these until the spring in 10th semester. In 10th semester, they no longer follow courses at NVH. (See section on Differentiation).

During the years of study, students must expect: A lot of obligatory courses, weekend and night shifts, placement to other parts of the country, four weeks practice with a Veterinary Surgeon which the students must provide themselves, four weeks of husbandry practice during the first summer.

Autumn Semester begins on the first Monday on or after 14th August and lasts for 18 weeks. Spring Semester begins on the first Monday on or after 4th January and lasts for 22 weeks + Easter Week. The re-scheduled examination periods are usually the last week before semester start.
Course structure of the Veterinary programme (with changes as from 2006)

First Year

First Semester
Block 1: Animal Biology
Animal Biology: 5 weeks, 7.5 ECTS Credits

Block 2: Cell Biology (13 weeks in 1st Semester)
18 weeks, 27 ECTS Credits

Second Semester

Block 2: Cell Biology continues.
(5 weeks in 2nd Semester)
27 ECTS Credits

Block 3: Population Medicine
6 weeks, 9 ECTS Credits

Block 4: Integrated Anatomy and Physiology
24 weeks, 36 ECTS Credits
(11 weeks in 2nd Semester)
(partial examination)
Introduction day for summer practice

Second Year

Third Semester

4 weeks of husbandry practice in the summer

Fourth Semester

Block 5: Animal Nutrition
5 weeks, 7.5 ECTS Credits

Block 6: Principles of Immunity and Disease
14 weeks, 21 ECTS Credits

Block 7: Veterinary Microbiology and Parasitology
16 weeks, 24 ECTS Credits
(8 weeks in 4th Semester)
(partial examination)

Third Year

Fifth Semester
Block 7: Veterinary Microbiology and Parasitology
continues.
(13 weeks in 3rd Semester)
36 ECTS Credits

Block 8: Veterinary Pharmacology and Toxicology
10 weeks, (year group 2010 and 2011: 15 ECTS Credits)

Sixth Semester
Block 9: Food Safety
16 weeks, (year group 2010 and 2011: 24 ECTS Credits)

Preliminary course in clinical sciences, Part 1
(year group 2010: 4 ECTS)
Propaedeutic course
Clinical work e.c.

Block 10: Animal Welfare, Animal Housing and Laboratory Animal Science
3 weeks, 5 ECTS Credits

Fourth Year

Seventh Semester

Introduction to diagnostic work continues.
18 weeks, 27 ECTS Credits including year group 10,
31 ECTS Credits as from year group 2011

Pathology

Eighth Semester
(parallel courses, rotations)

Block 1: Animal Biology
Animal Biology: 5 weeks, 7.5 ECTS Credits

Block 2: Cell Biology continues.
(5 weeks in 2nd Semester)
27 ECTS Credits

Block 3: Population Medicine
6 weeks, 9 ECTS Credits

Block 4: Integrated Anatomy and Physiology
24 weeks, 36 ECTS Credits
(11 weeks in 2nd Semester)
(partial examination)
Introduction day for summer practice

Eighth Semester mixed clinical rotations:
Small Animal Medicine and Equine Medicine
(rotation)
(5 weeks in 8th Semester)
9 weeks total (8th + 9th Semester), 16.5 ECTS Credits
Including some weekend and night shifts
Production Animal Clinical Science  
(Rotation, poultry, flocks placement)  
(5 weeks in 8th Semester)  
9 weeks total (8th + 9th Semester), 16.5 ECTS Credits  
Including some weekend and night shifts  

Aquatic Animal Medicine and Fish Health  
(Lectures, mixed block rotation, 1 week placement in Hjelmeland)  
6 ECTS Credits  

Pathology (mixed clinical rotation, demonstrations and lectures)  
15 ECTS Credits  

Tuition-free weeks in 7th-11th (12th) semester may be used for carrying out 4 weeks of obligatory practice with a veterinarian.

Fifth Year  

Insemination of Production Animals  
Obligatory course for those students taking the differentiation in production animals.  
1 week, 1.5 ECTS Credits  

State Veterinary Medicine  
3 weeks, 4.5 ECTS Credits  
Joint teaching for the entire year group first week of 9th semester. 3 days of internship (in groups) at the Norwegian Food Safety Authority in the mixed block rotation + 1 day group assignment associated with disease control.  
The course ends in 10th or 11th semester. (2 weeks in 9th Semester)  

Food and Meat Inspection  
Mixed block rotation: Field work at Sandnes 1 week in 9th Semester 9 + practical Food Inspection in rotation in Oslo  
3 ECTS Credits  

Epidemiology  
Mixed block rotation  
1 week, 1.5 ECTS Credits  

Small Animal Medicine and Equine Medicine  
continues (rotation)  
(4 weeks in 9th Semester)  
Including some weekend and night shifts  

Production Animal Clinical Science  
continues (rotation)  
(4 weeks in 9th Semester)  
Including some weekend and night shifts  
Examinations in the courses Production Animal clinical Science and Small Animal Medicine and
Equine Medicine are taken at the end of 9th Semester. Alternatively, students may choose to have a tuition free semester in the 10th Semester and take theses exams at the end of 10th Semester.

Examination: Production Animal Clinical Science (16.5 ECTS Credits)
Examination: Small Animal Medicine and Equine Medicine (16.5 ECTS Credits)
  - Partial examination: Equine Medicine
  - Partial examination: Small Animal Medicine

Sixth Year

Differentiation- Second Semester
(Eleventh and Twelfth Semester)
Individual education plan consisting of obligatory courses in their chosen direction of differentiation, elective courses and work with a thesis.

Conditions for further study and forfeiture of admission as of year group 2006
In accordance with the Regulations for Admission, Studies and Examinations at NVH § 5.4 may the curriculum set requirements for ECTS Credits production for continuing on with the course. Below, it is specified the number of credits that must be produced per year in order to continue in the year group, as of 2006. Lack of credit production causes the student to be moved to the year group underneath, and may result in forfeiture of admission. Further terms and conditions of forfeiture of admission are found in § 5.4 of the Regulation. The Regulation sets an upper limit on the amount of time that students can study at NVH. This limit is 8 years for the veterinary programme.

Courses are interdependent. In order to present oneself for an examination in a course, students must have passed the previous examinations that according to the Study Plan should have been taken earlier in the programme. This is considered so that the student will be allowed to complete the academic year and retake the examination in the re-scheduled examination period in August. After this period, the under sketched requirements must be achieved.

For external candidates apply that the same competence as the curriculum specifies up to the relevant exam must be approved and documented in order to take the exam as an external candidate.

Date for re-scheduled examinations* and requirements for ECTS credit production**:

First Year
August (last week before the autumn semester):
  • Cell Biology
  • Population Medicine
  • Integrated Anatomy and Physiology (partial examination)

Requirements to continue after the exam period in August: 30 ECTS credits. This means that the student must have passed all the exams that give you credits, with the exception of either
Animal Biology or Population Medicine to continue the programme. There is no requirement to pass the partial examination in Integrated Anatomy and Physiology as it does not give you credits before the main exam next fall. (See the course description for detailed rules regarding Integrated Anatomy and Physiology). Students can get dispensation to take the mandatory husbandry practice the following summer.

**Second Year**

Beginning of January
- Animal Nutrition

August (last week before the autumn semester):
- Integrated Anatomy and Physiology
- Principles of Immunity and Disease
- Veterinary Microbiology and Parasitology (partial examination)

Requirements to continue after the exam period in August: 50 ECTS credits and any fail exams from the first academic year. This means that the student must have passed all the exams that give you credits, with the exception of Animal Nutrition to continue the programme. There is no requirement to pass the partial examination in Veterinary Microbiology and Parasitology as it does not give you credits before the main exam next fall. (See the course description for detailed rules regarding Veterinary Microbiology and Parasitology).

**Third Year**

August (last week before the autumn semester):
- Veterinary Pharmacology and Toxicology
- Food Safety
- Animal Welfare, Animal Housing and Laboratory Animal Science

Beginning of January
- Veterinary Microbiology and Parasitology (oral examination)

Requirements to continue after the exam period in August: 60 ECTS credits and any fail exams from the second academic year. This means that the student must have passed all the exams that give you credits, with the exception of Animal Welfare, Animal Housing and Laboratory Animal Science to continue the programme.

**Fourth Year**

August
- Preliminary course in clinical sciences and Pathology
- Aquatic Animal Medicine and Fish Health
- Pathology (written examination)
- Pathology (practical examination/oral examination)

Requirements to continue after the exam period in August: 40 ECTS credits and any fail exams from the third academic year. This means that the student must have passed all the exams that give you credits, with the exception of either the exam in Aquatic Animal Medicine and Fish Health or one of the partial exams in Pathology to continue the programme.
**Fifth Year**
At least one of the clinical examinations (either Production Animal Clinical Science or both of the partial examinations in Small Animal Medicine and Equine Medicine) and any fail exams from the fourth academic year must be successfully completed in order to begin the differentiation year. Additional Requirements: Clinical exam/partial exam in the course included in the selected differentiation direction must be passed, i.e. to begin the differentiation in Production Animal Clinical Science, must at least the exam in Production Animal Clinical Science be passed. Similarly partial exam in Small Animal Medicine for the differentiation in Small Animal Medicine, and partial exam in Equine Medicine in the differentiation for Equine Medicine as well as Production Animal Clinical Science, if not both partial exams are passed. It will upon application be considered whether it is professionally acceptable to take courses in thesis writing and undertake the thesis if the progression requirements are not met.

**Sixth Year**
Course requirements, examination in State Veterinary Medicine and thesis + any fail exams from the fifth year must be completed so that the period of study do not extend over more than 8 years.

* The Head of Studies may, at the annual adjustment of the curriculum, change next year’s continuation arrangement.
** Approved by the Board November 16, 2006.

*The Rector is authorized to deviate the requirements of ECTS credits production if special circumstances exist. Students must submit an application stating the reasons (or with documentation) and implement mandatory conversation with the Head of Studies. Upon consideration of the application whether to continue the current year group, while previous examination (s) must be taken, it is emphasized that the programme seems realistic for that particular student, and that it probably will not affect learning and mandatory activities in the next block. In case of conflicting interests, emphasis is placed on academic and practical / economic conditions for NVH rather than the student's personal circumstances. Sick leave does not automatically provide the right to continue on the current year group.*

**Compulsory teaching and programme requirements**
This is regulated by the regulations (§ 5.4, 6.2 and 6.3).

"A student, who without permission cancels the programme for longer than 3 months, loses the right to study at NVH."

If a student fails to attend exams, or compulsory teaching and do not answer inquiries from the SFA in a period of 3 months, the student is considered to have canceled the programme.

The requirements for the different blocks / topics are described in the curriculum with procedures for the compensation of too much absence. In case of valid absence, medical certificate / other confirmation must be submitted the SFA. The student contacts Block Leader or another person with academic responsibility mentioned in the curriculum and agrees on how compensation of compulsory teaching / programme requirements will be implemented. Block Leader / Examination Coordinator will report before the final exam in the subject which students who still lack approval of the necessary compulsory teaching and programme
requirements. The student will either not be able to take the exam where the curriculum indicates it, or will not get an approval of the examination before compulsory teaching and programme requirements are compensated as the curriculum describes.

**Leave of absence and special arrangements of the study situation**
Rules laid down in the regulations § 5.5 and 5.7. Granted leave is in addition to the upper limit of 8 years. Special arrangements of the study situation on the basis of documentation will also give the right to an extended period of study.

**Specific Recognition**
Previously completed credits in subjects that are considered academically equivalent to courses included in the curriculum at NVH can be accommodated. One can apply for exemption from compulsory teaching and / or examination. The deadline for applications is no later than the 1st month before the start of the block. Detailed rules are given in the regulation § 4.10.

**Student Exchange**
Students who want to go on an exchange visit are given the opportunity of a 3-month period at a veterinary institution abroad, as far as capacity allows. Exchange to Nordic speaking countries usually takes place in the 8th and 9th semesters, while exchange between non-Nordic speaking countries occurs only in the 8th semester. There is also the possibility for exchange in the differentiation year. The differentiation coordinator will approve that kind of exchange. As international exchange is bilateral, this means that in the same time period, international students will come to Norway. If non-Nordic speaking students are present, teaching takes place in English in the 8th semester.

**Quality Assurance**
NVH has in accordance with the Act Relating to Universities and University Colleges a quality assurance system to ensure and develop the quality of education. Students participate in this partly through established student evaluation systems and participation in councils and committees.

**Authorization/Student license**
To work as a veterinarian in Norway one must have authorization. It is the Norwegian Food Safety Authority that is the authorized authority. SFA sends the compiled application when the diploma is finished. One can after 9th semester apply for a license as a veterinarian (student license), provided that 3 of the 4 weeks of veterinary practices (Production Animal + Small Animal / Equine) is completed, and all compulsory teaching up to and including 9th semester is approved. Students must normally have passed the previous examinations in the programme. There is no requirement for completed clinical exams, but students must be able to document that the clinic periods are approved. SFA collects information from clinics and checks the submitted documentation practice with veterinarians. The form and procedure are found at NFSA’s website. The form and proof of employment is sent to the SFA, which forwards it to the Norwegian Food Safety Authority.

**Course descriptions (as of year group 2006)**
This plan is revised each spring by May 31, and the framework applies for the upcoming academic year. Autumn’s blocks should be completely planned in regard to content and exams, while blocks starting next spring semester, adjustments in curriculum and exams can be done based on previous execution experiences. Adjustments for the spring semester are made within November 31.

The programme has block organization. This means that the current block will be completed before the next one starts. One of the advantages of the blocks is that one has put them together so that they consist of closely related subjects and that one reads these subjects simultaneously and not separately. The fact that there are fewer, but larger blocks makes it somewhat easier to identify overlap and repetition needed between subjects. Subject boundaries are broken down and thus students are forced to read "across" the old subject boundaries and will thereby have a less fragmented study.

However, it is important that students do not consider the subject as completed after the examination in a block. It is thus in several blocks links to previous and future subjects so that a spiral-shaped learning model is also ensured. There will be examples on how parts of the course are repeated through the education during the course description below.

**HMS (Occupational Health, Environment and Safety)**
Under each topic, it will be explained briefly what kind of training that will be provided in the block. See the Student Manual on how injuries should be followed up.

Students are encouraged to purchase their own accident insurance. Students are encouraged to attend the annual first aid course.

All students should be vaccinated against tetanus at the start of the study. When exchanging to countries where rabies occurs or where other vaccines are required, students are also asked to do so.

Pregnant women should take special precautions when handling certain agents or animals suspected of suffering from a zoonosis. Pregnant women are encouraged to inform the course coordinator at startup in subjects that may cause a risk. Pregnant students should not take radiographs (See more below the clinical courses).

Follow the block’s safety measures and the teacher’s instructions.

Read the HMS under each topic. Ask professionals if you are in doubt about the safety.

**Introduction to the veterinary programme:**
Practical information: 2 days
Fire Training (mandatory)

**Block 1: Animal Biology (5 weeks, 7.5 ECTS Credits)**
Aim and learning outcomes
Animal Biology is an introduction to the courses to come. It will give students a common vocabulary, as well as providing all students with basic knowledge in zoology, biology and anatomy and physiology.

After completion of the courses, the students should:

- Have learned to collaborate through colloquiums and group work, and be able to present the academic material both in writing and oral.
- Have learned simple terminology, basic Latin and basic features in taxonomy.
- Know the structure and function of unicellular, primitive multicellular molluscs, superior multicellular molluscs, vertebrates with emphasis on mammals.
- Have completed basic dissections of fish, birds and mammals.

**Teaching methods and approach:**
The programme requires that students themselves participate actively in class, are responsible for their own learning and have joint responsibility for conducting examinations. There is an emphasis on group work as teaching/work methods, and examination involves that students assess each other's efforts and knowledge. There are also 2 days of micro - tissues and dissection of fish, birds, mammals. It will be given training in safety and microscopy.

**Teaching materials:**
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

**Recommended previous knowledge**
Biology 1 and 2 (formerly 2BI/3BI) are recommended, but not required.

**Requirements for personal equipment**
No

**HMS**
Biochemistry laboratory: There will be given theoretical and practical training in infection and infection control and procedures at the laboratory before the first lesson. Please see “the instructions for the laboratory”. It is mandatory with white coats. Individual lab coats are available for students and those are not used by students who have lessons in infection courses. There is a clean and unclean zone by the entrance to the laboratory. Hand wash and coat change is required at entry and exit. The gas is turned off.

Dissection Hall: Dissection coat is required (on loan). There will be training in the use and cleaning of the dissecting instruments and routines in case someone should cut themselves.

**Compulsory teaching and programme requirements:**
None

**Examination**
Presentation of group work
Grading Scale: Pass/Fail
If the group work is not passed or the student does not implement the programme, the student will be given a new task that must be completed before the course is approved. Not completed or submitted task in accordance with the deadline without valid reason, involves a failed grade.

Contact:
Block Leader: David Griffiths
Head of Department: Mona Aleksandersen

Block 2: Cell Biology (18 weeks, 27 ECTS Credits)
Aim and learning outcomes
Cell biology aims to give students an insight into the current perception of life and life processes, starting with the main building block of all life, namely the cell – hence the term cell biology. With the cell as a starting point, students will partly move down towards the molecular and atomic level, and partly up towards the cell in a «social» context, where one will study specialized tissues and organs.

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.1, 1.4, 2.1, 2.2, 2.4, 3.7

After completion of the courses, the students should:

- Have acquired sufficient knowledge and skills in cell biology, including biochemistry, genetics, genetic engineering, histology with cytology and embryology, to embark on the various clinical and para-clinical courses in the veterinary programme.

- Understand how the cell works as a unit, and be able to describe the cell's structure and function on a molecular and atomic level and up to cell's context in specialized tissues and organs.

- Understand how a cell and its cytoskeleton are built, how cell membranes are assembled, the various functions proteins may have, and how molecules and proteins are transported across the cell membrane or into organelles.

- Understand how cells communicate with each other, how molecules outside of a cell can cause signaling inside the cell, and how the signaling results in a change in protein function as well as gene expression.

- Have detailed knowledge of the structure of biological polymers such as carbohydrates, proteins and nucleic acids, as well as a number of other molecules of great importance for cellular functions, including vitamins, lipids, etc.

- Be able to give a detailed description of how living organisms acquire the energy necessary to sustain life processes, and how a number of metabolic reaction sequences are structured and regulated / adapted to the organism variable needs.

- In broad terms be able to explain the embryological development of tissues and apply
this knowledge to understand the different tissue’s contributions to the development of the organism's basic form.

- Be able to explain the microscopic structure of cells and tissues of mammals, birds and fish, and to identify the various cells and tissues in the light microscope.

- Have acquired sufficient basic knowledge of the flow of information from DNA to protein and the basic principles of genetic doctrine in order to use modern techniques in basic medical research and veterinary medicine.

- Have developed an ethical awareness about biotechnology, biomedicine and bioproduction.

- Have gained an understanding of that working with chemicals can cause health hazards and the necessity to show hygienic care.

- Have learned to collaborate through colloquiums and group work, and be able to present the academic material both in writing and oral.

**Content**

- biochemistry
- molecular cell biology
- elements of anatomy,
- elements of physiology
- elements of genetics

**Cell Biology in relation to future courses:**
The cell biology block affects a number of topics that come later in the programme - in varying scope and level of detail. The basic understanding of cellular, genetic and biochemical processes are essential to good learning of physiology, anatomy, nutrition, general pathology, pathophysiology, pharmacology / toxicology, microbiology, hematology / clinical laboratory diagnostics, reproductive physiology and internal medicine and food hygiene.

**Teaching methods and approach**
With the cell as a starting point, students will partly move down towards the molecular and atomic level, and partly up towards the cell in a «social» context, where one will study specialized tissues and organs. Around 220 hours are dedicated to teaching, of which 50-60 hours are used for the laboratory course. Organized teaching in colloquium is also used. A seminar on bioethics is arranged within the subject area at the institute.

**Learning materials**
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

**Recommended previous knowledge**
Based on the terminology established in animal biology
Biology 1 and 2 (formerly 2BI/3BI) are recommended, but not required.
Requirements for personal equipment
Lab coat (must be purchased)

HMS
Biochemistry Hall: It is developed routines for the biochemistry hall. A first aid kit, eyewash water and a safety shower are available at all times. It is mandatory to use a lab coat, protective goggles and a closed hood when handling chemicals. There are also rules regarding disposal. The use of risk chemicals in laboratory courses has been significantly reduced in recent years.

Students are given training in these conditions before entering the biochemistry hall. There will also be shown in practice how the chemicals and waste should be handled.

Compulsory teaching and programme requirements:
There will be held 15 laboratory courses; 6 in biochemistry, 7 in micro-anatomy and 2 in embryology. The courses are mandatory. This means that students who are absent without valid reasons and lose more than 2 courses, must complete these prior approval of the examination.

Students must attend mandatory evaluation colloquiums approx. every 5 weeks. If valid absences, this may possibly be replaced by a written assignment that must be submitted before the student can take the exam.

Test Examination (trial exam)
There will be a test exam. Students are encouraged to attend this.

Examination
& hour written final exam (CELLEBIOL2)
Examination support material: None
Grading scale: A-F

Contact
Block Leader: Mohasina Syed
Head of Department: Mona Aleksandersen

Block 3: Population Medicine (6 weeks, 9 ECTS Credits)
Semester: 2

Aim and learning outcomes
The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.10, 2.2, 2.3

After completion of the courses, the students should:

Have an understanding of health and production at the population level, including knowing how scientific methodology is used to obtain information about a population, and knowing how one with breeding-related measures can improve properties that are related to health, reproduction and production in our domestic animal populations.
• Be able to use basic statistical methods for data collection; data description.

• Have an understanding of how systematic errors, random errors and incorrect presentation may provide misleading information about the condition of the population.

• Be able to use basic epidemiological methods to measure and assess disease incidence, measure and evaluate the association between factor and disease, and to interpret the results of diagnostic tests.

• Understand and be able to explain the reasons for, and importance of, genetic variation at the population level.

• Understand and be able to explain how the breeding-related measures, i.e. by selection and crossover, can affect favorably the health and other characteristics that are related to the production and reproduction of our domestic animals.

• Know the breeding objectives and how the practical breeding work is organized in Norway today for animal species like cattle, swine, salmon, dog and horse, as well as provide examples of genetic progresses achieved among all these species.

• Have learned to collaborate through colloquiums and group work, and be able to present the academic material both in writing and oral.

Content
- Statistics
  - Probability Distributions and clinical reference values
  - Estimation and confidence intervals
  - Hypothesis testing for mean values and the dependence of symbols
  - Correlation and regression
- Epidemiology
  - Objectives of the health status of groups and populations
  - Diagnostic tests
  - Objectives of the importance of a causal factor for health in populations
  - Systematic errors
- Animal breeding
  - Generic animal breeding
  - Special animal breeding for cattle, swine, fish, dog and horses

Teaching methods and approach
The teaching extends over six weeks.
Specimens of each teaching day (except special animal breeding) are:
- Introduction to the material through lectures.
- Adaption/understanding of the material through individual reading + exercise solving.
- Discussions in study groups of topics/questions that are experienced as difficult/unclear.
  The teacher will be present during the study groups.

Recommended previous knowledge
Several of the topics in statistics are familiar from high school. A repetition of this material will be very useful as a basis for teaching.
Teaching materials
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

Compulsory teaching and programme requirements
None

Requirements for personal equipment
Calculator with basic statistical functions

HMS
No specific procedures for this block.

Examination and examination results
5 hour written final exam (POPMED08)
Population medicine consist of two separate partial exams that both must be passed in order to pass the course. These are liquidated on the same day with a 5 hour exam. Students must have at least 50% correct answers on each section to get a pass in the course. The two parts are assessed independently. The student may appeal the grading of each part separately. If a student fails one of the two parts three times, the student will lose their place in the programme.

Examination support material: Private calculator and distributed formulas.
Grading scale: Pass/Fail

Students who fail in one or both of these parts will re-sit the two parts of the exam on the same day before the start of studies in August. Studenter som stryker i en eller begge av delene kontinuerer disse på samme dag før studiestart i august. The length of the exam in such cases will be as specified below.

Partial examination: Statistics of Epidemiology (6 ECTS credits). If the student just takes partial examinations of population medicine: 4 hours.

Partial examination: Breeding Principles (3 ECST credits). If the student just takes partial examinations of population medicine: 2 hours.

Contact
Block Leader: Rolf Bjerke Larssen
Head of Department: Olav Reksen, ProdMed

Block 4: Integrated Anatomy and Physiology (24 weeks, 36 ECTS Credits)
Semester: 2 and 3

The block is divided into two periods, each of 11 weeks in the spring semester and the subsequent 13 weeks in the autumn semester (after block 5).
**Aim and learning outcomes**

Anatomy and physiology will give the students insight into the normal physique (anatomy) and function (physiology) in companion animals and fish, with special emphasis on issues of importance to clinical practice and diagnostics, and food safety.

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.3, 1.4, 1.10, 2.1, 2.2, 2.4, 3.7, 3.16, 3.17, 3.20

After completion of the courses, the students should:

Have acquired sufficient knowledge and skills in anatomy and physiology, including medical terminology, to embark on the various clinical and para-clinical subjects in the veterinary programme.

- Understand how the animal organism functions as a whole and be able to explain the interaction between the body's various systems in terms of both structure and function.

- Have gained sufficient knowledge about animal physiology to determine whether there is any deviation from the normal physiological state of an animal through a general clinical examination.

- Have gained insight about the tissue's vulnerability to non-physiological handling, and also knowledge of the tissue's robustness under physiological conditions.

- Be able to in broad terms explain the embryological development of organs and tissues and apply this knowledge to understand the different tissue characteristics as well as the organs design and topography.

- Be able to explain the microscopic structure of cells, tissues and organs of mammals, birds and fish, and to identify the different cells, tissues and organs in the light microscope.

- Have acquired sufficient basic knowledge of anatomy of the various domestic animals species to perform clinical examination, surgery and meat inspection.

- Be able to identify and dissect off the various structures, including muscles, vessels, nerves and lymph nodes.

- Have learned to collaborate through colloquiums and group work, and be able to present the academic material both in writing and oral.

- Have developed an ethical awareness of the use of animals in teaching and research, which includes showing respect to animals after they are dead.

- Have gained an understanding of that working with dead animals and organs can cause risk of infection and the necessity to show hygienic care.

**Content:**

- Anatomy
- Physiology
**Teaching methods and approach**
The knowledge that students acquire in this block will also form the basis for understanding the mechanisms of disease progression and treatment. Teaching is provided in the form of lectures, demonstrations and laboratory and dissection courses, as well as studies on living animals. In total includes teaching about 350 hours. In addition, students work with colloquium tasks.

**Recommended previous knowledge**
Based on the terminology established in animal biology. Biology 1 and 2 (formerly 2BI/3BI) are recommended, but not required. Cell biology is a prerequisite.

**Teaching materials**
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

**Compulsory teaching and programme requirements**
All laboratory courses in physiology must be taken to get credit for the course. Upon passing the exam, credits are registered only when the requirement is met.

**Requirements for personal equipment at the dissection courses:**
Dissection coat, plastic apron, rubber boots and dissecting instruments. Students shall keep gloves and dissecting instruments (including scalpel blades).

**HMS**
Biochemistry Hall: Risk material is not handled at the physiology courses in the Biochemistry Hall.
Dissection Hall: Dissection coat is required. Training is provided in the animal biology course.
Biochemistry laboratory: There will be given theoretical and practical training in infection and infection control and procedures at the laboratory before the first lesson. Please see the instructions for the laboratory. It is mandatory with lab coats. Individual lab coats are available for students and those are not used by students who have lessons in infection courses. There is a clean and unclean zone by the entrance to the laboratory. Hand wash and coat change is required at entry and exit. The gas is turned off.

**Examination**
**Partial Examination 1 – Written**
Form of examination: Written with multiple choice questions.
Examination at the end of the 2nd semester.
Duration: 3 hours.
Examination support material: None.
There will be arranged a new exam in August for the students who have failed or have valid reasons for absence.
Students, who do not pass the new exam in August, will take the regular examination in June the upcoming year. Students can take the partial exam 2 although the partial exam 1 is failed, but will not get the course approved before partial exam 1 and 2 are passed.
Partial Examination 2 – Written
Form of examination: Written with prose exercises, multiple choice questions and tasks related to the anatomical image.
Upon the block’s end.
Duration: 7 hours.
Examination support material: None.
Students who fail will take the next exam the upcoming year (August).

Grades in the course:
Grading scale: Partial examination 1 – pass/fail, partial examination 2 – A-F

Appeal about the grading
Please refer to the Regulations for Admission, Studies and Examinations at NVH.

Contact
Block Leader: Erling Olav Koppang
Head of Department: Mona Aleksandersen
Contact person regarding the absence in laboratory courses in physiology and plenary session for colloquium groups: Johan Jansen Høgset.

Husbandry Practice (4 weeks)
Semester: Between 2nd and 3rd semester. Summer Practice
Students will acquire this practice themself. NVH can assist with obtaining practice herds.

Introduction to the summer practice will we given as a day seminar.

Purpose
Provide the student with practical knowledge and realistic experience with common husbandry production.

Content
This practice should take place on farms and Summer Mountain pastures with production animals, primarily dairy production.

Teaching materials
Guide for writing the report
Relevant literature: Compendium in Animal Housing

Requirements for personal equipment
Work wear

Compulsory teaching and programme requirements:
Practice is mandatory. Everyone shall write a report, including those students who possibly will get previous practice approved. The written report will later be included in the course; Animal Welfare, Animal Housing and Laboratory Animal Science (block 10)

The report must be passed in order to receive credits for the course. If anyone fails the report, it will be processed and re-written until it meets the criteria for passing.
The introduction programme for the summer practice is mandatory. Under special circumstances, summer practice may be postponed until the summer between 3rd and 4th semester. The student would have to submit an application regarding the postponement.

Contact
Block Leader: Hallgeir Flø
Head of Department: Olav Reksen, ProdMed

Block 5: Animal Nutrition (5 weeks, 7.5 ECTS Credits)
Semester: 3

Aim and learning outcomes
Animal Nutrition will provide students with basic knowledge of nutrition and nutritional physiology, as well as specific knowledge about nutrition and feeding of the various domestic animals species. Furthermore, the course will provide a basis for studies in clinical courses and an understanding of the close interaction there is between nutrition and health. Students will also gain an understanding of diseases caused by an imbalance in nutrient supply and inadequate feeding, how these can be prevented and how we can improve the course of disease in nutrition or feeding related support therapy for various diseases (clinical nutrition).

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.3, 1.8, 1.10, 1.11, 2.1, 2.2, 2.3, 2.8, 3.5

After completion of the courses, the students should:

- Have knowledge of the various nutrients and be able to determine nutritional needs of domestic animals and fish under different physiological conditions.
- Recognise the main feedstuff types, assessing their quality and nutritional value, as well as conservation methods for feedstuffs.
- Know how feeding affects production results and performance capabilities.
- Understand the significance of feedstuff for disease development and prevention.
- Be able to assess the quality of feeding schedules and feeding routines and recommend changes if necessary.
- Understand the Feedstuff Legislation and other government regulations relating to the manufacture and sale of animal feed.
- Have acquired a good attitude to the proper nutrition of animals and fish.

Content
- Basic nutritional physiology
- Species-specific nutritional physiology
- Species-specific feeding study, including the links between nutrition and health.
**Teaching methods and approach**
Teaching takes place in lectures (about 60 hours) and in groups (about 15 hours) with plenary review.

**Recommended previous knowledge**
Biochemistry, gastrointestinal physiology, energy metabolism.

**Teaching materials**
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

**Requirements for personal equipment:**
None

**HMS**
No specific procedures for this block.

**Programme requirements:** Test
A test must be passed in order to take the exam in Animal Nutrition. In special cases, in agreement with the Block Leader, the exam may be taken before the test is passed, but the grade will not be valid until the test is passed. The Block Leader will decide when a new test can be conducted in the following semester. If the student fails the test for a second time, he or she may have to wait until the next time the block is implemented.

**Examination**
4 hour written final exam (ERNÆRI07)
Examination support material: distributed calculator
Grading scale: A-F

**Contact**
Block Leader: Åshild Krogdahl
Head of Department: Mona Aleksandersen

**Block 6: Principles of Immunity and Disease (14 weeks, 21 ECTS Credits)**

**Semester: 4**

**Aim and learning outcomes**
“Principles of Immunity and disease” is an integration of the disciplines; immunology, general pathology, basic pathophysiology and medical genetics, as well as an introduction to the science of bacteriology, virology and parasitology. This is the veterinary students’ first systematic approach to infection defense and development of disease. “Principles of Immunity and disease” is essential for understanding infection biology, clinical and pathological diagnosis, therapy, immunoprophylaxis and breeding strategies against disease.

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.3, 1.4, 1.10, 2.1, 2.2, 2.3, 2.4, 2.5, 2.8, 2.9, 3.6

After completion of the courses, the students should:
• Have acquired a basic understanding of disease development and disease manifestation and the basis for a deeper understanding of the clinical courses.
• Have good knowledge within the field of immunology, general pathology and medical genetics.
• Clarify how immunological and pathogenetic mechanisms and the genetic background influence the individual's response to pathogenic stimuli.
• Clarify how the immune system’s cells function in defense against disease.
• Describe which morphological manifestations and functional changes that various disease processes can provide, and explain the underlying mechanisms.
• Understand the background of vaccination and vaccine response.
• Clarify the genetic basis of immune responses, disease resistance and diseases with hereditary nature / disposal.
• Observe and describe changes that are characteristic of central disease processes in histological sections and make morphological diagnosis.
• Prepare, store and send samples to analytical laboratories and also perform some diagnostic tests themselves.
• Have developed an awareness of ethical issues within the disciplines of immunology, general pathology and medical genetics.
• Have learned to collaborate through colloquiums and group work, and be able to present the academic material both in writing and oral.

**Learning objectives**
At the end of the block, students should understand key issues within fields like immunology, general pathology and medical genetics. They should describe how immunological and pathogenetic mechanisms and the genetic background influence the individual response to pathogenic stimuli. They must understand how the immune system’s cells function in defense against disease. They should be able to describe which morphological manifestations and functional changes that various disease processes can provide and explain the underlying mechanisms. Students should understand the background of vaccination and vaccine response. Students shall understand the genetic basis of immune responses, disease resistance and diseases with hereditary nature / disposal.

**Skills objectives**
Students should be able to describe the changes that are characteristic of central disease processes in histological sections and make morphological diagnosis. They should be able to prepare, store and send samples to analytical laboratories and shall be able to perform some diagnostic tests.

**Teaching**
Teaching is provided through lectures, courses, study groups and subsequent review of questions, and integrated study groups including a presentation of the group work.

**The course is organized into the following sections**

1. Basic pathology and immunity
2. An introduction to bacteriology, virology and parasitology
3. Infectious immunology, immune pathology and pathophysiology, chronic inflammation and regeneration
4. Clinical immunology
5. Medical genetics
6. Tumor Biology
7. Courses in histopathology
8. Courses in Immunology

**Principles of Immunity and Disease in relation to past and future courses:**
Immunology is first introduced in the anatomy / physiology block when the immune system's organs are taught. To ensure continuity, it is the Block Leader who teaches immunology in this block. A general introduction to genetics is provided in the cell biology block. In the course Principles of Immunity and Disease is then immunology, general pathology, disease, genetics and also some pathophysiology taught in an integrated form. Emphasis is placed on drawing lines to previous lessons and using examples from cell biology and anatomy / physiology classes.

Principles of Immunity and Disease also provide an introduction to the infection subjects which in turn is taught in the next block.

The pathology course and to some extent pathophysiology is taught in the special pathology while immunology is to some extent taught in the clinical subjects to return to the current problems after the students have acquired more clinical knowledge. It has long been taught in immunology in the differentiation in production animal clinical sciences and from 2012 also in the differentiation in equine medicine. Pathophysiology, but also pathology and immunology will also be key subjects in multidisciplinary case presentations intended for clinical students.

**Recommended previous knowledge**
The course is based particularly on veterinary cell biology, anatomy and physiology.

**Teaching material**
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

**Compulsory teaching and programme requirements**
Courses in general pathology and immunology are mandatory, a total of 12 teaching days. It is allowed with up to 10 % absence if valid reason. In case of absence beyond this, the student must attend next year’s courses.
Integrated study groups with a presentation of the group work are mandatory, totaling 3 days. In case of a single day absence, the student must perform the task to the teacher. In case of absence of more than one day without valid reason (illness), the student must attend next year’s study groups and presentation.
Students will normally be allowed to take the exam even though not all mandatory teaching has been approved. The grade will not be valid until the programme requirements are approved. The student is responsible for ensuring that the requirements are met the following year.

**Requirements for personal equipment**
Lab coats are required during the course teaching in the laboratories (Microbiology Hall). The institute will ensure that coats are available.

**HMS**
It is considered that there is no risk activity in the block.
Laboratory (Microbiology Hall): Please see “the instructions for the laboratory”. It is mandatory with lab coats. Individual lab coats are available for students and those are not used by students who have lessons in infection courses. There is a clean and unclean zone by the entrance to the laboratory. Hand wash and coat change is required at entry and exit. The gas is turned off.

**Examination**
6 hour written final exam (ALMSYKDL) consisting of pathology (ca. 40%), immunology (ca. 40%) and genetics (ca. 20%). The exam is assessed as a whole, and by the lack of knowledge in key areas, the student will be able to fail even though the knowledge in other areas are good.
Examination support material: None
Grading scale: A-F

**Contact**
Block Leader: Anne Storset
Head of Department: Per Einar Granum

**Block 7: Veterinary Microbiology and parasitology (16 weeks, 24 ECTS Credits)**
**Semester: 4 and 5**

**Aim and learning outcomes**
Veterinary Microbiology and Parasitology will provide students with knowledge of microorganisms (bacteria, fungi, and viruses), parasites and microbial toxins that can cause diseases in animals. Students will develop an understanding of how the host best can protect themselves against an overall infection pressure from all relevant pathogens within the host’s environment. Teaching and course-related training will enable the student to schedule a diagnostic and epidemiological approach toward diseases caused by all agents who have a clinical and administrative importance in veterinary medicine.

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.4, 1.6 – 1.12, 2.1 - 2.9, 3.6, 3.8, 3.11, 3.12, 3.14, 3.17, 3.19 and 3.20

After completion of the courses, the students should:
Have good knowledge of micro-organisms (bacteria, fungi, viruses), parasites and microbial toxins that can cause diseases in animals and humans.

- Describe taxonomy used for the characterization of microorganisms and parasites.
- Describe the structure of various types of microorganisms.
- Clarify reservoir, virulence factors and pathogenesis related to important microorganisms.
- Describe the morphology, life cycle and classic symptoms of important parasites.
- Clarify the key principles of infection hygiene.
- Clarify diagnostic methods and extraction of relevant samples from infected individuals and herds/populations.
- Explain and interpret analysis results regarding microorganisms and parasites.
- Clarify policies for the prevention and treatment of infections in animals, including zoonoses.
- Implement selected diagnostic methods in infectious courses.
- Manage infection in a responsible and hygienic manner.
- Have a behavior that helps to prevent infections.
- Show responsibility by a restrictive use of antibiotics and antiparasitic agents.
- Have learned to collaborate through colloquia and group work, and be able to present the academic material both in writing and oral.

**Content**
- Bacteriology and Mycology
- Virology
- Parasitology

**Bacteriology in relation to past and future courses:**
Earlier in the programme, students are introduced to the topic through lectures in "Principles of Immunity and Disease". This is followed by the actual bacteriology teaching in the form of lectures, laboratory courses and study groups in the block "Veterinary Microbiology and Parasitology." Bacteriology then comes up again in the courses like Food Safety and Pathology, and also in the clinical studies. In the course in infection in the differentiating year, students will again meet with infectious diseases, including bacteriology.

**Teaching methods and approach**
The course includes a general description of the major groups of infectious agents, and a more specific and detailed description of selected species/genera/families. In subareas like
bacteriology / mycology and virology, comes the general section mainly at the start of the course. For Parasitology, however, which includes several fundamentally different subgroups, comes the general section more dispersed as the first part of the review of each subgroup. After the various groups of agents are reviewed, the teaching will emphasize a comprehensive understanding, by presenting the agents in relation to organ or animal species.

In the general section emphasis issues of importance for disease development due to agents in animals and humans such as hygiene, infection routes, significance of infection pressure, the animal's resistance, and more. The specific part emphasis agents that are involved in disease states in animals, including fish, and agents that can result in diseases in humans by food borne pathogens (after nutriment contamination). The course places special emphasis on the various infectious agents, their pathogenic properties and introduction to practical diagnostics including the basis for disease control in veterinary medicine. Teaching is provided in the form of lectures (72 hours), courses (80 hours) and organized study groups (40 hours).

**Recommended previous knowledge**
The course is especially based on Principles of Immunity and Disease.

**Teaching material and teaching objectives**
Recommended literature and teaching objectives are found at the block’s home area on Hippocampus.

**Compulsory teaching and programme requirements:**
All lab courses are mandatory. It is allowed with up to 10 % absence in each of the courses in the subareas bacteriology/mycology, virology and parasitology. In case of absence beyond this, the student must attend next year’s courses to get the course-related teaching approved. In some cases, a customized programme can be created. Safety requirements make the introductory course in bacteriology (3 days course) mandatory in order to participate in the rest of the bacteriology course. In case of more than one day's absence, the student must contact the Block Leader (or teacher in charge) for an assessment of the situation. Students will normally be allowed to take the exam even though not all mandatory teaching has been approved. The grade will not be valid until the programme requirements are approved. See subsection; Examination.

**Requirements for personal equipment:**
Lab coat is mandatory in course-related teaching (on loan at the laboratory).

**HMS**
Laboratory: Please see “the instructions for the laboratory” (Microbiology hall). It is mandatory with lab coats. Individual lab coats in the courses where the students are working with microbiology. There is a clean and unclean zone by the entrance to the laboratory. Hand wash and coat change is required at entry and exit.

Training in fire protection is provided. It is mandatory with lab coats when working with gas. A first aid kit and an emergency shower are available. Gas plants are centrally controlled with a stopcock. The stopcock is demonstrated to the students at the first visit. The number of gas units is reduced to a minimum. Gas plants are checked prior to the instruction 2 times a year. There are separate fume hoods used where chemicals are used.
Since working with infection subjects represent a real risk of infection, thorough training and a variety of security measures are initiated:

Intro Course (three day course) in infectious learning:
- Provision of security policies to each student (on paper) the first day of class.
- Verbal information is accompanied by a PPT presentation about safety procedures at the first day of the intro course.
- Routines are taught and rehearsed. Demonstrations and practical training, many supervisors present to supervise and guide.
- It is not permitted that students are absent in this part.

Main course in infection learning:
- Safety procedures are repeated. The review of safety procedures in the intro course and in the main course are held by two different people, which is considered to be an advantage when the same points are rendered slightly differently and it sits better with the students afterwards.
- Introduction of discrepancy log - in other words spills and other incidents are logged; what happened, which students were involved and which follow-up were given.

Changes and procedures to prevent zoonoses:
The following measures were introduced 2007-2009, to reduce the risk of laboratory infection in the course in infection learning:
- Listeria monocytogenes replaced with Listeria ivanovii (Listeria ivanovii is not human pathogenic).
- Salmonella Typhimurium replaced with diarizonae Salmonella (S. diarizonae is not human pathogenic).
- Practical execution of the typing of Salmonella bacteria is not done anymore (now only demonstrated by the instructor).
- Streptococcus pneumoniae (human pathogenic, especially for those with weak immune systems) is not used more.
- Liquid culture has been replaced with Campylobacter (human pathogenic) and we have minimized the use of other types of liquid media (cultures in liquid media involves greater risk for spillage than cultures on solid media).

Students with compromised immune systems or who are pregnant are particularly susceptible to infections, and special care must be taken when working with biological agents. This applies particularly to Listeria monocytogenes, Salmonella pathogenic biovar, and Streptococcus pneumoniae. None of these agents are used further in the course in infection teachings.

Examination
Partial examination 1 – Written multiple-choice exam
Examination at the end of the 4th semester
Duration: 2 hours.
Examination support material: None.
There will be arranged a new exam in August for students who have failed, or have valid reasons for absence. Students can take the partial exam 2 although the partial exam 1 is failed, but must then retake the partial exam 1 the next summer. Partial exam 1 must be passed in order to pass the course.
Partial examination 2 – Oral
At the block's end, students must pass an oral examination in all three disciplines on the same day.
Examination support material: None.
Students with valid absence may, in exceptional cases, if there is availability, take a re-scheduled exam in the same exam period. Application is submitted to the Academic Administration.
Each of the fields of parasitology, virology and bacteriology / mycology is assessed; a grade in each subject area is set, as well as a common grade in the oral exam. This accounts for 70% of the total grade. Students who fail the oral exam in one or more subjects will take a new oral examination in these subjects the next year (January).

Grades in the course:
Grading scale: A-E
The grade is calculated on the basis of the grades in partial exam 1 (30%) and 2 (70%).

Appeals about the grading
It is not possible to appeal a grade in an oral exam. Appeals about the grading in the multiple choice exam can only be made when the final grade is set. See the regulations.

Contact
Block Leader: Mette Myrmel
Head of Department: Per Einar Granum, MatInf

Block 8: Veterinary Pharmacology and Toxicology (10 weeks, 15 ECTS Credits)
Semester: 5 and 6

Aim and learning outcomes
«Veterinary Pharmacology and Toxicology” is a discipline that deals with respectively drugs and toxins' fate and effects in the animal organism. Proficiency in both pharmacology and toxicology is essential to understanding drug therapy in clinical practice in domestic animals and fish, and to make rational therapy selection regarding drug treatment of diseases and poisoning. Further knowledge in these disciplines is essential to understand the part of food hygiene, including meat control, which deals with drugs and toxins, and to understand the background of the retention periods of animal food products for human consumption from animals that have been exposed to contaminants.

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.3, 1.4, 1.6, 1.9, 1.11, 1.12, 2.1, 2.2, 2.3, 2.5, 2.6, 2.7, 2.8, 2.9, 3.4, 3.10, 3.13, 3.14, 3.15

After completion of the courses, the students should (be able to):

- Have acquired knowledge and attitudes that will allow him or her to be able to use drugs for animals in accordance with the laws and regulations applicable to such activities.
- Define key concepts in pharmacology and toxicology.
• Explain key processes in pharmacokinetics and pharmacodynamics, and the impact these processes may have on treatment outcome.

• Explain key processes in toxicokinetics and toxicodynamics, and how these processes can affect the outcome of a poisoning condition.

• Clarify the mechanism of the different main groups of drugs.

• Clarify side effects and interactions between different drugs.

• Clarify the rules that apply to requisition, handling and storage of medicines.

• Be familiar with the content of the laws and regulations governing the use of veterinary medicines.

• Clarify the mechanism of relevant toxins.

• Define key concepts in environmental toxicology.

• Clarify the different groups of pollutants, the characteristics of the different groups and what effects they have.

• Use available channels of information concerning drugs and their use.

• Prescribe medicinal products in accordance with the regulations for prescription writing.

• Consider the ethical aspects and propose rational drug therapy in domestic animal and fish diseases.

• Have learned to collaborate through colloquiums and group work, and be able to present the academic material both in writing and oral.

Content
• Pharmacology (the study of drugs, their composition, effects and use on various domestic animals species).
• Toxicology (the study of poisons, their effects in different domestic animals species and treatment of poisoning). It also provides an introduction to environmentally hazardous prevalence and effects.
• Drug Legislation and prescription writing

Veterinary Pharmacology and Toxicology in relation to past and future courses:
The block builds on the previous teaching, for example in physiology and biochemistry. It is often necessary to repeat or highlight parts of the previous teaching. This applies to parts that are central to understanding the mechanisms in pharmacology / toxicology. For example, parts of the central nervous system's anatomy, physiology and biochemistry are repeated because of its relation to the lectures on medicinal products that affect the central nervous
system. Treatment is reviewed in the 7th semester, and in terms of repetition of pharmacology/toxicology, we meet our alumni also in the clinic in the 10th term, where we in groups consisting of 8-10 students, present topics in clinical pharmacology. For example, we provide at the medical clinic, a repetition of antibacterial drugs in which we emphasize on pharmacokinetic and dynamic properties that are particularly relevant in a clinical context. As a rule, it is also a clinician present at these gatherings.

**Teaching methods and approach**
Emphasis will be placed on admission, distribution, transformation and excretion (kinetics), mechanisms (dynamics) and effects in various animal species. The course emphasizes in addition clinical veterinary pharmacology and toxicology of small animals, horses and production animals and aquatic species. Teaching is provided in the form of lectures (80 hours) and organized study groups (30 hours).

**Recommended previous knowledge**
The blocks provided previous in the programme.

**Teaching Material**
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

**Compulsory teaching and programme requirements**
Test: A test must be passed in order to take the exam in Animal Nutrition. In special cases, in agreement with the Block Leader, the exam may be taken before the test is passed, but the grade will not be valid until the test is passed. The Block Leader will decide when a new test can be conducted in the following semester. If the student fails the test for a second time, he or she may have to wait until the next time the block is implemented.

Teaching in colloquiums is mandatory. You are allowed one absence from the courses / colloquia. In absence beyond this, one must submit an additional task assignment (s) which must be assessed as passed before one gets a valid grade in the subject. The colloquium additional task (s) will be distributed after the first exam, and papers will be submitted for evaluation during the first week of the spring semester.

**Requirements for personal equipment:**
None

**HMS**
Biochemistry Hall: It is considered to be very low risk activity in the block. A first aid kit is available. All handling of drugs is carried out by the teachers. However, when extraction and processing of fish, students will be in contact with low concentrations of anesthetic drugs. Prior to the course students are instructed about safe handling of drugs, and during the practical part, teachers ensure that safety is maintained in terms of the students using gloves and protective clothing.

**Examination**
**Written final examination** (FARMTOK) 4 hour last week before Christmas
Examination support material: Calculator is allowed on tasks that require extensive number crunching.
Grading scale: A-E

Contact
Block Leader: Nils Sølø
Head of Department: Per Einar Granum, MatInf

Block 9: Food Safety (16 weeks, 24 ECTS Credits)
Semester: 6

Aim and learning outcomes
The teaching in food safety will provide students with comprehensive knowledge of the pathogenic microorganisms and toxic substances that can be transferred in the food chain, with emphasis on the animal, and how health hazards can be prevented. Students will acquire an understanding of that the quality of the finished foodstuffs depends both on the health of the food-producing animals, the environment and the handling of foodstuffs. They will acquire the skills to be able to determine which laboratory analysis of food that is necessary and appropriate for different issues, and knowledge to assess the results of such analyzes.

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.1, 1.3, 1.4, 1.5, 1.8, 1.9, 1.10, 1.11, 1.12, 2.1, 2.2, 2.3, 2.5, 2.6, 2.7, 2.8, 2.9, 3.6, 3.8, 3.16, 3.17, 3.20

After completion of the courses, the students should:

Have developed an understanding of food safety as a very important part of veterinary public health and as a link between veterinary and human public health. The student will have developed the ability to acquire and apply knowledge, and ability to cooperate and critical thinking in the field.

- Be able to explain zoonoses, other agents and toxic substances / pollutants that can be transferred in the food chain, with emphasis on animal infection paths.

- Know the principles for the detection of pathogenic bacteria and examination of microbiological quality of food and water, to conduct such analyzes, and assess the significance of the analytical results.

- Take precautions to prevent contamination in the food chain.

- Conduct epidemiological outbreak investigation of food-borne illnesses.

- Perform a simple microbiological / toxicological risk assessment.

- Have an awareness of animal welfare during transport to slaughterhouses and at the slaughterhouse.

- Know the content of the laws and regulations related to safe food production.
• Have learned to collaborate through colloquiums and group work, and be able to present the academic material both in writing and oral.

**Food Safety in relation to past and future courses:**
The subject of food safety, which has its main block in 6th semester, is based on several subjects from previous blocks. Subjects such as microbiology, biochemistry, pharmacology and toxicology form the basis for teaching in Food Safety. While students in 6th semester get a theoretical introduction to meat inspection, they get the practical implementation in 9th semester. Especially the knowledge acquired in 6th semester of zoonoses, and how these can be transmitted through meat to humans, is important for meat inspection instruction. This aspect and knowledge of epidemiology has become even more important since the EU, through the EFSA, now will modernize and change the meat inspection in a more risk-based direction. In meat inspection, knowledge in animal welfare, clinical microbiology, pharmacology, toxicology, anatomy and pathology is also applied. In 9th semester the students are given an insight into FSA's practical work with inspections, where knowledge from 6th semester is the most important scientific basis. Common teaching in infection control for all directions of differentiation is based on everything that has been taught previously at NVH. This also applies to the further education of ProdMat differentiation students. These students will gain more practical knowledge in production hygiene and in the course in veterinary public health students will get more in-depth teaching in legislation, epidemiology, risk assessment, animal welfare and specific learning objectives as the Hygiene Package describes to the official veterinarian at the FSA.

**Teaching methods and approach**
Pathogenic organisms and toxic substances may be transferred to humans through food and water, and is both nationally and globally important causes of diseases. Veterinarians are responsible for the public meat control and are employed in the local Food Safety Authority, which is responsible so that all food that is traded is safe to be eaten. Many also work to ensure safe production in the food industry. The understanding of the relationships in the food chain (from earth and fjord to the table) is gradually built up throughout the veterinary programme, but it is focused specifically on this subject in Food Safety.

Teaching takes place in the form of lectures (approx. 110 hours), laboratory courses (37 hours), group work in outbreak detection, and colloquia exercises for self-study, organized study groups with plenary discussions, exercises in risk assessment and individual tasks in food safety:

**Theoretical part:**
- Basic theory on agents / toxic substances, and on food safety and product quality in the animal food chain and the aquatic environment. Ends with a multiple choice test (partial examination 1).

**Laboratory part:**
- Laboratory course, and group work with outbreak detection. Ends with a practical laboratory test and presentation of group work / submission of report.

**Food chains and risk based supervision:**
- Lectures in risk assessment and management.
- Group work in risk assessment with exercises in microbiology / toxicology. Ends with a presentation / discussion.
Individual tasks in food safety that ends with a report.

At the end of the semester, it will be held a final oral examination which includes material from the entire syllabus (Partial examination 2).

**Recommended previous knowledge**
The blocks prior in the study such as microbiology, biochemistry, pharmacology and toxicology.

**Teaching Material**
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

**Compulsory teaching and programme requirements:**
- Excursion to the slaughterhouse, including preparation and summary.
- Laboratory course, including lectures in lab theory at startup and a laboratory test.
- Epi-games
- Outbreaks Detection. The work spans a few weeks, but the time spent to solve the task will differ between the groups.
- Risk assessment
- Individual tasks

It is allowed with up to 10% absence from compulsory teaching. In case of absence beyond this, a medical certificate is required. Excluded from the 10% is: Excursion to the slaughterhouse including preparation and summary, lectures in lab theory as well as the laboratory test, presentations of outbreak detection and risk assessment. In case of absence, a medical certificate is required. To participate in the course in meat inspection at the slaughterhouse in 9th semester must the excursion to the slaughterhouse be approved by the academic community.

On submission of a medical certificate it will be created a customized program so that it is possible to obtain a valid examination provided that the absence is no longer than 1 week. Students will normally be able to take the exam even though not all mandatory training is approved, but the grade is not valid until the requirement is passed.

**Requirements for personal equipment**
None. Lab coats are available at the laboratory.

Programme requirements:
1) Laboratory Test: Individual test in technical laboratory work. Duration pr. candidate: 20 min.
   Pass / Fail. In case of a fail one gets one retake in the 6th term, and possibly another next year. The grade will not be valid until the test is passed.

2) Outbreak Task: Pass / Fail. Assessed by a submitted questionnaire, reorders, report and presentation (20 min in groups). All aids allowed. If not passed, the student must submit a new report, and present a new presentation with the examination no later than August.

3) Group assignment in risk assessment: Presentations that are assessed pass / fail.
4) Individual tasks with submission of report: To be assessed as pass / fail.

**HMS**

Please see “the instructions for the laboratory” (Microbiology hall). It is mandatory with lab coats. Individual lab coats in the courses where the students are working with microbiology. There is a clean and unclean zone by the entrance to the laboratory. Hand wash and coat change is required at entry and exit.

Training in fire protection is provided. It is mandatory with lab coats when working with gas. A first aid kit and an emergency shower are available. Gas plants are centrally controlled with a stopcock. The stopcock is demonstrated to the students at the first visit. The number of gas units is reduced to a minimum. Gas plants are checked prior to the instruction 2 times a year. There are separate fume hoods used where chemicals are used.

Since working with infection subjects represent a real risk of infection, thorough training and a variety of security measures are initiated (see infection learning).

It is informed both orally and in writing (in writing about Listeria monocytogenes) that special consideration must be taken by students with impaired immune systems or who are pregnant. Students in such a risk group must inform their course leader about their condition, and it will be ensured that these students do not get distributed tasks or cultures of L. monocytogenes or Salmonella Typhimurium.

**Examination: (MATTRY)**

The examination consists of two partial exams which are recognized in the grade. There is no requirement that the two parts must be passed in order to take the final oral examination. The final oral exam includes questions from the whole syllabus.

Grading scale: A-F.

**Partial exam 1: Multiple choice (1 hour)**

Midterm exam is held directly after the curriculum that is included in the examination is reviewed. It will be given scaled grades for 30% of the final grade for the course. The repetition of the exam is held after a short time (about 2-5 weeks) if there are students who fails or have valid reasons for absence in accordance to guidelines, attachements and regulations. If there are students who withdraw or don’t take the exam, it must be taken the following year. Students are allowed to take the final exam even if the midterm is not passed, but the grade is not valid before the midterm 1 is passed.

**Scoring /given on the activity sheet:**

Correct answer: 1 point. No answer: 0 points. Incorrect answer: - 1/2 point. One cannot receive less than 0 points. Grades are given.

Examination support material: None

**Partial exam 2: Final oral exam over 3 days.**

The repetition of the exam is held in August.

Examination support material: None

**Grades in the course:**

Grading scale: A-E.

The grade is calculated on the basis of the grades in partial exam 1 (30%) and 2 (70%).
Contact
Block leader: Tone Normann Asp
Head of Department: Per Einar Granum, MatInf

Preliminary course in clinical sciences (6th semester) (see 7th semester)
Semester: 6

Overall learning objectives: See 7th semester

Content:

Propaedeutic course:
- Production animals: Clinical examination and herdinvestigation
- Horse: Clinical examination
- Companion animals: Clinical examination
- Horse: Cutting, seizures, Hoof disease
- Production animals: Hoof shape. Hoof diseases. Pruning of cows.
- Handling animals, ampling, anesthesia horse
- Asepsis, antiseptics, sutures
- Reproduction all animals
- Obstetrics large and small animals

Clinical examination etc.:
- Clinical examination and herd investigation
- Diagnostic methods
- Obstetrics large animals

Teaching methods and approach
Propaedeutic course:
The year group is divided in 4 groups that rotate between the topics on Wednesday mornings for 14 weeks. Both live animals and slaughterhouse materials are used in teaching.

Clinical examination and more:
There are days of lectures in parallel with coincident species with the block animal welfare, animal housing and laboratory animal science. It is given a 1-week course in diagnostic methods. The entire year group will participate in practical courses in first aid which is a course in the use of first aid theory using phantoms and dead animals.

Recommended previous knowledge
The programme’s previous blocks. Especially anatomy and physiology and the infection courses.

Requirements for personal equipment in the propaedeutic course and the first aid course
The first day will the student groups 1, 2 and 3 wear coveralls / other clinic clothing suitable for working with large animals, whereas group 4 will wear a white coat designed to work with
small animals. Group 3 and 4 shall bring stethoscopes. Group 1 and 2 should preferably be wearing gloves.

**Compulsory teaching and programme requirements**
Practical lessons: Everything is mandatory. These are lessons that cannot be replaced by self-study, and prepares students for the clinical periods. It is accepted with up to one-time valid absences before substitute teaching must be taken. Lectures are optional.

Absence from the propaedeutic course will be replaced with ambulatory clinic equivalent with the number of days as the absence, taking place in the summer holiday between 6th and 7th semester or a suitable programme in the training clinic. If necessary, substitute teaching is not taken SFA shall be notified so that the exam after the 7th semester will not get approved before substitute teaching is conducted. Substitute teaching in the first aid course must be taken the next year. The grade will be retained until this is implemented.

**HMS**
Handling large animals are demonstrated.
Upon review of the clinical examination of dog, proper handling and protection against bite injuries are important. See additional information 7th semester.

**Examination**
Administered in conjunction with the 7th semester exam.

**Contact**
Block Leader for the Wednesday mornings in 6th semester in the propaedeutic courses: Carl Fredrik Ihler
Block Leader for the other weeks: Ann Margaret Grøndahl
Theme Responsible, first aid course: Adam Martin
Theme Responsible, clinical examination: Anna Eggertsdottir (Small Animal and Equine), Terje Fjeldaas (Production Animals)
Theme Responsible, diagnostic methods: Stein Istre Thoresen
Head of Department: Ann Margaret Grøndahl

**Block 10: Animal welfare, Animal housing and Laboratory Animal Science (3 weeks + summer practice, 5 ECTS Credits)**
**Semester: 6**

**Aim and learning outcomes**
Animal welfare, Animal housing and Laboratory Animal Science will give students a basic understanding of the veterinary medicine and ethological basis of animal welfare, focusing on animal welfare in Norwegian animal housing. Furthermore, the course provides insight into the use of laboratory animals and how to ensure good welfare of animals used in scientific work.

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.1, 1.3, 1.4, 1.5, 1.6, 1.8, 1.9, 1.10, 1.11, 2.1, 2.2, 2.3, 2.6, 2.8, 3.2, 3.15, 3.18

After completion of the courses, the students should:
Have knowledge of animal welfare, ethology (behavioral learning) and animal ethics with regard to animal husbandry and have an understanding of the complexity of the concept of animal welfare.

- Understand the main legislations, regulations and supervisions in the field.
- Be able to define and use terminology in the field.
- Be able to explain the health, physiological, cognitive, emotional and behavioral indicators of welfare status.
- Be able to describe welfare issues with domestic animals and fish.
- Have a general knowledge of the scientific basis for the development of welfare protocols, and could explain some advantages and disadvantages associated with different types of welfare indicators.
- Have knowledge of normal behavior in domestic animals including dogs and cats.
- Have an understanding that the behavioral medicine is a veterinary area and know the progress of a behavioral consultation as well as the most common behavior problems in dogs and cats.
- Be able to describe the welfare consequences of selective breeding.
- Be able to explain the connection between the environment, health and welfare.
- Be able to account for environmental factors and structural facilities for domestic animals.

Know the key principles for milking.

- Be able to account for factors that can affect the outcome of an animal experiment and how experimental animals' health and welfare status is monitored.
- Be able to explain the principle of "the three Rs".
- Be able to explain the methods of handling, anesthesia, analgesia and euthanasia of experimental animals (including fish).
- Be able to debate animal welfare, and take a critical look at the arguments about animal welfare.

Content:
The course is divided into four topics:
1. Animal Welfare and Ethology (3 credits)
2. Animal Housing (1 credit)
3. Laboratory Animal Science (1 credit)
Animal Welfare in relation with future courses:
Animal welfare and animal environment (6th semester) provides a general introduction to animal welfare with a focus on behavioral and health aspects of animal welfare and animal ethics. In 8th semester there will be visits to stocks: Visits with poultry producers. Currently laying hens, but from 2013, poussins. In addition to disease issues, relevant welfare issues will also be addressed. In 9th semester there will be a theme day in animal welfare: Ambulatory Clinic. The students will go on stock visits to poultry producers with laying hens in environmental cages. Some legislation (animal welfare legislation, hold regulations poultry), focusing on the welfare evaluation using resource-based and animal-based measurements, WelfareQuality welfare protocol, behavioral indicators, health with a focus on “production diseases”, stabling forms, advantages and disadvantages of cages/aviaries, handling of chickens, lock routines. As part of the meat inspection instruction in Rogaland it will be looked at poultry slaughter in its totality and animal welfare in relation to anesthesia and euthanasia methods are central themes. Otherwise it is included animal welfare in all clinical subjects and pathology in 8th and 9th semester and the differentiation year. In Ambulatory there are stock visits with welfare protocols in cattle and pigs. In the course public veterinary medicine hold regulations and animal welfare legislation which is central to animal welfare issues will be reviewed.

In the differentiation year there are own themes in the differentiation in both ProdMat and Aquatic Medicine:
- *Veterinary Public Health*: Food Safety Authority's role in animal welfare issues; supervision, decision, police report.
- *Herd consulting and supervision*: Herd visits poultry two full days, where topics of animal welfare are key + supervisory work with FSA.
- *Fish welfare*: The theme is animal welfare and animal ethics in aquaculture.

Teaching methods and approach
Animal Welfare:
The teaching of animal welfare provides insight in ethology (behavioral learning), general animal welfare and animal ethics with regard to practical animal husbandry. Students will acquire knowledge of behavioral indicators, physiological indicators, and production and health indicators for animal welfare. There will be an introduction to pain physiology and welfare parameters. Students should have knowledge of human - animal relations’ impact on animal welfare.

Animal Housing:

Laboratoty Animal Science:
Instruction in laboratory animal science will give students insight into the use of experimental animals, legislations and administrative procedures when carrying out animal experiments. It then provides an introduction to the choice of experimental animals, health risks and health control, environmental factors and anesthesia, analgesia and humane killing of experimental animals. It also provides an introduction to quality control and good laboratory practices.

Teaching Material:
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

**Recommended previous knowledge**
Blocks earlier in the programme. Especially husbandry practices, animal nutrition, propaedeutic courses in the animal welfare section and physiology courses in laboratory animal science.

**Requirements for personal equipment**
None

**HMS**
No specific procedures for this block.

**Compulsory teaching and programme requirements:**
It is recommended to attend classes, as it will be difficult to read the entire subject oneself. Husbandry Practice and Report is mandatory and must be passed to pass the course.

**Mandatory husbandry practice:**
See earlier in the curriculum.

Students are allowed to take the written exam even if the requirement has not been passed, but the grade will not be valid until the requirement is passed.

**Written Examination in the whole subject area (4 hours):**
Animal Welfare and Etiology, Animal Housing, Laboratory Animal Science

Examination provides 5 credits. It can be achieved a total of 100 points on the exam. It is given graded marks of A-F. The examination in all three subjects is assessed together, and the whole examination must be re-taken at grade F.

**Contact**
Block Leader: Randi Moe
Partly Responsible: Hans Petter Kjæstad (Animal Welfare), Kristine Eraker Aasland Hansen (Laboratory Animal Science)
Head of Department: Olav Reksen, ProdMed

**Introduction to diagnostic work (18 weeks, 27 ECTS Credits) (21 weeks 31 ECTS Credits as of year group 2011)**
Semester: 7

**Aim and learning outcomes**
The purpose of the “Introduction to diagnostic work” is for students to be knowledge and skill wise prepared for the clinical rotation in production animal, equine and small animal medicine in 8th and 9th semester. The goal is that the teaching should contribute to the integration between the preclinical and clinical part of the programme and that it has provided students with inspiration and desire to further clinical work. Although pathology is taught in the 7th semester, it will first be tested at the examination of pathology in the 8th semester. The
student must, however, possess relevant knowledge of pathogenesis and pathoanatomy to understand the subject “Introduction to diagnostic work”.

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.3, 1.4, 1.5, 1.7, 1.8, 1.10, 1.11, 1.12, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.8, 2.9, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.11, 3.12, 3.13, 3.16, 3.17, 3.18, 3.19, 3.20

After completion of the courses, the students should:

Learning objectives
Students should
- Know the most common anomalies, disorders and diseases of the various organ systems that are included in the subjects being taught in the 7th semester.
- Acquire sufficient knowledge to be well positioned when it comes to undertake patient assessment in the clinic, ie able to know about the causes, prevention, investigate further, monitor and treat individual animals that have been reviewed in the themes of 6th and 7th semester.
- Know (to the extent that the subjects are reviewed in 6th and 7th semester) sufficiently about stock medicine to participate actively in stock findings.

Have knowledge about zoonoses so that students can protect themselves and others in the clinic.

Skills (There will be asked theory questions from these topics):
- Be able to handle experimental animals.
- Be able to record anamnesis, conduct a physical examination and be familiar with the main points in a problem-oriented patient evaluation.
- Be able to handle sick and healthy animals.
- Be able to perform simple sampling, bandaging and suturing.
- Be able to remove horseshoes and be familiar with the crop of hooves.
- Be able to perform a gynecological examination of cows and a single heat control in bitch.
- Take out a semen sample and evaluate the semen quality.
- Know the principles of adequate treatment at birth difficulties with our most usual domestic animals.

General competence:
- Have learned to collaborate through colloquiums and group work, and be able to present the academic material both in writing and oral.
- Have an ethical awareness of the housing conditions of experimental animals.

Content:
- Production Animal Clinical Science
- Small Animal Medicine
- Equine Medicine
- Obstetrics
- Reproduction
• Clinical chemistry and other diagnostic aids
• Laboratory Animal Science
• Pathology (but first tested at the examination after the 8th semester)
• Treatment

Teaching methods and approach
The teaching is based on organ systems of living and dead animals. This takes place as theme modules consisting of lectures, problem solving in groups, demonstrations and reviews. The approach is a problem-oriented patient evaluation.

In rotations, students are divided into 6 groups. Students will get demonstrations and training in clinical examination as well as other basic skills on living animals, and performed autopsies on animals, and microscopy of tissue sections. Students have rotations at the pathologist (9 mornings), production animal clinics (6 mornings), horse clinic (2 mornings), experimental animal unit (2 ½ mornings), small animal medicine (1/2 morning) stock medicine (5 mornings).

Laboratory Animal Rotation provides an introduction to the work at a laboratory animal facility and maintenance of laboratory animals. It also provides a brief description of the principles of anesthesia and analgesia. Emphasis is placed on legislations and ethical handling of animals.

The course in preventive health care has the herd as an approach. It is given an introduction to epidemiological principles of disease surveillance, organized health plans, policies and procedures for disease prevention in problem herds.

Literature and reading references
Core literature for propaedeutic course, 6th and 7th semester:
Torleiv Løken’s «Klinisk diagnostikk hos produksjonsdyr». This must be mastered and similar facts for small animals and horses must also be mastered.

Otherwise it is recommended to start reading the recommended literature, but these works are also intended to be read in 8th, 9th and possibly in the differentiation year while learning by meeting cases and issues in the clinic.

We recommend that you read the distributed lecture notes and that you follow the emphasis in the teaching in the 6th and 7th semester and read about the various topics in relation to this.

Recommended previous knowledge
Programme’s previous blocks.

Requirements for personal equipment
Work clothes and protective footwear. Stethoscope and scissors.

HMS
A first aid kit is available in the clinics. Fire Training is provided in the clinics. Students are encouraged to wear gloves when handling medications and other risk materials, allergens and when handling animals suspected to be suffering from a zoonosis. There are separate infection
locks by the entrance to the clinics for production animal medicine and the section of pathology. Overalls, gloves and boots are available by the infection locks.

Students who are pregnant or have compromised immune systems are encouraged to contact the responsible for the education in advance of all the clinical courses.

Rotation Pathology:
At the section hall, HMS training is divided in 2 parts. First a briefing with HMS rules that the students must read and sign. This is supplemented with information and pictures illustrating the procedures. The second part consists of information at the audience on how to implement infection control practices.

Rotation in the clinics:
Quarantine: Students cannot have been abroad for the last 72 hours before the clinic teaching in production animal medicine.
See the ”Rules for handling large production animals and horses at NVH ” and ”Basic Policy regarding the handling of animals”. Prodmed strives to not have larger groups than six students when handling large animals.

Stationary Clinic: Clinic Procedures are reviewed orally at the first visit. Production Animal Medicine has prepared a briefing on hygiene and safety of ProdMed’s clinical activities. Excerpts are handed out.
Reproduction: Gloves are used when examining organs from the slaughterhouses. Gloves are also used upon examination of animals, and gloves shall be changed for each animal.

Rotation Equine Clinic
Introduction to clinical procedures are reviewed orally. Students acknowledge that they have received this training.

The laboratory animal unit
Renewed international accreditation by AAALAC. This sets very stringent requirements for HMS training and procedures at the department.
Quarantine: The section has its own quarantine rules that state that if one has been in contact with animals abroad in the past three days or in contact with rodents, rabbits or production animals in Norway over the past two days, one will not gain access to the department.
Allergen Information is given to the students.

Compulsory teaching and programme requirements:
Rotation the first 6 weeks at ProdMed (medicine, reproduction, preventive health care), SportFaMed, pathologist, laboratory animal department.
Reproduction the whole day.
Pathology rotation before lunch for 1/6 of the year group.

This instruction is mandatory and must be taken again in case of absence. Generally it is accepted with one day valid absences for the compulsory teaching which runs over a week before substitute teaching must be taken. For pathology it is accepted with until 2 days valid absences for the 7th and 8th semester together. Wherever possible, repetition of absence shall be agreed with the module manager. If this is not possible it must be taken the following year. The exam can be taken, but the grade will not be valid until all mandatory teaching is
completed. Head of Department must submit lists of students who lack compulsory teaching to the SFA no later than the day before the exam.

**Examination**
Short answer tasks and multiple-choice questions
Examination support material: None
Grading scale: Pass / Fail
Examination will ensure a certain factual foundation before the clinical work at production animals, small animals and horses. Examinations may contain questions from topics of 6th semester and preparatory course. The examination will be assessed as a "pass" if one has the right answers to 60% of the tasks. Application and deeper understanding is tested in the clinical examinations (9th (10th) semester).
Pathology is taught in 7th semester and tested at the end of 8th semester.

**Contact**
Block Leader and Head of Department: Responsibility is rolled on a two-year basis between the Head of Departments at ProdMed and at SportFaMed.
For 2013, it is: Ann Margaret Grøndahl

**Clinic Preparatory Week**
This is added to the week after the exam in “Introduction to diagnostic work”, and is part of the subject “Small Animal Medicine”. Attendance is voluntary, but the program requirements in the form of a test must be passed before the clinical examination may be taken (after 9th (10th) semester). Focus is patient management and clinical investigation.

### 8th Semester
The 8th semester begins with one week of joint teaching in «Diseases in Wildlife and Semi-Domesticated Reindeer», «Aquatic Animal Medicine and Fish Health» and «Poultry Diseases». Then the year group is divided into 3 groups that follow rotation in Production Animal, Small Animal and Equine and Mixed Clinical Rotation. In May, the year group is deployed one week in Sandnes, Sheep and Goats Diseases and one week in Hjelmeland, Aquatic Animal Medicine and Fish Health. The semester ends with two final exams in Pathology and one final exam in Aquatic Animal Medicine and Fish Health.

**Mixed Clinical rotation in 8th semester consists of:**
- Pathology
- Aquatic Animal Medicine and Fish Health
- Professional Ethics (included in the clinical courses)

Semester responsible: Carl Fredrik Ihler

**Small Animal Medicine and Equine Medicine (9 weeks + reading period, 16.5 ECTS Credits)**

**Production Animal Clinical Science (9 weeks + reading period, 16.5 ECTS Credits)**
See description under 9th semester
Diseases in Wildlife and Semi-Domesticated Reindeer (1 week, 1.5 ECTS Credits)

Semester: 8

Aim and Learning Outcomes
The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.8, 2.1, 2.2, 2.3, 2.8, 2.9, 3.17

After completing the course the student should have basic knowledge of the most important diseases in domestic reindeer, wildlife (including marine mammals):

- Be able to explain the most important zoonoses found in reindeer and wild animals in Norway or that can be introduced to Norway, and how they behave (reservoir, transmission routes, symptoms, etc.)
- Be able to explain the infectious diseases that can be transmitted between domestic animals and reindeer / wild animals.
- Have knowledge of selected pathological findings that are normal or may occur in relation to meat inspection of reindeer.
- Have knowledge of selected pathological findings that are common in wild animals.
- Work in groups and prepare a literature study in a relevant theme based on the collection of scientific information and publication rules.

Content:
- Diseases in wildlife
- Diseases in reindeer

Teaching methods and approach:
The course consists of 6 hours of lectures on diseases of reindeer and wild animals, including marine mammals. There is an emphasis on matters of importance and that veterinarians may be confronted with in their further work. One such topic is diseases in reindeer and wild animals that are hunted. Furthermore, emphasis is placed on zoonoses, and diseases that can be transmitted between wildlife and domestic animals. Students are strongly encouraged to follow the lectures because of the task that will be written afterwards.

Teaching Materials
It is not defined a special curriculum for this course, primarily because the available literature will go far beyond the course framework. It will, however, be handed out source references at the lectures.

Recommended previous knowledge
The programme’s previous block.

Requirements for personal equipment
None
HMS
No specific procedures for this block.

Compulsory teaching and programme requirements:
None

Examination
Students are divided into groups (or one uses the practice groups) and are given an assignment that is presented in the last lecture. The assignment will consist of a frontage and 4-8 pages of text (Word, double line spacing, Norwegian or English) including references. Students will focus on a topic, search for information (articles, textbooks, etc.) and put this together as a whole. Through this, students will gain experience in putting together short and concise information on a topic and convey this in writing. The assignment will also be training in the use of source references and references. Students are encouraged to contact the course coordinator and teachers if there is a need for clarification or feedback along the way. The assignment must be submitted within the given deadlines. The assignment is returned to the students with comments and corrections. The assignment is then delivered back in a revised form for approval within the stipulated deadline.

The assignment should be organized according to the following scheme:
Front page: assignment title and authors, year group, date of submission
Introduction: presentation of the problem
Special conditions related to pathology, infectious agents, routes of transmission, epidemiological conditions etc. from the problem job's nature.
Discussion about diseases’ impact on animal health and possible for people (nutritional conditions, infection factors etc.). Emphasize matters of practical importance.
References

The assignment is evaluated as pass / fail based on the following criteria:
Ability to present a topic in writing
Ability to find relevant information on a topic and to acquire information from sources such as scientific articles and summarize this
Ability to use referrals and references in the text and in the reference list
Ability to put the information in a context and to discuss and consider the problem in relation to other relevant factors
All students of each group are evaluated equally on the basis of the joint assignment
The assignment is approved only after it is delivered back in the revised form. This requires that the audit complies with the guidelines that are given to each student group

Examination:
Home Exam: Submission of a written work within 4 weeks after the lessons end. (VILTRE07)
Grade: Pass

Lack of submission within the given deadline without documented and valid reason (medical certificate), causes the grade: Fail.

If the assignment is not passed, or exams not taken due to legitimate absence or as a result of student exchange, it is given a new assignment at the beginning of the fall semester. Deadline: 6 weeks. If the assignment is not submitted and approved within the deadline, the last attempt
will be at the next scheduled exam the following year (3 attempts in the discipline in accordance with the regulations).

Contact
Block Leader: Morten Tryland
Head of Department: Per Einar Granum, MatInf

Pathology (15 ECTS Credits)
( Including infection diagnosis)

Semester: 8

Aim and learning outcomes
Pathology will provide students with sufficient knowledge of disease development (pathogenesis), pathological-anatomical and histopathological changes of the most commonly occurring disease states, and of serious infectious diseases (Group A and B diseases) in production animals, horses and family animals in Norway.

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.2, 1.3, 1.4, 1.6, 1.8, 1.10, 1.11, 1.12, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.8, 2.9, 3.1, 3.2, 3.5, 3.6, 3.15, 3.16, 3.17, 3.20

After completing the course in pathology, the student should:

- Be able to understand and explain the basis for disease development (pathogenesis) and could explain the macroscopic and microscopic changes in commonly occurring (infectious and non-infectious), and serious infectious diseases (Group A and B diseases) in production animals, horses and family animals in Norway. This applies to:
  - Nutrition disorders
  - Production Diseases
  - Poisonings
  - Neoplasia
  - The most common congenital disorders
  - Virus Infections
  - Bacterial infections
  - Fungal infections
  - Parasitic Diseases
  - Prion diseases

- Have good hygiene regarding the handling / autopsy / investigation of potentially infectious material.

- Be able to conduct independent autopsies of domestic animals and describe the autopsy findings for important diseases in domestic animals.

- Observe and describe the basic microscopic changes and be able to make morphological (pathoanatomical) diagnoses based on macroscopic and microscopic descriptions of the most important diseases.
• Be able to recognize changes in organs and tissues in production animals in relation to food hygiene (meat inspection).

• Be able to retrieve samples for histological, bacteriological and parasite survey, know how to handle and ship, and when appropriate diagnostic laboratory should be contacted before sending out samples.

• Be able to assess the pathoanatomical diagnoses in relation to the clinical diagnoses and specify possible cause of death.

• Know their own limitations and know when it is right to bring in expertise, advices from laboratories or management.

**Content:**
- Special Pathology
- Pathophysiology
- Autopsy

**Teaching methods and approach:**
In special pathology the individual organ systems' disease processes, their causes, development and appearance are emphasized. In pathophysiology the physiologic changes that occur as a result of disease, and how this manifests itself in the sick and dead animal is emphasized.

Instruction is provided in the form of 18 lectures spread throughout the semester and continues with lectures given on the 7th semester. In connection to this there will be given demonstrations of slaughterhouse material. There will be offered daily throughout the semester, demonstration of cases from the clinics. Each group of students has two weeks of autopsy in the mix rotation. It will, through collaboration with infection diagnostics be a plan for further diagnosis of the autopsy material. There will also be an arrangement of self-study with journals.

**Teaching Materials**
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

**Recommended previous knowledge**
Blocks earlier in the programme

**Requirements for personal equipment**
None

**HMS**
There are separate infection locks by the entrance to the section of pathology. Overalls, gloves and boots are available by the infection locks. At the section hall, HMS training is divided in 2 parts. First a briefing with HMS rules that the students must read and sign. This is supplemented with information and pictures illustrating the procedures. The second part consists of information at the audience on how to implement infection control practices.
Rotation Pathology:
At the section hall, HMS training is divided in 2 parts. First a briefing with HMS rules that the students must read and sign. This is supplemented with information and pictures illustrating the procedures. The second part consists of information at the audience on how to implement infection control practices.

Compulsory teaching and programme requirements:
All autopsy work and work with journals is obligatory. In the case of absence, students must contact the person who is responsible for the exam and arrange when the work can be carried later in the semester in the following year. Students will normally be allowed to take the exam even if they have not completed the course work. However, grades will be held back until the course work has been completed.

Examination
Test Examination
The test exam (both partial examination 1 and 2) will be held before Easter. The test exam is voluntary, but students are encouraged to participate. Selected tasks will be discussed in plenary, after an assessment of the voluntary submitted assignments.

Examination
Examination: (PATOLO06)
Examination support material: None

Partial examination 1:
Practical Exam– Macro and micro images
The class will be divided into two groups.
Macro part will be held in an auditorium. Slides of macro preparations will be displayed on canvas in a PowerPoint file. A total of 30 images with automatic change of image after 3 minutes - total time spent 90 minutes. For each image there will be 2 questions.
Micro part is held in at a different localization. Students will be given a task set of 10 tasks consisting of color photographs of histological sections. For each task, there will be 2 questions. Total time: 60 minutes.

Partial examination 2:
Written exam of 5 hours
There will be a total of 60 tasks with approx. half multiple choice assignments and half short answer assignments.

Evaluation: Scaled grades
\( \frac{K_1 + K_2}{2} \), \( K_1 \) and \( K_2 \) is the grades per part converted to numeric value A= 5, B=4 etc.

Responsible
Block Leader: Arild Espenes
Responsible for the written exam: Gjermund Gunnes
Responsible for practical/oral: Randi Sørby
Head of Department: Mona Aleksandersen
Aquatic animal medicine and fish health (6 ECTS Credits)
Semester: 8

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.8, 1.9, 1.10, 1.11, 1.12, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 3.1, 3.2, 3.5, 3.6, 3.10, 3.14, 3.18, 3.19, 3.20,

Aim and learning outcomes
Aquatic Animal Medicine is a field of study that primarily deals with diseases in aquaculture with emphasis on salmon farming. Knowledge in Aquatic Animal Medicine is essential to be able to make rational choices in the diagnosis, treatment, control and prevention of diseases in aquaculture.

After completing the course the student should:

Have knowledge of the farming industry's structure, principally in the production cycle and the most important diseases of farmed fish

• Have basic knowledge of the life cycle of Atlantic salmon, rainbow trout and cod in fish farming.

• Have knowledge of infectious and production-related diseases in the different phases of the production cycle, with emphasis on issues related to the introduction of agents (pathogens), host factors and environmental conditions.

• Have knowledge of principles of disease prevention, including infection containment and vaccination under farming conditions.

• Be able to diagnose various diseases in farmed and wild fish based on histological preparations, provide a general description of pathological changes and indicate possible differential diagnoses.

• Know general characteristics of the cultivation and disease in wild fish (salmon), and interactions between wild and farmed fish.

• Be able to conduct autopsies and know how samples should be taken for submission to a diagnostic laboratory.

• Conduct surveys of fish parasite.

• Be able to treat diseases in farmed fish.

• Understand the legislation concerning the welfare of fish and understand that good health is an important indicator of welfare.

Content:
• Aquatic Animal Medicine
• Fish diseases with emphasis on disease in farmed fish
• Fish Biology
• Fish Histopathology
• Fish Pharmacology and Treatment

**Teaching methods and approach:**
The teaching will focus on relevant species, their natural living conditions and extend as well as an introduction to modern fish farming. The teaching in fish farming discusses the diseases that affect them.

Teaching is spread throughout 8th semester. Introductory instruction is given in the form of lectures, group rotation instruction in the mixed block in form of courses in fish histopathology and group projects with plenary discussion. In addition, there is organized a field trip to Sandnes with visits to fish farms along with local fish health veterinarians. Treatment of fish is taught at the end of the semester.

**Teaching Materials**
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

**Recommended previous knowledge**
Block earlier in the program. Fish have been taught previously in all relevant contexts.

**Requirements for personal equipment**
Lab coat, warm clothes in the field course

**HMS**
Field course:
Marine Harvest's procedures for employees are followed. It is mandatory with lifejackets when the students are on board the boat or out at sea sites. In addition, students are required to abide by the messages given, either from the instructor, skipper of the boat, or the operator of the facilities. There are special safety procedures on board the boats and limitations in passenger numbers. In all plants and in most of the boats there are first aid kits available that we can use in case of cuts, etc. There is very little or absence of zoonotic potential in the autopsy material we have access to. Upon visit to the slaughterhouse, all will be equipped with overwrap suits and shoes for the sake of product quality and safety.

**Compulsory teaching and programme requirements:**
Group instruction in pathological diagnosis in fish
It is agreed with the field course instructor how the course can be taken again later in the semester in case of absence, possibly next year.

On the last day of the initial lecturing week it will be distributed group tasks that will be presented in plenary in the group rotation instruction in the mixed block (all students in the group must participate in the presentation).

**Field course in Hjelmeland**
This must be taken again next year (or similar programmes) that the students must provide themselves and in consultation with the course coordinator.
Students will normally be able to take the exam even though not all mandatory training is approved, but the grade will not be valid until the study requirements are passed.

**Examination**
- 4 hour written final exam (AKVFIS06)
- Examination support material: None
- Grading scale: A-F

**Contact**
- Block Leader: Øystein Evensen
- Head of Department: Mona Aleksandersen

**The 9th semester**
The semester begins with an insemination course the week before the start of semester.

The 9th semester starts with 4 days of teaching in state veterinary medicine and 1 day bird medicine, exotic and rodents. Then the year group is divided into 3 groups and they rotate between mixed clinical rotation, production animal clinical science and small animal medicine and equine medicine.

**Mixed clinical block rotation consists of:**
- Food and meat inspection (1 week) (practical examination)
- State veterinary medicine (1 week)
- Epidemiology (1 week) (as of year group 2004)

The course ends in week 46. Autumn candidates have one exam in production animal clinical science and two partial exams in small animal medicine and equine medicine.

**Semester responsible:** Carl Fredrik Ihler

**Food and meat inspection (3 ECTS Credits)**
**Semester:** 9

**Aim and learning outcomes**
The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.1, 1.3, 1.4, 1.5, 1.6, 1.8, 1.9, 1.10, 1.11, 1.12, 1.13, 1.14, 2.3, 2.4, 2.5, 2.6, 2.7, 2.9, 3.2, 3.3, 3.5, 3.6, 3.8, 3.13, 3.14, 3.17, 3.20

After completing the course the student should:

Be able to perform ante-and post-mortem inspection of production animals and identify factors that affect food safety, animal health, animal welfare and quality of products derived from animals.

The student should:

- Be able to carry out ante and post-mortem inspections.
• Be able to make relevant technical evaluations in terms of meat inspection rating of the slaughter.

• Be able to perform simple assessment of slaughter hygiene.

• Be able to perform simple assessment of animal welfare in slaughterhouses.

• Have theoretical knowledge on the assessment of slaughterhouses and other food industry's Hazard Analysis Critical Control Point (HACCP) system.

• Have theoretical knowledge of inspection / auditing of food businesses.

Content:
• Food and meat inspection

Teaching methods and approach:
All students will travel to Sandnes in the mixed clinical rotation, which includes 1 week in Sandnes. To attend classes, students must have completed a field trip to the slaughterhouse in 6th semester. (Students meet at Highland, the Sunday before the rotation week in Sandnes.)

Meat Inspection:
Teaching is carried out in the slaughterhouse, and students get, through practical work and group instruction, an introduction to animal welfare during transport, housing, driving, anesthesia and euthanasia. Veterinary tasks such as ante-mortem inspection and post-mortem inspection (assessment of slaughter) have a special focus. Knowledge of slaughter hygiene, animal welfare at slaughterhouses, inspection and auditing of slaughterhouse and extraction of samples in connection with monitoring programs are also included in the curriculum.

Food Inspection:
The main focus will be on work at the FSA. This includes risk-based supervision, supervision philosophy, holistic thinking, the Food Safety Act and the administration of this Act, inspection and audit, client's internal control, import and export. Based on the common theoretical introduction at NVH, students participate in groups on practical inspections and audits together with the staff from the Food Safety Authority's regional office in Sandnes.

Teaching materials and learning objectives:
Relevant legislations and regulations (See the block’s home area on Hippocampus).

Recommended previous knowledge
Blocks earlier in the programme

Requirements for personal equipment
Lab coats, boots and helmets are handed out in slaughterhouses.

Compulsory teaching and programme requirements:
The course week in Midt-Rogaland is mandatory. Students must contact the examination coordinator unless the course can be completed on the scheduled week. An assessment of the course can be completed later in the fall or the year after. In the week it is allowed with up to
one day's absence. If the student has more than one day's absence, the whole week must be re-taken at a later time.

**HMS**

On the first day at the slaughterhouse, the students get general information about safety, fire and knife use. Emphasis will be placed on getting the students into an environment where many people are working in a relatively small area, with fast movements, sharp knives, boiling water, etc. Students will stay close to the facilitator and follow direct orders about where to roam.

In the practice period of meat inspection, students are always together with an educator who knows the facility well. Every morning at the various facilities, the students get a brief refresher on the use of protective equipment and an introduction to fire safety / evacuation routes. When knife use is relevant, an educator will display in practice how the knife use shall be carried out, sheath use and washing. The knife should not be used for pointing, only for sectioning. The hand not holding the knife should be kept well away from the blade leading hand.

**Examination**

Practical/oral examination in food and meat inspection
The examination will be conducted in the premises of Fatland Jæren A/S, Friday in rotation week.

*Meat Inspection:*
Students will perform post-mortem examination of at least two slaughter and will be examined in relation to this.

*Theoretical examination:*
After completing the post-mortem examination, the student will be examined in relation to the learning outcome’s descriptions.

To pass the examination must both parts be assessed as passed. If the student fails, both parts must be re-taken in Sandnes. Date will be arranged individually. It will be offered internship at the forefront in connection with this. Fail examination will not affect the clinical examinations in the autumn.

Examination support material: None
Grading scale: A-F

**Contact**

Examination coordinator: Truls Nesbakken
Contact person Sandnes: Guro Myrene
Head of Department: Per Einar Granum, MatInf

**State veterinary medicine (3 weeks, 4.5 ECTS Credits)**

**Aim and learning outcomes**
State veterinary medicine will provide students with basic knowledge and understanding of the regulations that are necessary to exercise the veterinary profession in a legally sound manner.
The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.1, 1.3, 1.4, 1.5, 1.6, 1.8, 1.9, 1.10, 1.11, 1.12, 2.3, 2.6, 2.7, 2.8, 2.9, 3.15

After completing the course the student should:

- Be able to describe the main features and use regulations pertaining to
  - animal welfare
  - control of infectious animal diseases, both in land animals and fish
  - importation and exportation of animals and infectious objects
  - veterinary medicine and professional liability


- Know the law of sales’ usage when buying and selling animals.

- Know the veterinarian’s duties in the legal system and the penal procedure.

- Be able to manage / deal with a complaint / compensation from a customer and be able to fill out veterinary certificates and declarations in a proper way / in accordance with the regulations.

- Be able to prepare and carry out inspections in animal husbandry.

- Show an attitude and behavior that shows respect for animals based on their uniqueness and intrinsic value.

- Display an attitude and behavior in their professional practice that do not undermine confidence in the professional group.

- Develop a thesis relevant to the differentiation direction.

Content:
- Law and Forensic Medicine
- Public Administration

State Veterinary Medicine in relation to previous and future courses:
6th semester, animal welfare: Introduction on regulatory importance and animal protection/animal welfare.
9th semester: 1 week of lectures where all relevant regulations for veterinary medicine is presented.
9th semester, mixed clinical rotation: practical application of the legislation through assignments in disease control (1 day) and 3 days deployment at the FSA.
10th semester: 1 week is set aside for independent work on a written assignment in state veterinary medicine. The assignment is a part of the oral exam the same semester.
ProdMat specialization: 1 week of the course in veterinary public health is allocated for administrative law and practical task with animal protection issues and combating diseases.
Equine specialization: Further education about doping of horses and regulations. Courses in management and clinical operation: Further education about the Veterinary Medicine Legal Advice.

**Teaching methods and approach:**
The teaching includes legislation of relevance to veterinary medicine, with particular emphasis on the Act Relating to Animal Health Personnel, the Food Safety Act and the Animal Welfare Act, and regulations issued pursuant to these laws. Particular emphasis is placed on rules for combating infectious animal diseases, import and export of animals and veterinary's role in relation to the animal welfare regulations. Rules of case processing and principles of public administration and public law are affected too. The teaching also includes the Rules of Procedure, business as a specialist, provisions concerning trade in animals related to the purchasing laws and veterinary professional responsibility and legal liability in connection with the claim for compensation. The teaching is divided between 9th semesters and 1st differentiation semester (1 week mandatory part of this). In 9th semester there are given four days of lectures in state veterinary medicine (17 hours) and one week internship at the FSA. The first day of this week, students work with a group assignment with regulations associated with combating diseases and animal welfare, as an extension of the thesis the students have the week before with disease control. In the first differentiation semester the student works under guidance with a thesis related to the differentiation direction. It will be held an oral exam during the last study week of the first differentiation semester.

**Learning Materials**
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

**Recommended previous knowledge**
Blocks earlier in the programme

**Requirements for personal equipment**
None

**HMS**
No specific procedures for this block.

**Compulsory teaching and programme requirements:**
An internship in Food Safety Authority is mandatory. It can be agreed with the examination coordinator how this may be re-taken later in the semester, or the next year. The thesis in the differentiating year must be submitted within the prescribed time limit in order to take the exam.

**Examination**
**Programme requirements:** Passed individual home examination. 
**Oral examination:** Students come up in groups of maximum 8 per day. Individual examination of approx. ½ hour (OFFVET07) carried out. The students are questioned about both the assignment and the curriculum from 9th semester. Examination support material: None 
Grading scale: A-F
Contact
Examination coordinator: Marit Nesje
Head of Department: Olav Reksen, Prodmed

Professional Ethics
Learning outcomes
After completing the course the student should:
- Know what it means to be a “professional athlete”. Know both the social mandate veterinarians are set to manage and that those who are vets share a common set of values that form the basis for the practice of the subject.
- Know and use the professional ethical guidelines in reflections on their practical work.
- Have a moral awareness and develop moral judgment that the student may benefit from in the conduct of their profession.
- Use tools they can use to reflect ethically in specific situations.

Educational programme:
3 hour joint lecture for the entire year group
The purpose is to give students an introduction to the subject.
Teaching in groups (the practice groups), 3 hours times 2.
Instruction will be based on the principles of a study model called Problem-based learning. Problem-based learning is characterized by the fact that teaching is based on specific problems or situations. Students are encouraged to ponder whether the problem reminds them of situations or problems they are familiar with from before. By examining the issue in light of the students' previous experiences and new knowledge they have acquired, the students, together with the teacher, should discuss specific ways to understand or solve the problem. Key principles are to work in small groups and that the problems are authentic. The reason why this model is selected, firstly, that it represents a good way to learn. It gives students the opportunity to work actively with the material and make connections between experiences they have already made themselves and new knowledge. Another reason for choosing this model is that it has much in common with the way it will be natural for students to reflect on ethical issues in their upcoming professional life. Learning adds in this way a foundation for good habits and patterns that can be easily retrieved. Groups are also similar to work jointly students can later become a part of.

Assessment:
After the first three hours of group lectures, students will be assigned a professional ethical problem they will discuss and present a reflection on in the last three hours. Students can work in pairs and present the problem for the rest of the group, followed by discussion in plenum about the presentation. In this way, the evaluation also becomes a type of learning.

Literature:
Literature should be generally about professional ethics and professional ethical problems. This material can be taken from one or more suitable textbooks that are not necessarily related directly to the veterinary profession. There will also be some literature that is more specifically related to Veterinarians professional practice. Relevant scientific articles will also be used. In addition, DNV's professional ethical guidelines will also be part of the curriculum.
**Introductory lecture - 3 hours**

*Why do you want to be veterinarians? Values and motives that characterize the study and the professional practice*

When I began the veterinary studies, we were interviewed by the “Hippie Tiden” about why we wanted to be veterinarians. I will present some of the answers to the students. Prior to the lecture, I will also ask the students to send me two lines about how they would answer the same question today. I will also ask some of my fellow students to answer why they are still working as veterinarians. The point is to make students aware that most of them probably have reflected ethically on their future profession, ever since they began studying and that to a greater or lesser degree this is something they always do. They bring, in other words a lot of experience and reflection into the teaching. As we will later discuss specific issues, it is important that they are aware of this.

I also want to highlight the values and motives that are dominant and show what happens to those during the study period and over a relatively long profession. Are there any values and motives that are stable all the way? Are there any values and motives that become less clear after a while and if so, why? Is this positive or negative? Are there any values and motives that arise during the program / profession?

**What makes the veterinary profession into a profession? What is professional ethics?**

The veterinary profession as a profession. Brief description of the characteristics of a profession and of the veterinary profession’s history. It may be helpful to look at the development of a pure man profession to gradually a rather female dominated profession, and at the development in terms of what kind of tasks veterinarians are working with. What impact has the development had for veterinarians’ views on their own profession, and also the society's views on the profession?

The veterinarian as a helper. The word profession comes from the Latin word professio which means: I declare myself willing to help. Professional Performers are understood as a resource and a help, both to individuals (people and animals) and to society. In other words, it is not the professional's own interests, but the interests of the people one are helping that should govern the practice.

Veterinarians’ social mandate. Veterinarians’ practices are intended to also realize benefits beyond the specific practice exercise. That people are confident that they will receive help if their animals become sick or injured, and that the food we eat is safe, is considered as the basic goods of society.

Professional autonomy. The veterinary profession possesses a special knowledge that allows it to be given the authority to assess the quality of their work and to define what constitutes the professional and ethical boundaries in both meetings with individual patients and in relation to the demands of society. Such authority is based on society's confidence in that the profession takes the work to ensure the quality of work seriously.

Veterinary profession as a normative practice. The characteristics mentioned above, make the veterinary profession into a normative practice and not just a profession of a craft. It instructs profession practitioners with ethical obligations. Veterinarians must not only consider what is the appropriate treatment or the right action in a specific situation. They must also consider the consequences of their activities. Such assessments can often be difficult. It is not always a good and a bad way of doing something. Do veterinarians need their own ethics, or is it enough with good manners?
The veterinarian as an administrator of the specialized knowledge. As professionals, vets may do things others cannot afford to do. They can, for example, give medication to other people's animals. They may also determine whether a business has to be closed. Such actions and decisions would be completely unacceptable if they were made by people who did not have a veterinary medical education. Patients or clients are also at the mercy of veterinarian reviews and must assume that the support they receive is relevant. Veterinarians need therefore an ethic that goes beyond general ethical boundaries.

Important to problematize the responsibility and power that lies in the expert role, in having a monopoly on managing knowledge.

The veterinarian as an administrator of major social resources. Veterinarians make decisions that have consequences for both animal and human welfare.

Veterinarians authority and autonomy of the profession is challenged by market thinking, the increased level of knowledge of the population and competition from other professions.

Veterinarians work under pressure from many stakeholders. Having a mandate from the community while also being committed to the individual patient or client may in some cases be problematic (eg conflict between the interests of animal welfare and economic interests).

How awareness of ethical values can be of help to oppose the irresponsible demands from the client’s side.

Veterinary activities are often also a business. Many veterinarians are private practitioners. They are not only the good helpers, but also need to make money. It is not in itself morally reprehensible to be concerned with good income and a successful career, but ethics can be helpful to avoid unaccountable private interests?

Professional Ethical Guidelines
This concerns ethical requirements and obligations relating to a specific type of profession. Professional Ethical Guidelines will help the individual practitioner to have the ideal purpose of the practice in mind. The guidelines have three main perspectives:

- One is related to that which is the profession’s social task.

- The second is rooted in the relationship between the profession practitioner and the individual patient or client.

- The third is intended to regulate relations among the profession practitioners.

The professional ethical guidelines are practically oriented and have good results as its objective. The guidelines are important both because they provide guidelines for what constitutes good professional help, thus helping to ensure the customer service quality, and as a source to the professional's understanding of their professional and moral identity. Used indiscriminately, they can however be too instrumental and general. They provide little action guidance in specific situations.

I will go through parts of the veterinary association's ethical guidelines and associate them with the values and motives we talked about initially.

Follow Up lecture – 3 hours x 2
The main theme here will be practical professional ethical problems. The problems will be taken from the veterinary medicinal legal advice, DNV and from problems that students or teachers have experienced in the clinic. If students have good professional ethical issues they wish to discuss, these will be raised. There is much to learn by reflecting on own experiences. It is vital that the problems primarily revolve around professional ethics and not animal ethics.
- although animal ethics in many situations will be part of a professional ethical issue, this instruction will focus on professional ethics. Students will gain insight into two types of ethical theory. The first is about how we can work to train our moral judgment. The second presents a possible tool for practical reflection on ethical issues.

**Discernment Ethics** is not primarily action-oriented, but adds weight on the person behind the action. The point here is that students will be aware of how the ability to assess a situation in a positive way is related to the individual’s characteristics and attitudes. Moral judgment is not something that is innate, but something that is formed through learning and that such learning happens best in community with others. The importance of learning from our own and others' experiences and to be able to rely on your judgment will also be emphasized.

**Casuistic** is a way to reflect ethically, and is close to the general human and intuitive way we often reflect on moral issues. What we do when we find ourselves in a difficult situation, is to think what we did then, and how it worked. The casuistic focuses precisely on solving specific problems through looking at old cases that are recognized as acceptable or good solutions. Such solutions are often called role models, examples, standards or scales of what is considered as appropriate behavior or attitude. Widely used within the legal system. The importance of good examples - not as an illustration of what is the right thing to do, but as a moral scale for how we should be or act. By studying practical situations or examples and compare them with situations we’ve been in before, we can become aware of what values or interests that are at stake in a situation.

Contact: Cathrine Grimsgård (external lecturer)

**Epidemiology** (1 week, 1.5 ECTS Credits)

**Aim and learning outcomes**

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.1, 1.3, 1.4, 1.5, 1.6, 1.8, 1.9, 1.10, 1.12, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 3.1, 3.5, 3.7, 3.8, 3.14, 3.18, 3.19, 3.20

After completing the course the student should:

Have knowledge and skills in the use of quantitative epidemiological methods to detect, monitor and combat infectious diseases in a population.

- Understand how infectious animal diseases and zoonoses spread in populations and could simulate the path of an infectious disease in simple simulation models.

- Recognize the importance of zero access of exotic diseases and to propose appropriate measures to prevent such diseases.

- Be able to find information online about both diseases and the relevant epidemiological tool for assessing sample sizes, diagnostic test characteristics etc.

**Content**

- Basal epidemiological principles and methods.
• Simulation of epidemics.
• Case Assignment: Surveillance and control of a contagious infectious disease.

Teaching methods and approach
Problem-based learning with the following pattern:
• Day 1: Tasks related to basic epidemiology with a review the same day.
• Day 2: Infection Epidemiology. Simulation of progresses under various conditions.
• Day 3-5: Working with an assigned group task - one per five students. The supervisor is the whole time available when needed.
• Day 5: Presentation and discussion of the task. After lunch.

Learning Materials
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

Recommended previous knowledge
Blocks earlier in the programme. Especially we recommend a repetition of material taught in statistics and epidemiology in the PopMed-block.

Requirements for personal equipment
Each group of 5 students should have access to a computer, preferably a laptop. All: Calculator with basic statistics function.

HMS
No specific procedures for this block

Compulsory teaching and programme requirements
Presence all week, active participation in the group work including presentation and discussion Friday and the following Monday.

Examination
Presentation of the group's task. Approval requires that the solution of the task and presentation gives a proper discussion of all relevant sub-questions and proposes and justifies appropriate measures for that particular case.

Contact
Block Leader: Rolf Bjerke Larssen, EPI-Center
Head of Department: Olav Reksen, Prodmed

Production Animal Clinical Science, Equine Medicine and Small Animal Medicine

Aim and Learning Outcomes
Provide students with theoretical knowledge and clinical skills in disease development, diagnosis, treatment and preventive health care in production animals, horses and small animals.
The block forms the basis so that the student after completing the course will master the following «Day One Skills» by EAEVE: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11, 1.12, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.17, 3.18, 3.19, 3.20

After completing the course the student should:

- Show respect for animals and humans and have an understanding of owners' relationships with the animals.
- Be familiar with animals' welfare needs.
- Emphasize economic considerations.
- Work independently.
- Communicate and collaborate with animal owners and colleagues and other professionals.
- Gather and assess expert information.
- Know their professional limitations and seek help when needed.
- Render knowledge of important diseases, diagnostic tools and treatment methods in common species.
- Adopt anamnesis and obtain relevant information about the livestock.
- Handle animals in a safe manner.
- Perform clinical examination and evaluate findings.
- Take out relevant tests and interpret test results.
- Set up a relevant list of differential diagnoses and diagnostic.
- Assess prognosis.
- Carry out or suggest treatment.
- Provide emergency assistance, including obstetrics.
- Assess the need for and apply principles of livestock diagnostics.
- Suggest preventive measures in production animal herds.
- Write detailed journals, reports and certificates that meet applicable regulations.
- Implement practical hygiene measures and infection prevention.
• Be aware of the importance of food safety in the food chain.

• Prevent zoonoses.

**Pathophysiology**

**Interdisciplinary case reviews based on Pathophysiology:**
During 8th and 9th semester it will be presented 8 different cases of 90 minutes from central organ systems such as the nervous system, endocrinology, cardiovascular circulation, respiration, kidney / urinary tract, gastrointestinal, liver and reproduction. Various professionals will present the relevant cases from their respective field. Pathophysiology will be central, and in addition to a clinician and a physiologist it may, depending on the type of case, also be appropriate to have a presentation from a pathologist, clinical pathologist, immunologist, pharmacology, etc. There will be plenty of time for questions and discussion among all those present. The reviews will be open to all students and staff, but aimed at students in 8th and 9th semester.

Block Leader: Karin Zimmer
Head of Department: Mona Aleksandersen

**Small animal medicine and equine medicine (9 weeks + reading weeks, 16.5 ECTS Credits)**

**Content:**
- Anesthesia and Radiology
- Small Animal Medicine
  - Internal Medicine
  - Obstetrics/disease in newborn animals
  - Surgery
  - Outpatient clinic
- Equine Medicine
  - Internal Medicine
  - Surgery
  - Foal Diseases (including neonatal disorders)

**Teaching methods and approach:**
Teaching takes place in small groups in rotations in the clinics at the Division for Small Animal Diseases and the Division for Equine Diseases in 8th and 9th semesters (5 weeks in 8th semester and 4 weeks in 9th semester per student). Students are a total of 2 weeks at the surgical clinic for small animals (1+1), 2 weeks at the medical clinic for small animals (1+1), two weeks at the outpatient clinic for small animals (1+1) and 3 weeks at the horse clinic (2+1).

**Small Animal Medicine**
The field includes internal medicine and surgical diseases in small animals, mainly dogs and cats, but also rabbits, rodents and cage birds that are kept as pets. Overview lectures on disease development, diagnosis and treatment are given. Students rotate at the medical and the surgical clinic at the outpatient clinic. Students make independent clinical examinations of patients under the supervision of a veterinarian. Instruction in clinical laboratory techniques and diagnostics is also given. In addition to the purely medical disciplines, an introduction to
preventive health care, environmental issues, management, owner’s behavior and communication and ethics is also given. As far as is practically possible, the castration of tomcats and ovarian hysterectomy of female cats will be offered. Radiology teaching is an integral part of the rotation. There is a theme day on bird and rodent medicine in the first week of the 9th semester. Students will also have 1-3 evening shifts / night shifts per clinical week. This will include weekends and red letter days. Shift rotations are set up by the education coordinator.

Equine Medicine
The field includes internal medicine and surgical diseases in horses, as well as foal diseases. Radiology is an integral part of the rotation. Students make independent clinical examinations of patients under the supervision of a veterinarian.

Propaedeutic Course and Introduction to Diagnostic Work and Pathology
See 6th and 7th semester. Themes from this teaching will also be examined at the clinical examination in 9th semester.

Learning Materials:
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

Recommended previous knowledge
Blocks earlier in the program
At the examination in 9th semester themes from the entire veterinary curriculum may be examined to the extent it is relevant to the issue / case which is examined.

Requirements for personal equipment
Work clothes, protective footwear, stethoscope and scissors.

Compulsory teaching and programme requirements:
Courses and clinical service is mandatory. Weekend and night shifts are also mandatory.

Absence:
A maximum of one day of valid and documented absence per week is allowed. It is not possible to accumulate days. Valid absences beyond this must be re-taken in accordance with the Head of Section’s instructions.

The reason for the above is that the rotations provide the skill training which is necessary for professional practice. In case of absence beyond what is accepted, the number of missing days must be re-taken, following rules found in this document, "Clinical Rotation 8th and 9 semester, information and form " of the quality system. Students will not be able to take the clinical exam until the missing time/days are re-taken.

Examination
Programme requirements: Students must pass each clinical period and ensure that documentation is completed. Regulations and forms are found in the document: "Clinical Validation 8th and 9th semester". To pass the clinical period, the student must have been sufficiently present and have shown that they possess widely acceptable professional and ethical standards. The form is handed out on the last day of the rotation. Students who have not passed the clinical period will not be allowed to take the exam.
HMS
A first aid kit is available. Fire Training is provided in the clinics. Students are encouraged to wear gloves when handling medications and other risk materials, allergens and when handling animals suspected of being infected by a zoonosis.

Rotation Horse Clinic
See the "Rules for handling large production animals and horses at NVH" and "Basic rules regarding handling of animals" (see Hippocampus). Introduction to clinic routines are discussed orally. Students must acknowledge that they have received this training.

Rotation Small Animal Clinic
The greatest health risk is bite wounds by animals. Handling and the use of muzzle bands in risk situations are emphasized. Students use gloves when handling medications and when required.

Radiology
In the theoretical radiology review in 6th semester, risks and protection are reviewed. In the practical lessons as from 8th semester, students are shown in practice how to protect themselves. Students must follow the rules below. There is a separate Radiation Protection Manager at the department.
- Using lead-coat and thyroid protection when the student assists in the X-ray room.
- Female owners / students who are pregnant or suspect pregnancy, shall not participate in taking pictures.
- Owners younger than 18 should not assist.
- There shall not be unnecessary people inside the X-ray room when exposed.
- The use of sedation / restraints to reduce the number of images and to reduce the risk of injuries may be used on troubled patients.

Practical / oral examination in Small Animal Medicine and Equine Medicine: Students are automatically registered for the exam in the Small Animal Medicine and Equine Medicine. There is one partial examination in Small Animal diseases and one partial examination in horse diseases. Both parts must be passed in order to pass the subject.

Examination is held on 2 different days for each student with a clinical test on one of the partial examinations (either in the field of small animal medicine or the field of equine medicine) and an oral examination in the second field. Lots are drawn to decide this at the beginning of the examination period by the SFA.

Re-sit examination:
Students must only re-sit the failed partial examination. There will be no new drawing of lots, ie if one fails on the clinical test; one gets a new clinical examination.

Contact
Block Leader, Small Animal Medicine: Anna Eggertsdottir
Course Coordinator, Equine Medicine: Carl Fredrik Ihler
Course Coordinator, Radiology: Magnus Rørvik
Head of Department: Ann Margaretr Grøndahl
Head of Section, Small Animal Medicine: Anna Eggertsdottir
Production animal clinical sciences (9 weeks + reading period, 16.5 ECTS Credits)

Content:

- Medical disorders in production animals.
- Surgical diseases in production animals.
- Obstetric disorders, puerperium disorders and diseases in new born animals in production animals.
- Reproduction in production animals, dogs, cats and horses.
- Obstetrics in horses.
- Ambulatory activities on production animals and horses.
- Livestock Medicine on production animals.
- Poultry Medicine.
- Field work in Sandnes in sheep diseases and livestock medicine.

Teaching methods and approach:
The teaching is given as lectures in poultry during the first week of the 8th semester, Rotation Teaching in small groups at ProdMed’s clinics and ambulatory activity in 8th and 9th semester (4 weeks + reading week in 8th semester and 4 weeks in the 9th semester per student). Field work in Sandnes in sheep diseases and livestock medicine in 8th semester (1 week). Weekend and night shifts at ProdMed’s clinics and ambulatory services.

Medicine/Surgery/Obstetrics Clinic
Instruction provided on the Medical clinic includes internal medicine, surgical and obstetric disorders in cattle, sheep and pigs. Puerperium diseases, newborn animal diseases and udder diseases are also included. Each student is a total of 3 weeks at this clinic (2 +1 in respectively 8th and 9th semester). Students have to help in the clinics, where they will be given patients who they will examine and treat, and under guidance they will even perform surgeries on animals. It will, as far as practicable implement, also be offered caesarean section on ewe. Students will be extracted from the other rotations.

Reproduction Clinic
Teaching includes reproductive physiology, gynecology, andrology, reproductive endocrinology. Instruction is provided partly at the department's stationary clinics and partly on livestock visits. Each student is a total of 2 weeks at this clinic (1 +1 in respectively 8th and 9th semester). In this clinic, the reproduction of horses, dogs and cats, in addition to cows, sheep and pigs, will be covered.

Ambulatory Activity
The ambulatory clinic serves livestock farms in Oslo, Bærum, Lørenskog, Skedsmo and Nittedal, as well as UMB’s cowsheds. Students receive training in ambulatory practice under realistic conditions on production animals and horses. The course lasts for two weeks per student.

Livestock Medicine
Teaching takes place in the form of livestock visits and working with tasks in connection with this. Teaching lasts for 1 week per student and takes place during the 8th semester.
**Poultry Medicine**
Instruction is provided in the form of lectures and 1 day in livestock medicine. The autopsy in poultry in the mixed clinical rotation in 8th semester is mandatory. Students are responsible for making sure to contact the course coordinator so that it is possible to re-take this during the current semester. Otherwise, it must be retaken the next year. The student will not get a valid grade in this subject until the autopsy is taken.

**Sheep Diseases and Livestock Medicine**
Teaching also takes place in the Sheep Section in 8th semester in Sandnes. In addition to teaching using the section's own livestock and pathological diagnosis of incoming material, lectures, seminars and livestock visits to sheep herds are also provided.

**Propaedeutic Course and Introduction to Diagnostic Work and Pathology**
See 6th and 7th semester. Themes from this teaching will also be examined at the clinical examination in 9th semester.

**Learning Materials:**
Recommended literature and detailed description of the course are found at the block’s home area on Hippocampus.

**Recommended previous knowledge**
Blocks earlier in the program
At the examination in the 9th semester, themes from the entire veterinary curriculum may be examined, to the extent that this is relevant to the issue / case which is being examined.

**Requirements for personal equipment**
Work clothes, protective footwear, stethoscope and scissors.

**Compulsory teaching and programme requirements:**
Poultry autopsy in the mixed clinical rotation: see the rules under poultry medicine.

**Compulsory teaching and programme requirements:**
Courses and clinical service is mandatory. Weekend and night shifts are also mandatory.

**HMS:**
Quarantine: Students may not have been abroad for the last 72 hours before the clinical teaching in production animal clinical science. See the "Rules for handling large production animals and horses at NVH” and "Basic rules regarding handling of animals" (see Hippocampus). A first aid kit is available. Fire Training is provided in the clinics. Students are encouraged to wear gloves when handling medications and other risk materials, allergens and when handling animals suspected of being infected by a zoonosis.
There are separate infection locks by the entrance to the clinics. Overalls, gloves and boots are available by the infection locks and at the visits to livestock. Investment in a new hoof box reduces the risk of injury. ProdMed strives to have groups no larger than six students when handling large animals.

Stationary Clinic: Clinic Procedures are discussed orally at the first visit (See Hippocampus). Production Animal Clinical Science has prepared a briefing on hygiene and safety regarding ProdMeds clinical activities. Excerpts from this are handed out.
Reproduction: Gloves are used when examining organs from slaughterhouses. Gloves are used in the examination of animals and one must change gloves for each animal. The Ambulatory clinic has created its own safety procedures (See Hippocampus). These are reviewed orally at the beginning of 8th semester.

The Section of Sheep Diseases have prepared a document on protection against the spreading of infection. Procedures for the various activities are posted on the wall in any room that students congregate. Students are not given permission to use the autopsy saw. Students are given thorough training in fire drill upon arrival and must sign that they know the escape routes in case of fire. Students who are pregnant must contact the section on arrival. They are given a customized program, so that the risk of coming into contact with dangerous material that could cause miscarriage, such as Listeria and Toxoplasmosis, is minimized.

Absence:
A maximum of one day of valid and documented absences per week is allowed. It is not possible to accumulate days. Valid absences beyond this must be re-taken in accordance with the Head of Section’s instructions. The reason is that this is skill training necessary for professional practice. In case of absence beyond what is accepted, the number of missing days must be re-taken, following rules found in this document, "Clinical Rotation 8th and 9 semester, information and form " of the quality system. Students will not be able to take the exam until the missing time in the clinics is re-taken.

Examination
Programme Requirements: Students must pass each clinical period and ensure that documentation is completed. Regulations and forms are found in the document: “Clinical Validation 8th and 9th semester”. To pass the clinical period, the student must have been sufficiently present and shown to possess widely acceptable professional and ethical standards. The form is handed out at the last day of the rotation. Students who have not passed the clinical period will not be allowed to take the exam.

Practical / oral examination in Production Animal Clinical Science: Clinical examination and oral theory examination (2 examination stations are used; candidates come up in clinic either in the field of medicine / surgery or reproductive physiology / obstetrics and a theory examination in the second field or in preventive health care / livestock medicine / poultry medicine). Students come up in groups of up to 8 and are examined individually. An overall grade is given for the entire exam. If the average grade is not a whole grade, the grade in the clinical examination shall count most. A fail in the first part will cause the student to be disqualified from taking the second examination.

Contact
Block Leader: Terje Fjeldaas
Course coordinator, Internal Medicine, Surgery and Obstetrics: Terje Fjeldaas
Course coordinator, Reproduction: Wenche Farstad, Knut Karlberg
Course coordinator, Ambulatory: Hans Petter Kjæstad
Course coordinator, Obstetrics: Olav Reksen
Course coordinator, Sheep Diseases and Livestock Medicine: Martha Ulvund
Course coordinator, Livestock Medicine on Production Animals: Olav Reksen
Course coordinator, Poultry Medicine: Tore Engen (pathology) and Randi Moe
Group Contact: Kirsten Bredeveien
Head of Department: Olav Reksen ProdMed
Clinical Examinations: autumn and spring candidates.
Conditions for registration and further progression

§ 7.12 and 7.14 of the Regulations deals with the practical / clinical exams § 7.14 authorizes that the special rules for continuing the programme must be stated in the curriculum. There will be no separate re-sit examinations for those practical / clinical exams that normally take place at 2 periods per year. Students who fail must wait until the next scheduled exam period (1/2 years).

Students who fail in both the clinical examinations (Production Animal Clinical Science and Small Animal Medicine and Equine Medicine) may not commence the differentiation year. This means that students who fail in the Production Animal Clinical Science examination + one of the partial examinations in Small Animal Medicine and Equine Medicine do not get to start the differentiating year

If the student has not passed one of the clinical examinations, the following applies:
• The student must have passed (partial) examinations in the subject area he/she has chosen as differentiation to proceed in the study.
• The student re-takes the failed exam the next time it is held, i.e. in about ½ year.
• There is a requirement for additional clinical training before the re-sit examination (§ 7.14)
• In Small Animal Medicine and Equine Medicine student must only re-take the failed partial examination. There will be no new drawing, ie if one fails in clinic one gets a new clinical examination. In Production Animal Clinical Science there will be a new drawing in case of repetition of an examination.

Study Committee sat the extent of additional clinic service to 1-2 weeks at each of the two clinical departments - or spread over the semester. Candidates who have failed the clinical examination must contact the relevant course coordinator (Løken, Eggertsdottir, Ihler). The course coordinator notifies SFA when the candidate has received approval for additional clinical practice. Candidates participate in the re-drawing in Production Animal Clinical Science, and goes up to the re-sit examination on the date SFA sets.

Guidelines for the distribution of autumn and spring graduates

Students may, within certain limits, choose whether they want to be autumn or spring graduates, i.e. take the clinical examinations in the 9th autumn semester and start right on the differentiation year, or take a "standby semester" in 10th semester and take the clinical examinations at the end of this semester and be spring candidates. The clinics have set a maximum limit of 40 examinees per semester, to make it practical to hold the clinical exams.

Students then can choose between two options:

1) "Autumn Candidates":
Clinical examinations after the common part are implemented in the 9th semester. The differentiation year is implemented in 10th and 11th semester.

2) "Spring Candidates":

Students then can choose between two options:
Clinical examinations are implemented in 10th semester. The differentiation year is implemented in 11th and 12th semester. These students have no regular teaching in 10th semester.

Students choose when they want to take their clinical examinations at the same time as they apply for admission to the differentiation they wish to follow i.e. in the latter part of 8th semester.

There can be a maximum of 45 students in each option. If there are more than 45 who choose one of the options, students are allocated according to the following guidelines:

Students have priority in the selection of examination semester in the following cases:
- Pregnancy / maternity leave during 9th and / or 10th semester
- Special social needs (e.g. specific care responsibilities, illness / death in the family, etc.)
- Other circumstances where weighty reasons indicate why the student should receive their primary choice.

The issue of priority is determined by the Head of Studies after an individual evaluation.

When the question of priority cannot determine the distribution, a draw is conducted of the students who have requested a particular option that does not have places for everyone.

Students should be informed about the allocation within the end of the 8th semester.
Differentiation year in the veterinary programme 60 ECTS Credits

General information about the differentiation year:

The following number of students may be admitted to the 5 following differentiation directions:

- Small Animal Medicine 25 places (Head of Department: SportFaMed)
- Equine Medicine 10 places (Head of Department: SportFaMed)
- Production Animal Clinical Science and Food Safety, 35 places (Head of Department: ProdMed)
- Aquatic Medicine 12 places (Head of Department: BasAm)
- Research Project Varies (Head of Department: BasAm)

The differentiation year runs over 2 semesters (40 weeks, 60 credits). The diploma will say: Specialization in Aquatic Medicine 60 credits (equivalent for the other directions) and the title of the specialization thesis in Norwegian and English.

Students can complete the differentiation year in 10th and 11th semester or in 11th and 12th semester. This depends mainly on when students choose to take the clinical examinations.

The differentiation year consists of three parts:

- Joint compulsory part (8.5 ECTS Credits)
- Direction Specific: (51.5 ECTS Credits)
  - Mandatory part for the direction
  - Optional part
  - Specialization Thesis

TOTAL 40 weeks (60 ECTS Credits)

HMS
See the relevant subject area earlier in the curriculum.

Joint section
Mandatory for all: 8.5 ECTS Credits
Research methodology and scientific writing (KIFO) 2 ECTS Credits

Aim and learning outcomes
The course will provide students with practical and scientific methodological basis for a good start and implementation of a thesis at NVH.

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.8, 1.10, 2.1, 2.2, 2.3,
After completing the course the student should:

Have the necessary methodological expertise to conduct a thesis at NVH.

- Be able to make a good plan for the work with a thesis based on the standard protocol for NVH.
- Be able to make appropriate cover letter and registration form for the completion of a questionnaire relating to own, in-depth study as well as relevant database in accordance with the standard template.
- Be able to explain the main types of research design and relevant statistical methods, and know which designs and analysis methods that is appropriate in a thesis.
- Know the principles of scientific writing, have established a Word file for writing the thesis based on the default template, and use RefWorks to store references and create reference lists.

Content
- Scientific writing: principles and practical assignments.
- Scientific method: planning and design of research projects.
- Questionnaires: planning and execution.
- Scientific literature: searching in databases and the use of reference tools.
- Data management: establishment and use of own database.
- Statistics: overview of relevant figures, tables and analysis methods.

Learning Materials:
- Copies on paper and electronic slides of all the images.
- Copy file of all template files for use in in-depth studies at NVH.

Recommended previous knowledge
- Students must have clarified the specific purpose of the task before the course starts.

Requirements for personal equipment
- Personal laptop.

Compulsory teaching and programme requirements:
- There is no requirement for attendance.

Assessment:
The course is passed when the following requirements are met

- Passing the multiple choice test on the last day of the course.
- Submission of revised protocol after the presentation and joint discussion with the supervisor and the course coordinator.
If the student fails the multiple choice test, a new test is carried out and must be passed within three weeks or in connection with the course the following semester.

Contact: Rolf Bjerke Larssen
Head of Department: Olav Reksen

**Leadership and management of veterinary practice 3 ECTS**

**Credits**

**Aim and learning outcomes:**
The course will provide students with an introduction to the working life as a veterinarian, where the vet can enter one or multiple roles as employee, self-employed, manager, clinic owners and professionals. The veterinarian must exercise this in interaction with colleagues, managers, employees, clients and other professionals.

The block forms the basis so that the student after completing the course will master the following «Day one skills» by EAEVE: 1.1, 1.2, 1.3, 1.4, 1.5, 1.7, 1.8, 1.9, 1.10, 1.11, 1.12

A) After completing the course the student should:

- Be reflective in relation to a leadership role as a veterinarian. This involves having thought through their own behavior in groups, learned about typical group processes and handling of important topics such as confidence-building and conflict management.

B and C) After completing the course the student should:

- Be well oriented about the society and working life he/she will meet after they complete their studies and in that way be able to make a conscious and wise career choice.

**Content:**

A) Management and teamwork

Topics that will be covered are:

- Leadership theories with special emphasis on the management of knowledge workers
- Group processes, as a leader and team member
- Trust and conflict management
- Team roles and team development

The program provides knowledge and skills on current issues actual for the students regarding team work and leadership in their later work careers. The program combines theoretical perspectives with experiential learning, allowing students to receive both practical and theoretical understanding of the relevant issues through lectures, exercises and group work. The course will in this respect also provide a high degree of personalized learning, where each student has the opportunity to think systematically through what it means to lead and work as a veterinarian.

B) Self-employed/Facing working life

Give introduction and basic knowledge for starting their own businesses and provide useful information on matters that will meet students in the workplace.

Topics covered:

- How to establish a business
- Election of corporate form
- Taxes
• Laws/regulations for businesses and employees
• Expense types (car, travel etc.)
• Government schemes for sickness benefits, parental benefits, maternity, layoff etc.
• Prepare a business plan
• Strategy Models for marketing and pricing of services/products
• Concepts in Accounting and Finance

C) Communication between veterinarian and client
Communication skills
Role play
Dealing with angry clients
Relation to other professions and society

Learning materials (Recommended reading):
Featured URLs:
• http://www.eaeve.org/about-eaeve/history-and-aims.html
• http://www.live.ac.uk/documents/DOS_handbook.pdf
• http://www.ebvs.org/
• http://www.oie.int/
• http://www.oie.int/fileadmin/Home/eng/Support_to_OIE_Members/Vet_Edu_AHG/DAY_1/DAYONE-B-ang-vC.pdf
• http://abrionline.org/article.php?id=75
• https://www.tekna.no/ikbViewer/Content/793924/Forslag%20til%20veileder%20til%20journalforskriften%20for%20dyrehelsepersonell.pdf
• http://www.rcvs.org.uk/education/postgraduate-education-for-veterinary-surgeons/certificates/
• http://www.esavs.org/
• http://www.vetnett.no/videreutdanning-og-spesialisering
• http://www.pdsa.org.uk/
• http://vetrecordjobs.com/vet-record-jobs/vet-veterinary-nurse-jobs.html
• http://www.rcvs.org.uk/advice-and-guidance/guide-to-professional-conducts-for-veterinary-surgeons/?s=1
• http://www.vetnett.no/default.asp?V_ITEM_ID=1423
Clients, Pets and Vets Communication and management: Carl Gorman ISBN 1-903152-04-6, Kapittel 1, 2, 3, 5, 7, 8

Requirements for own equipment:
No

Mandatory teaching and program requirements:
A) Teaching is mandatory

B og C) Teaching is mandatory. With valid absences beyond one day, the student will have to submit assignments in the course. With unauthorized absences the course must be followed the following year.
Evaluation:
A) The students give a presentation on day 5 on a subject from the curriculum and instruction. The presentation takes place in groups, and is essential to pass the course.

B og C) must actively participate in the teaching and role play

Contact:
A) Management and team work: Per Einar Granum
  External lecturer: Trond Kjærstad

B) Clinic operations and self-employment: Bård Johansen

C) Communication veterinarian and client: Åshild Roaldset

Administrative manager for B and C: Ann Margaret Grøndahl

Biosecurity 2 ECTS Credits (1 week)

English title: Biosecurity

Aim and learning outcomes:
The course will provide the student with basic knowledge about biosecurity in veterinary medicine.

After completing the course the student should be able to know:
  • The principles of biosecurity.
  • An understanding of how the principles of biosecurity can be used in practice.
  • Understanding the importance of a responsible approach to infection control.

Content:
Principles within biosecurity, protection regarding zoonoses; animal and fish diseases; modes of infection and transmission routes; protection against new diseases and infection to Norway; barriers; the veterinarian’s role in infection control. Teaching is provided in the form of lectures and group work.

Learning materials:
Recommended literature and detailed description of the course is on the block’s home directory on Hippocampus.

Recommended prerequisites:
The examination in veterinary microbiology and parasitology is required

Requirements for own equipment
No special requirements

Mandatory teaching and program requirements:
Lectures, group work and presentations are mandatory.
Rules for absence: Up to 20% absenteeism is accepted. Failure to give a presentation requires a medical certificate.
Evaluation: Presentations and reports will be evaluated.
Evaluation: Liv Marit Rørvik

Head of department: Per Einar Granum

State veterinary medicine: Assignment
Part of the subject state veterinary medicine and constitutes 1.5 ECTS credits of the course credits. See earlier in the study plan.

Aim and learning outcomes:
Students will study in depth a topic in state veterinary medicine and write a thesis with relevance to the depth direction they have chosen. This will provide a deeper and more in-depth knowledge in selected regulations within the relevant field/animal.

Study program:
A list of suggested topics will be developed, and students can even suggest topics which must be approved by the teacher in advance.

Academic requirements and examination
Approved submission of thesis and practical/oral examination

Contact: Marit Nesje

Head of department: Olav Reksen

Elective courses for all/some:
Laboratory Animals 1 week, 1.5 ECTS Credits

Aims:
to create interest and knowledge about the diverse roles that a laboratory veterinarian has.
to increase student’s competence in the field of laboratory animals.
to provide students with an ethical perspective and expertise about the use of animals in experiments.
to increase students’ knowledge about the care and treatment of rodents and rabbits both as laboratory animals and companion animals.

Learning outcome:
The differentiation course in laboratory animals will give students a deeper understanding of the subject laboratory animals.

After completing the course the student should:

• Understand the diverse roles that a laboratory veterinarian has.
• Have a reflective stance on important topics in laboratory animals, such as ethics, quality assurance, operation of an laboratory animal unit, legislation and publications.
• Be able to debate animal welfare, and have a critical look at the arguments around animal welfare.
• Know the key principles for the care and treatment of rodents and rabbits both as laboratory- and companion animals.
Content:
- The course is an advanced course that builds on the compulsory course in laboratory animals in Block 10, 6th semester. The course will immerse in some of the topics in laboratory animals, such as ethics, quality assurance, operation of a laboratory animal unit, legislation and publications. It will also elaborate on topics within the care and treatment of rodents and rabbits both as laboratory- and companion animals.

Program
The tuition is both theoretical (lectures) and practical (tour in several different laboratory animal units in Oslo and practical training in handling and techniques on models, live animals and cadavers). It is facilitated time for independent work on group assignments.

Mandatory teaching and program requirements:
Requirement of approved group assignment
Requirement of 80% attendance

Contact
Kristine Eraker Aasland Hansen.

Insemination of production animals 1 week, 1.5 ECTS Credits

Aim: To provide the necessary theoretical knowledge and practical skills to carry out insemination.

Learning outcome
The student shall be able to inseminate cattle after completing the course.

Content
The content comprises of theoretical lessons and practical/clinical exercises in the artificial insemination of cattle. In addition, the theoretical background of insemination of sheep/goats and pigs is included.
6 per group at Rudshøgda and 8 per group in Egersund, max 2 groups per week. For students in other directions than Production Animal clinical sciences and Food safety it must be documented by the employer that the student has received a commitment as an inseminator. There will be requirements for the extent and duration.

The courses are normally arranged in August and March

The following students may apply for the course:

1. Candidates with a major in Production Animal clinical sciences and Food safety.

2. Candidates with other specialization directions that can demonstrate that they have a job offer within insemination practices.

Geno sets the following requirements to practice within 1 year after the course:
Considered met by students with a specialization in production animal clinical sciences and food safety (ProdMat), since these students practice skills in teaching at ProdMed.

- Others have to have inseminated at least 100 animals and achieved a satisfactory result, within a year after completing the course. (not current percentage higher than 10% below land agent.)

Those who have completed an insemination course in NVH or Geno’s direction and do not meet the practice requirement must be set to a one-day review test to start insemination activities for Geno.

Please refer to the guidelines for the allocation and application.

**HSE**

HSE rules set limits to the number of participants per course. Students must abide by the rules at the slaughterhouse and guidance from the teacher.

**Mandatory teaching and program requirements:**

100% presence. Practical test at the end of the course.

**Assessment of the optional part**

Presence and mandatory activities is required to be completed to receive credit. It is the student’s responsibility to ensure that the optional part is carried out, and there will be no reimbursement of tuition for this unless the student can demonstrate legitimate absence.

The one who is responsible for the course gives diploma/certificate and/or acknowledgement of the evaluation form in which part is listed. Only 100% completed elective program is approved. It is not possible to take more credits than the differentiation year adds up to, i.e. 60 credits in total for the differentiation year, (including 1.5 ECST for the operation in state veterinary medicine).

**The Individual Differentiation Directions**

**Differentiation in production Animal clinical Sciences and Food safety (51,5 ECTS)**

**English name:** Production Animal Medicine and Food Safety

**Clinical part: 16 ECTS**

**Practical work with herds, ambulatory clinic (6 ECTS, 3 weeks)**

**Content**

Practical clinical work with cattle and pigs, as well as some sheep, goat and horse practice

**Learning outcome**

After completing the course the students will

- Have good knowledge and skills in practical clinical work on production animal, both in individual animals and at herd level.
**Program**
The teaching takes place in small groups with a lot of self-study and individualized training under supervision. Systematic use of crew data and participation in the evaluation of crew problems will naturally be included in the program.

**Mandatory teaching and program requirements:**
The required attendance is 4 of 5 days each week. In addition, the student must participate in on-call duty minimum 4 nights and one weekend day. It also requires the approval of three submitted records/crew reports.

**Clinical reproduction (2 ECTS)**

**Content**
The course is a week-long and includes clinical work in the reproduction clinic and in cattle herds.

**Learning outcome**
After completing the course the students will
- Be able to provide an overview of clinical reproduction in cattle, i.e. perform sexual health control on cattle, could diagnose the stage of normal oestrus cycle, point out abnormalities and deviations from the normal oestrus- and pregnancy progress and diagnose pregnancy from 5 weeks on cows.
- Be able to make a scientific study of reproductive problems in both dairy and beef cattle herds.
- Have good skills in investigation of individual animals and be able to see this in the context of herd status in cattle.
- Be able to perform a fertility study of male animals with extraction of semen.
- Be able to explain the ultrasound examination of the genitalia in cattle and principles of embryo transfer.

**Program**
The teaching consists of students themselves examining the reproductive organs of cows both by palpation and by ultrasound. It will be carried out visits in a beef cattle farm and in 1-2 dairy farms. Students also try semen collection in male animals and learn the principles for assessment of sperm quality with emphasis on ruminants. A part of the learning consists of solving group exercises focusing on reproductive issues related herd of cattle.

**Mandatory teaching and program requirements:**
The required attendance is 4 out of 5 days, and performing mandatory group assignments

**Clinical specialization in stationary clinic for medicine/surgery/obstetrics (2 ECTS, total 1 week)**

**Content and aim**
The specialization week will offer active duty with the clinical care of cattle, pigs and some sheep/goats. The aim is also to provide instruction in some central issues in production animal practices. Students will be given greater responsibility in relation to previous clinic periods and they will partially participate in the teaching of younger students.
Learning outcome
After completing the course the students will
• Have acquired a good knowledge and skills in practical clinical work on all common species of production animals, and know how to diagnose, assess and treat sick animals.
• Have received some training in the guidance of clinic work and the dissemination of knowledge about production animal medicine.

Program
The specialization week will consist of active duty in the stationary clinic for medicine, surgery and obstetrics from 0815 to 1500. Students will preferably be distributed evenly throughout the fall and spring semester in groups of 2 students, and to some extent participate in the teaching of students in 8th and 9th semester. The work will include examination of patients, assessment of additional tests, treatment, journal writing and discussion of patient outcome. During the week, students present a theme in production animal medicine for the younger students, clinic veterinarians and other interested parties. For students who may have active duty for weeks without younger students, we can’t offer participation in education, but the opportunity for independent clinical work will be good.

Mandatory teaching and program requirements:
The required is attendance and performing assigned duties in 4 of the 5 days.

Ruminant practice and diseases around lambing (4 ECTS, 2 weeks)

Aim and learning outcome
To achieve experience in sheep/goat practice through as much sole responsibility as possible for case history, disease diagnosis and treatment, obstetrics, caesarean section, autopsy follow-up and feedback and advice to farmers.

After completing the course the students will
• Have sufficient expertise and experience to work in sheep/goat practice, ie. have a good overview of relevant diseases and approach and handling of these.

Content
The course focuses on the diagnosis and treatment of conditions and diseases around lambing at ewe and lamb.

Program
Teaching takes place at NVHs section in Sandnes. Teaching takes place as guided independent study in the sheep house around lambing (obstetrics, weak lambs, treatments), cesarean section, clinical examination of pregnant animals, autopsies of sheep and lambs, follow-up in the laboratory etc. There will be prepared reports to the farmer, and provided overviews of individual topics.

Mandatory teaching and program requirements:
Mandatory for specialization students. All students must attend night shift. There are expected long days in the barn. The requirements for attendance are 9 of 10 working days.
Counseling and Supervision in herds (2 ECTS, 1 week)

Aim and learning outcome
Gain practical knowledge and skills in assessment and counseling work in swine herds, poultry operations (chicken and human consumption eggs), cattle, sheep and fur farming, and practical supervision in selected herds.

After completing the course the student should have good basis for:
• Engage independent consult ing work in pig and poultry farm herds.
• Independent work for FSA on the livestock chain (food safety, disease control, animal health, animal welfare, livestock hygiene, production hygiene).

Content
The teaching takes place at NVHs section in Sandnes. In crew counseling in swine livestock and poultry farms (broiler and egg production) it is emphasized observation of farming, handling of animals, review of health records, animal environment in different departments and feeding related issues. If relevant it will be taken out a trial sample. In addition, it will focus on livestock hygiene as part of the preventive meat inspection and control of communicable diseases. There is also emphasis on animal welfare.

In the supervision of crew there will be given an introduction to practical supervision of animal health and animal welfare. There will be given an overview of important management consideration. Students should have as much insight to the veterinarian’s supervision role as possible, both as a public and a private practitioner livestock veterinarian. The focus will be on the health of livestock, animal welfare, livestock hygiene (animal room, milking parlor, feed storage etc.) and infection protection. Students will participate in FDA inspections realistic situations in herds of sheep, fur animals, cattle, poultry and swine.

Program
The teaching takes place at NVH’s section in Sandnes. The crew counseling will add emphasis on the use of available “tools” in the herd analysis and independent work in crews under supervision. The veterinarian’s role as a crew advisor will be particularly emphasized.

In the audit section the students participate in FDAs inspections in realistic situations in herds of sheep, fur animals, cattle, poultry and swine. The students are involved as much as possible in the assessment work and in communication with the farmer.

Mandatory teaching and program requirements:
100 % attendance is required.

Assessment of clinical periods
To pass the clinic period, all program requirements must be passed. If the student is absent more than accepted or has expelled bad attitudes, it will be conducted a similar or an alternative arrangement, or a task given by the subject liable/responsible. If the absence is invalid it can cause that the student must attend the class next year.
**Professional Specialization: 19.0 ECTS**

**Veterinary public health (4.5 ECTS, 3 weeks)**

**Aim and learning outcome**
The student will during the course acquire knowledge about the veterinarian’s scope and responsibilities of the FSA. This will professionally be based on an understanding of veterinary public health – focusing on the veterinarian’s social responsibility in the control of animal diseases and food infections, and responsibility for animal welfare and the environment. Completion of the course, along with other parts of the veterinary course, will provide the basic skills needed to work at the FSA, by the student meeting the requirements to be an official veterinarian.

After completing the course the students will
- Understand the veterinarian’s community responsibility in a broad sense and keep track of what Veterinary public health contains.
- Understand the framework for risk-based supervision and how risk assessments are used in the field.
- Have basic knowledge of the rules that qualify to work as a public veterinary.
- Be able to work on a decision in cases of disease control, animal welfare and food safety.

**Content**
The following topics will be covered:

- **a) The regulations covering the veterinary public health field by FSA including a thorough review of the hygiene package and requirements of an «official veterinarian»**
- **b) Risk-based supervision:**
  - Understanding of the concept.
  - Application of risk assessment in the FSA scope.
  - Arrangements for disease surveillance and disease control when it comes to animal diseases and zoonotic agents as well as work with assessment of animal welfare.
- **c) Public veterinarian:**
  - Review of the academic requirements to act as a public veterinarian.
  - Overview of curriculum towards examination.
- **d) Administrative procedures and decisions:**
  - Working with background documents based on field data and observations.
  - Writing of decisions in disease control, animal welfare and food safety.

**Program**
1) The course is in three parts, with an initial week of lectures and group work, and a final week with topics that are important to know about as a public veterinarian including the hygiene package and a final (MC) test.
2) By passing the veterinary public health the student will satisfy the competence of a “Public employed veterinarian” according to the words of the hygiene package (H3) about the professional qualifications of the public veterinarian.

**Mandatory teaching and program requirements:**
90 % attendance is required. Case presentations and MC test. If the course requirements are not met there will be a meeting with the student to ensure their competence. If the student
does not thereby show that they have acquired sufficient skills, the course must be repeated the following year.

**Production Hygiene (2 weeks, 3 ECTS)**

**Aim and learning outcome**
Give the students an insight into how food production works in Norway. Get insight into how hygiene is handled in companies and water utilities. Get insight into how the FSA works in Norway.

After completing the course the student should be able to:
- Think analytically about how to prevent the spread of infection through food and water.
- Help make arrangements for hygienic food and water productions.

**Content**
Lectures of various types, understanding of how HACCP works, visits, visits to the waterworks and the area around Oslo’s water supply. Students will hold seminars for each other about what they have learned in the different companies.
Program
The FSA gives a lecture about how they work. Visit the slaughterhouse, production companies and water utilities with range. Join the FSA visiting the companies.

Mandatory teaching and program requirements:
Mandatory participation every day
Writing of reports from every visit and lecture this to other students who have been elsewhere

Herd health (10 ECTS, 5 weeks)

Specialization Cattle

Aim and learning outcome
To provide specialization in the field of herd health
To provide students with a basis to carry out a crew report and take steps to normalize and optimize health and reproduction in a cattle herd

After completing the course the student should:
- Be able to diagnose, take action and provide advice in connection to the investigation of health and reproductive problems at herd level.

Content
Herd health, part of cattle, has a total length of 10 days. Initially, 2 days, there will be given a review of epidemiological concepts and targets as well as tools for analysis of herd, including the interpretation of herd output, use of protocols, reporting and monitoring. One day will be devoted entirely to feeding. There are also plans for a day visit with Geno at Hamar and Tine at Ås. There are 3 herd visits with herd reports; reproduction (theory will be combined with visits to Geno), udder health (theory will be combined with visits to Tine) and calf health. In addition, the course will include a visit to a beef cattle herd in which the operations are reviewed. One day will be devoted to a review of the reports from the herd visits.

Specialization sheep

Aim
Be able to make health-related depth review of the flock, select appropriate test and follow up, assess welfare, diagnose disease and evaluate casual relationships, and provide specific advice to the farmer.
**Learning outcome**

Be able to make independent health care in sheep flocks, even in groups that do not participate in other organized health care, and where there is no prior data.

**Content**

Make depth review of 1-2 sheep herds with records of herd data, surveys of individual animals, sampling, analysis and evaluation of results, assessments of causality operating disease, cost-benefit analysis of preventive measures, and design of a concrete report with advice on practical strategic prevention herd.

**Program**

Visiting one or to herds with collecting of data and samples, analysis of the sample material, processing results, review of relevant topics related to the herd, design a report and presentation of the report to the farmer.

**Specialization swine**

**Aim and learning outcome**

Specialization swine shall provide training in routine work in swine herds, providing deeper insight into Norwegian swine production, diseases and herd problems, and provide expertise in the study as a basis for counseling and preventive work in swine farms.

After completing the course the student should be able to:

- Conduct routine and disease ratings in herds in the period around birth.
- Implement pregnancy examination with different methods and oestrus and reproductive control.
- Use reports from USR and Ingris and evaluate diseases/disease complexes in swine herds as the basis for assessment of herd problems.
- Perform herd review, give good advice and suggest reasonable precautions in swine herds.
- Conduct decontamination of various diseases in swine.
- Inserting epidural – and total anesthesia and perform common surgical operations on piglets.

**Content**

Teaching is at NVH Adamstuen, in swine herds in the eastern areas, and at Norsvin. Lecturers in the theory section are from NVH, VI, Animalia and Norsvin. The training in routine work in the period around birth occurs in large satellites near NVH, and gestation, mating and reproduction control in the hub of a sow ring. Herd counseling is based on herds with aktuelle issues such as the suckling pig or weaning diarrhea, respiratory or reproductive problems. Students receive background data for the herds and shall by visiting collect more data and information about the herds and the disease complex and perform herd review as independent as possible. Student groups of approximately 3 will be responsible for the crew report on preventive measures. The course includes the writing and approval of crew reports which shall be of such quality that they can be sent to the herd owner and practicing veterinarian/health service veterinarian. Work outside normal working course time must be expected. The operations performed on piglets will be performed on NVH last day before the surgery course starts and in cooperation with the responsible for this course. It will also be given training in posting venous catheters and intravenous total anesthesia on piglets. The
course could lead to travel with up to two nights’ accommodation and social content (“Hedmarkturen”).

Specialization in surgery

Aim
Provide students with increased knowledge and skills in:
- Diagnosis, treatment and prevention of hoof disorders at individual and herd level.
- Diagnosis and treatment of surgical abdominal cavity disorders in cattle.
- Diagnosis and treatment of umbilical, joint and bone disorders in production animals.
- Castration and surgical procedures by anomalies in the gender system in production animals.
- General surgical principles including aseptic, antiseptic, methods of suture and wound healing.

Learning outcome
After completing the course the students will
- Be able to work independently in the production animal practice and be able to perform both emergency care and preventive health care within the defined areas.

Content
There is provision for 3 teaching days to the surgery section that will be a condensed version of the previous 5-day course of surgery on production animals. It all adds up to the best possible integration of theoretical and practical lessons.

Program
A herd visit will be planned, focusing on hoof disease in dairy cattle and preventive hoof health work. In addition, the course will be held in the Stationary Clinics premises at NVH.

Guidelines for participation
Mandatory for students with a specialization in production animal medicine and food safety

Mandatory teaching and program requirements:
80 % for each of the course modules, but all assignments and herd reports must be submitted at the designated time.

Seminar week (2 ECTS, in total 1 week)
Content and aim
The seminar week will include presentations and discussion of completed and commenced differentiation tasks. The aim with the course is also to provide research-based presentations by PhD students and completed researchers as well as a lecture with the theme “Well prepared for production animal practices.”

Learning outcome
After teaching the students will
- Have presented and received feedback on their presentations of completed and commenced differentiation tasks
- Have gained an insight into how to work as a researcher and different ways to go towards a research career.
Have presented new research findings in practice relevant topics that will be useful during the transition from study to veterinary practice.

Program
The seminar week will consist of presentations and discussion of completed and commenced differentiation tasks. Finished researchers and PhD students will talk about how to work as a researcher, his own research and his way toward a career in science. In addition to research-based teaching the motto for teaching will be “Well prepared and updated for production animal practice” with themes such as udder health, calf health, feeding-related diseases, infectious diseases and other acute disease condition.

Mandatory teaching and program requirements:
It is required presentation of differentiation tasks and 80 % attendance.

Assessment of academic study topics:
To pass the academic specialization any records, papers, presentations and tests must be approved in line with what has been described for each subject. Students may have to wait until next year unless the records, papers, presentations and tests are approved after 3 attempts. In addition, the minimum presence must be met. With valid absence of more than 20 % it will be agreed that work experience and a task must be approved by the subject manager. By not valid absence, the student must follow the topic next year. Subject manager keeps lists of students with approved topics in academic study specialization which is filed. Subject manager acknowledges the topic as approved on the censorship form to the student.

Optional program 1.5 ECTS

Insemination of production animals (1 week, 1.5 ECTS)

Aim
To provide the necessary theoretical knowledge and practical skills to carry out insemination

Learning outcome
The student shall be able to inseminate cattle after completing the course.

Content
Theoretical lessons and practical/clinical exercises when it comes to artificial insemination of cattle. In addition, the theoretical background of insemination of sheep/goats and pigs. 6 per group at Rudshøgda and 8 per group in Egersund, max 2 groups per week. For students in other directions than Production Animal clinical sciences and Food safety it must be documented by the employer that the student has received a commitment as an inseminator. There will be requirements for the extent and duration.

The courses are normally arranged in August and March
The following students may apply for the course:

1. Candidates with a major in Production Animal clinical sciences and Food safety.

2. Candidates with other specialization directions that can demonstrate that they have a job offer within insemination practices.

Geno sets the following requirements to practice within 1 year after the course:
   Considered met by students with a specialization in production animal clinical sciences and food safety (ProdMat), since these students practice skills in teaching at ProdMed.
   - Others have to have inseminated at least 100 animals and achieved a satisfactory result, within a year after completing the course. (current percentage not higher than 10% below land agent.)

Those who have completed an insemination course in NVH or Geno’s direction and do not meet the practice requirement must be set to a one-day review test to start insemination activities for Geno.

Please refer to the guidelines for the allocation and application.

HSE
HSE rules set limits to the number of participants per course. Students must abide by the rules at the slaughterhouse and guidance from the teacher.

Mandatory teaching and program requirements:
100% presence. Practical test at the end of the course

Specialization Food Safety (3 ECTS, 2 weeks)
This is taken instead of the clinic weeks/insemination course:

Aim
For the students who wish to specialize in particular areas of food safety in terms of future work at the FSA, food industry, or other work in food safety.

Learning outcome
The program will be designed individually/in groups from the interest of the students, and the specific learning outcomes will vary.

Content
Students can specialize in issues related to FSA, industry, technology, epidemiology, microbiology, toxicology and risk assessment.

Program
Case-based assignments, secondments, visits – depending on the area of specialization

Mandatory teaching and program requirements:
Organized programs are mandatory; otherwise any reports/presentations must be approved.
Assessment of the optional part

The presence and activities is required to be completed to receive credit. It is the student’s responsibility to ensure that the optional part is carried out, and there will be no reimbursement of tuition for this unless the student can demonstrate legitimate absence. Responsible for the course gives a diploma/certificate and/or acknowledge the evaluation form in which the optional part is listed. Only 100 % completed elective program is approved. It is not possible to take more credits than the differentiation year adds up to, i.e. 60 ECTS in total in the differentiation year (including 1.5 ECTS for assignment in public veterinary medicine)

Thesis 10 weeks 15 ECTS

See guidelines for this

All year:

Teaching materials:
Same literature as in 7th, 8th and 9th semester

Recommended prerequisites
Based on the examination in companion animal medicine from 9th semester

Requirements for own equipment
Work clothes, hard-toe shoe, stethoscope and scissors

Review
To pass the differentiation direction in production animal medicine and food safety, the following two parts must be passed:

• Thesis (15.0 ECTS): Passed
  Norwegian and English names should be applied the diploma
• Specialization in Production animal clinical sciences and food safety (36.5 ECTS): Passed
  (consisting of the mandatory part (clinic and topics) 35.0 ECTS and elective part 1.5 ECTS).
  Or alternatively
  Specialization in production animal clinical sciences and food safety with extra emphasis on food safety (36.5 ECTS): Passed

Grading form and 2 copies of the thesis must be delivered SFA no later than 1 week before the end of the term for the certificate to be issued by the exam completion.

Responsible:

Responsible for direction: MatInf Liv Marit Rørvik (from fall 2013).

Clinic and Subject responsible:
Ambulatory clinic: Hans Petter Kjaestad
Stationary clinical teaching (medicine/surgery/obstetrics): Terje Fjeldaas
Reproduction: Knut Karlberg
Ruminants practice and diseases regarding lambing: Martha Ulvund
Herd counseling: Martha Ulvund
Surgery: Terje Fjeldaas
Differentiation in Companion Animal Medicine (51.5 ECTS)

Aim
The teaching in the differentiation year in companion animal medicine will provide students with a deeper theoretical knowledge in selected areas and clinical skills in disease development, diagnosis, treatment and preventive health in pets.

Clinic periods: weeks, 21.5 ECTS

Content
In the clinic in companion animal differentiation it is emphasized on practicing what the student has learned in active clinic and have the opportunity to more independently assess and treat patients, including customer contact. There will be planned more skills training than active clinic. The students will write detailed records on a defined number of patients.

Learning outcome
Builds on the descriptions of the learning outcomes of the 9th semester.
After completing the course the students will

- Have acquired a good knowledge of independent practicing clinical diagnostics, perform treatment and advise on disease prophylaxis.
- Have good ethics to benefit the veterinary profession and the customers we serve.

Mandatory teaching and program requirements:

- During the clinical period, each student has to submit 5 records from each clinic rotation, based on the patients the students have been responsible for in the clinic. Records shall be approved by the lecturer.
- Students will in the clinical period have 1-3 evening/night shifts per week. This includes weekends and red days.
- Students will demonstrate the case for younger students.
- One of the rotation weeks are a night shift rotation.

It is allowed up to 1 day of legitimate absence per week and up to 1 day’s absence per night shift rotation per 5 days shift. It is not possible to accumulate days. Valid absence beyond this must be repeated in accordance with the direction responsible’s instruction.

The clinic service is divided onto policlinic, surgical clinic and medical clinic.
External work experience rather than mandatory clinic (1.5 ECTS x 2, 1-2 weeks)
In special circumstances, up to two of the mandatory clinic weeks may be taken with the ambulatory clinic, by appointment and approval from the direction responsible.
This requires 100% attendance and approved records.
This can also take place at reputable clinics abroad for direction Manager’s approval.
At clinics in Norway this will only apply in DNV approved clinics
It is the same quality assurance requirements as for optional programs (see this.)
It is essential that this is a full day companion animal practice with participation in on-call.
**Responsible:** Anna Eggertsdottir

**Reviews**
To pass the clinic period, all program requirements must be passed. In addition, the student must have been sufficiently present and possess widely acceptable professional and ethical standards as described in Part 2 of the document: “Clinical rotation 8th and 9th semester, information and forms.”

**Professional Specialization topics: 12 ECTS**

**Sedation, anesthesia and treatment of pain (2 ECTS, 1 week of lectures)**

**Aim**
The course focuses on the theoretical background for sedation, anesthesia and pain management in companion animal veterinary practice.

**Learning outcome**
After completing the course the student should:
• Possess good knowledge to plan and implement sedation, anesthesia and pain management of companion animal patients.

**Program**
In addition to the theoretical analysis, the student shall work with anesthesia cases in the clinic weeks. Students collect the necessary anesthesia cases while they are in regular clinic service.

**Mandatory teaching and program requirements:**
The student must have participated in the planning, execution and recovery from anesthesia by 5 patients while they are in the clinic. This shall be documented, signed by the veterinarian responsible for anesthesia, and it should be only one specialization student to anesthesia per patient.
Each specialization student must write their own casuistic, and there is only one student who can write about each anesthesia. The same goes for the 5 anesthesia specialization students in companion animals who had to prove that they have followed from beginning to end.
**Radiology (2 weeks, 3 ECTS)**

**Aim**
The course will provide a thorough introduction to imaging diagnostics as a tool for companion animal practice, and provide students with knowledge about the practical implementation of picture-taking to interpretation.

**Learning outcome**
After the course the student shall be able to understand imaging diagnostics in companion animal practice.

**Content**
Radiology deals with the use of imaging diagnostic in companion animal practice. Emphasis is placed on radiology diagnostic, but other modalities such as ultrasound, scintigraphy and CT will also be reviewed.

**Program**
Radiology is structured as a combination of lectures and assignments. In addition to basic radiology and physics, any step in the study of individual body parts being systematically reviewed. Which patients are appropriate for the different types of research, how the researched are made, the choice of projections, assessment of images, etc. are reviewed.

**Mandatory teaching and program requirements:**
80 % attendance, at least

**Clinical pathology (1,5 ECTS, 1 week)**

**Aim**
The course will provide students with a sound basis for using clinical chemistry, clinical endocrinology, hematology and cytology in its companion animal practice.

**Learning outcome**
After completing the course the student should be able to:
- Assess indications for various tests, know the most common pre-analytical factors that influence test results and have a basic understanding of the interpretation of test results.
- Present cell slide samples (hematology/cytology) of diagnostic quality.

**Content**
Principles of sampling, evaluation of pre-analytical factors and interpretation of test results in clinical chemistry, clinical endocrinology, hematology and cytology. Practical exercises in preparation of hematology/cytological, cell slide samples and microscopy will be included. Special emphasis is placed on interpretation of test results from dogs and cats.

**Mandatory teaching and program requirements:**
At least 80 % attendance and passed “multiple choice test”. 
Reproduction and obstetrics (2.5 ECTS, 1 week lectures + self-study)

Aim
To teach the students the general principles relating to reproductive physiology and pathology in females and male cats and dogs as well as knowledge of the common operations related to reproductive organs. Introduction to obstetric problems such as obstetrics, udder health and puerperium diseases, as well as pediatrics will be included.

Learning outcome
After completing the course the students will be able to
- Clarify the general principles relating to reproductive physiology and pathology in females and males of cats and dogs, ferrets and rabbits and other rodents.
- Perform oestrus control and remove semen sample for assessment of semen quality in dogs, make a pregnancy diagnosis in dogs, have knowledge of normal and abnormal conditions related to childbirth, performing obstetrics in dogs and cats, as well as to diagnose and treat udder diseases and puerperium diseases.
- Clarify diseases and treatment of puppies and kittens.

Content
Reproduction and obstetrics (physiology and pathology) in dogs and cats
Diagnosis and treatment of reproductive disease, obstetric problems and pediatrics
Introduction to the most common operations related to the genital performed on dogs and cats

Mandatory teaching and program requirements:
80 % attendance, at least

Clinical Neurology (3 ECTS, 2 weeks)

Aim
The course will provide students with a thorough review of the topic of neurology in dogs and cats.

Learning outcome
After completing the course the student should be able to assess patients with neurological symptoms, and diagnose and know the most common differential diagnosis of neurological diseases in dogs and cats.

Program
Video-based case reviews and discussions on assessment of patients with neurological symptoms as well as lectures on diseases of the nervous system in dogs and cats.

Mandatory teaching and program requirements:
80 % attendance at classes, and participation in the presentation of the homework
Assessment of academic specialization topics
To pass the academic specializations all records, papers, presentations and tests needs to be approved in line with what has been described for each subject. Students may be necessary to wait until next year unless the records, papers, presentations and tests are approved after 3 attempts. In addition, the minimum presence must be met. With valid absence of more than 20% it is agreed that work experience and a task must be approved by the subject responsible. By not valid absences, the student must follow the subject next year. Subject responsible keeps lists of students with approved topics in the academic specialization which is filed. Subject responsible acknowledges the subject as approved on the censorship form to the student.

Optional arrangements: 3 ECTS
There are a total of 2 weeks, 3 ECTS in which the student can choose from the following programs in companion animal differentiation:

External visitation as an optional part (1.5 ECTS x 2, 1-2 weeks)
Up to 2 weeks of the elective courses can be taken externally. This requires 100% attendance and approved records. Shadowing at clinics in Norway can only be done in DNV-approved clinics. This can also take place at recognized clinics abroad after the direction Manager's approval. It is essential that this is a full day companion animal practice. Students will also write a reflective report on the shadowing. Scope of the report is determined by the direction manager.

Responsible: Anna Eggertsdottir

Requirements for external clinics approved:
Clinics in Norway must be DNV certified. Shadowing at clinics in universities shall be made on an accredited EAEVE / AVMA institution. Beyond this, shadowing at a foreign clinic needs to be approved by the responsible of the direction.

Scientific and methodological specialization related to the thesis (2 weeks, 3 ECTS)

Aim
Give more time associated with tasks that require extra preparation.

Content
Self-study and preparation work to be able to implement an in-depth study within 10 weeks.

Responsible: Tutor

Thesis: 10 weeks, 15 ECTS
See guidelines.
**All year:**

**Teaching materials**
The same literature as in the 7th, 8th and 9th semester

**Recommended prerequisites**
Based on the examination in companion animal medicine from 9th semester

**Requirements for own equipment**
Work clothes, hard toe shoes, stethoscope and scissors.

**Reviews**
To pass the differentiation direction in companion animal medicine, the following 2 parts must be passed:
- Task specialization (15 ECTS): Passed
- Norwegian and English names should be applied the diploma
- Specialization in companion animal medicine (36,5 ECTS): Passed
  (Consisting of the mandatory part (clinic and subjects) 33,5 ECTS and elective 3 ECTS)
- Censorship form and 2 copies of the thesis must be delivered SFA no later than one week before the end of the term of the certificate shall be issued to exam completion.

**Responsible**
Direction responsible: Anna Eggertsdottir
Subject responsible:
- Anesthesia: Andreas Haga
- Reproduction and obstetrics: Wenche Farstad og Vibeke Rootwelt
- Clinical pathology: Stein Istre Thoresen
- Radiology: Magnus Rørvik
- Neurology: Karin Hultin Jäderlund
- Prior approval optional elements: Anna Eggertsdottir
- Thesis: Tutor
- Responsible head of the department: Ann Margaret Grøndahl

**Differentiation in Equine Medicine (51.5 ECTS)**

**Aim**
The teaching in the differentiating year in equine medicine will give students a deeper theoretical knowledge in selected areas and clinical skills in disease development, diagnosis, treatment and preventative health in horses.

**Clinic periods: in total 10 weeks, 20 ECTS**

**Content**
In the clinic in horse differentiation it is emphasized on diagnosis and treatment of neonatal patients, diagnosis and treatment of colic, diagnostic injections in lameness diagnosis, certification and issuance of passports on horses, use and maintenance of endoscopic equipment. In addition, students will have a week of practical anesthesia and pain management as a part of the specialization in anesthesia. This week is in addition to the 10 weeks (see the subject Anesthesia and pain management)
Learning outcome
Builds on the learning outcomes descriptions of 9th semester
After completing the course the students will:
• Have acquired a good knowledge of independent practicing clinical diagnostics, perform treatment and advise on disease prevention
• Have good ethics that are beneficial for veterinary profession and the costumers we serve.

Mandatory teaching and program requirements:
During the clinical period each student will submit 8 case reports from patients the students have been responsible for in the clinic. Students will in the clinic period have at least one day of duty a week. Students will demonstrate the case for younger students. Case reports are based on the record and it is envisaged that students will go deeper into the diseases’ etiology, diagnosis, differential diagnosis and treatment. In the case report it shall be referred to references from current literature. Case reports must be approved by the supervisor before the clinic period has passed.

Up to one day of legitimate absence per week is allowed. It is not possible to accumulate days. Valid absence beyond this must be repeated according to the instructions of the responsible of the direction.

External work experience rather than mandatory clinic (1.5 ECTS x 2, 1-2 weeks)
In special circumstances, up to two of the mandatory clinic weeks are taken by an external clinic by appointment and approval of the supervisor.
It is required 100 % attendance and approved records.
This can also take place at acknowledged clinics abroad after the approval of the responsible of the direction approval.
The same requirements for quality assurance as for the optional programs (see this).
It is essential that this is a full day horse practice.
Responsible: Carl Fredrik Ihler

Evaluation
To pass the clinic period, all program requirements must be passed. In addition, the student must have been sufficiently present and possess widely acceptable professional and ethical standards as described in Part 2 of the document: “Clinical Rotation 8th and 9th semester, information and forms”.

Professional Specialization subjects: 10.5 ECTS

Anesthesia and pain management (1 week, 2 ECTS)

Aim
The course focuses on the theoretical background for sedation, anesthesia and pain management in veterinary horse practice. In addition, the student will during the clinic period have practical training in the implementation of total anesthesia.
Learning outcome
After the theory and practice, students shall possess knowledge and manual skills to plan and implement sedation, anesthesia and pain management of horse patients.

Mandatory teaching and program requirements:
Submission and approval of general anesthetic case report, where planning, implementation and possible complications are described and discussed. The choice of methods, medications and dosages should be professionally justified in the case report. Each specialization student must write their own case history, and there is only one student who can write about each anesthesia. Students collect the anesthesia cases necessary while they are in regular clinic service. The same rules apply in the clinic week as in the other clinic weeks.

Radiology (1 week, 1,5 ECTS)

Aim
The course will provide a thorough introduction to imaging diagnostics as a tool for horse practice and provide students with knowledge about the practical implementation of picture taking to interpretation.

Learning outcome
After the course the student shall be able to understand the imaging diagnostics in horse practice.

Content
Radiology deals with the use of imaging diagnostics in horse practice. Emphasis is placed on y-ray diagnostics, but other modalities such as ultrasound, scintigraphy and CT will also be reviewed.

Program
Radiology is structured as a combination of lectures and assignments. In addition to basic radiology and physics, any step in the study of individual body parts will be systematically reviewed. Which patients are appropriate for the different types of research, how the examinations are done, the choice of projections, assessment of images etc.

Mandatory teaching and program requirements:
At least 80 % attendance required

Clinical pathology (1.5 ECTS, 1 week)

Aim
The course will provide students with a sound basis for using clinical chemistry, clinical endocrinology, hematology and cytology in its horse practice.

Learning outcome
After completing the course the student should be able to:
  • Assess indications for various tests, know the most common pre-analytical factors that influence test results and have a basic understanding of the interpretation of test results.
• Present microscope samples (hematology/cytology) of diagnostic quality.

Content
Principles of sampling, evaluation of pre analytical factors and interpretation of test results in clinical chemistry, clinical endocrinology, hematology and cytology.
Practical exercises in preparation of hematology/cytological examples and microscopy
Special emphasis is placed on interpretation of test results from horses.

Mandatory teaching and program requirements:
At least 80 % attendance and passed “multiple choice test”
Should have had a microscope sample of diagnostic quality approved

Reproduction (1.5 ECTS 1week)

Aim and learning outcome
Give students a solid foundation in order to assume responsibility for the operation of a breeding station for horses.

After completing the course the student should be responsible for the operation of a breeding station for horses.

Content
The following topics are theoretically taught:
Reproductive physiology and pathology, insemination with fresh and frozen semen, obstetrics, diseases on foals.

The following topics are practical: Palpation training.

Mandatory teaching and program requirements:
At least 80 % attendance is required.

Horse diseases with emphasis on emergency medical care, horse care and rules concerning doping (4 ECTS, 2 weeks)

Aim and learning outcome
Provide a detailed theoretical basis for going into the clinical practice of horses in the field.

After completing the course, students will have the theoretical knowledge that is required to go into the ambulatory horse practice.

Content
Lameness diagnostics, Immobilization of fractures in the field, Cardiology, Colic Treatment, Fluid therapy, Wound care, Joint infections, Respiratory diseases, Neurological disorders, Emergency treatment of eye diseases, Descriptions, Care, pony measurement, Waiting periods, Doping regulations.
Program
Teaching takes the form of lectures and demonstrations. Students will work on assignments in their self-study time and present it to their teachers and other students.

Mandatory teaching and program requirements:
Working with tasks and presenting this work.

Assessment of academic study subjects:
To pass the academic specialization all records, papers, presentations and tests must be approved in line with what has been described for each subject. Students may have to wait until next year unless the records, papers, presentations and tests aren’t approved after 3 attempts. In, addition, the minimum presence must be met. By valid absence of more than 20 % it will be agreed that work experience and a task that must be approved by the responsible of the subject. By not valid absence, the student must follow the subject the following year. The responsible of the subject keeps lists of students with approved topics in academic specialization which are filed. The subject responsible acknowledges the subject as approved on the censorship form to the student.

Optional program: 6 ECTS
There are a total of 4 weeks, 6.0 ECTS in which the student can choose from the following programs on horde differentiation:

External work as an optional part (1.5 ECTS x 4, 1-4 weeks)
4 weeks of the elective courses can be taken externally at the most. It may be possible to take up to 1 extra optional week internally. This requires 100 % attendance and approved records. This can also take place at acknowledged clinics abroad after the approval of the direction responsible. It is essential that this is a full day horse practice.

Requirements for approval of external clinics
The external clinics shall operate both surgical and medical diagnosis and treatment, and have emergency service and patients stabled.

Responsible: Carl Fredrik Ihler

Compound feed quality control of products for production animals and horses (1 week, 1.5 ECTS)

Aim and learning outcome
To provide students with knowledge of the development of compound feed for production animals and horses and to train students to deal with problems that one might encounter as a practicing veterinarian regarding the quality of the feed.
Be able to assess whether the compound feed may be partial causes of disease states.

Content and program
The course will include two days of lectures and discussions that will take place at NVH. One of the days will be at UMB in Ås, where students will be briefed on the activities pursued there when it comes to compound feed development and feeding trials on production animals and horses. Then, there will be a 2 day excursion to Trondheim to “Felleskjøpet” production
plant and research and development for compound feed. It will be held some lectures in Trondheim and there will be a tour of the production plant at Felleskjøpet with an emphasis on the development and quality assurance of the products.

Practical information: Students will have their stay in Trondheim covered. The journey to Trondheim will be covered for the students with a specialization in Equine medicine. The other students have to finance their trip (approx. 1000 NOK) via the department where they are specialization students or they have to cover it themselves. Maximum number of students is 20. The Specialization students in Equine medicine are prioritized.

Mandatory teaching and program requirements:
All days of the course are mandatory to get the course approved.

Responsible: Carl Fredrik Ihler

Scientific and methodological specialization related to the thesis (2-4 weeks, 3-6 ECTS)

Aim
Give more time associated with the tasks that require extra preparation.

Content
Self-study and preparation work to be able to implement a thesis over 10 weeks.

Responsible: Tutor

Thesis: 10 weeks, 15 ECTS
See guidelines

All year:
Teaching materials:
The same literature as in the 7th, 8th and 9th semester

Recommended prerequisites:
Based on examination in equine medicine from 9th semester

Requirements for own equipment
Work clothes, hard toe shoes, stethoscope and scissors.

Evaluation
To pass the differentiation direction in equine medicine, the following two parts must be passed:
  • Thesis (15 ECTS): Passed
    Norwegian and English names should be applied the diploma
• Specialization in equine medicine (36.5 ECTS): Passed
   (consisting of the compulsory part (clinic and subjects) 30.5 ECTS and 6 elective
   ECTS)

Censorship form and 2 copies of the thesis must be delivered to SFA no later than 1 week
before the end of the term for the diploma to be issued to the exam completion.

**Responsible**

Block responsible: Carl Fredrik Ihler
Subject responsible:
  - Anesthesia: Andreas Haga
  - Reproduction: Ragnar Thomassen
  - Clinical pathology: Stein Istre Thoresen
  - Radiology: Magnus Rørvik
  - Horse diseases: Carl Fredrik Ihler
  - Pre-approval optional elements: Carl Fredrik Ihler
  - Thesis: Tutor

Responsible head of the department: Ann Margaret Grøndahl

**Differentiation in Aquatic Medicine (51.5 ECTS)**

**Aim**
The teaching in the differentiation year in aquatic medicine will provide students with in-
depth theoretical and practical knowledge about infectious diseases in farmed salmon, the
diagnosis of these, principles about prevention by vaccination and the underlying
immunological mechanisms and importance of nutrition for fish health.

**Academic specialization subjects: 30.0 ECTS**

**Comparative immunology (3 ECTS, 2 weeks)**

**Aim**
Provide an introduction to the basic principles of immunology with a focus on comparative
aspects based on current understanding of immune responses in higher vertebrates (mainly
mice). Compliance with immune responses in fish will be presented and discussed where
these are known and it’s relevant.

**Content and program**
The teaching consists of lectures and discussions of case. The cases are related to the topics
that are covered in the lectures and students are expected to go through and discuss them
among themselves and are prepared to answer the questions related to the cases in class. Some
practical exercises will also be posted such as blood sampling and anesthesia, practical
handling of fish for research.

**Learning outcome**
After completing the course the student should be able to explain the immune responses of
fish and how these can be measured.
Mandatory teaching and program requirements:
Oral test

**Vaccinology (6 ECTS, 2 weeks + work with assignment)**

**Aim and learning outcome**
Provide an overview of the use of vaccines as a tool to prevent disease in farmed fish.

After completing the course, students should be able to explain the principles of vaccination and propose options for disease control through vaccination for hot-and-cold-water fish species.

**Content**
The course will include an overview of vaccination history (general), use and assessment of the benefits of foil-based vaccines in farmed salmon and a comparison of vaccination procedures in cold-and-hot-water-based aquaculture.

**Program**
The program consists of lectures and group work where students will work on a vaccine application to be submitted by the end of the course for evaluation.

Mandatory teaching and program requirements:
Approved group assignment, (vaccine proposal) required.

**Medicine in Aquaculture (2 ECTS, 1 week lectures)**

**Aim and learning outcome**
Give the student a good introduction to medicine use in aquaculture.

Upon completing the course, the students should know:
- Basic principles of absorption, distribution, metabolism and excretion of drugs in fish.
- Be familiar with the indications for the use and operation of the most common groups of drugs intended for fish.
- Basic concepts for toxicological risk assessment and know and understand how ADI-, MRL-values and retention times are calculated.
- National and international legislation on drug residues in food and feed, and know about the surveillance programs for medication and drug residues in fish.
- Legislation and animal welfare considerations when using fish as experimental animals.

**Content**
The course reviews key principles of fish pharmacology and legislation on drug residues in food and feed. Recent drug groups are examined (anesthetic agents, antiparasitic agents, antibiotics, topical disinfectants). The course will also focus on legislation and animal welfare considerations in the use of fish as experimental animals.

**Program**
Teaching methods are lectures and group discussions. There is also a full day at NIVA’s marine research station in Drøbak.

**Mandatory teaching and program requirements:**
Full day trip is mandatory.
Oral test.

**Infectious diseases in farmed fish (4 ECTS, 2 weeks tuition)**

**Aim and learning outcome**
Provide an overview of the most important infectious diseases in fish with special emphasis on cold-water fish.

After completing the course the students will:
- Have good knowledge of the pathogenic agent of the most important infectious diseases affecting cold water fish.
- Have good knowledge of virulence mechanisms including bacterial antibiotic resistance which is included in the course.
- Be able to explain the basic principles of international law on fish diseases.
- Be able to perform routine sampling for diagnostic examination after autopsy, could suggest methods of preservation of samples for various diagnostic procedures and know the limitations with respect to the possibility of identification of agents that cause disease.
- Be able to perform molecular characterization of a disease-causing organism using the computer.

**Content**
Infectious diseases in fish
Introduction and overview of sampling procedures and analytical methods for parasitological, histopathological, bacteriological and virological investigations

**Program**
Teaching will be a combination of lectures and practical laboratory work.

**Mandatory teaching and program requirements:**
The laboratory portion of the course is mandatory.
Multiple choice test and approval of laboratory reports

**Clinical nutrition of farmed fish (3 ECTS, 2 weeks)**

**Aim**
Provide an overview of the importance of nutrition for good fish health (with emphasis on salmonids).

**Content**
Nutrition of carnivorous fish species, Introduction and overview of the importance of nutrition as a basis for good health, and the effects of malnutrition
Learning outcome
After completing the course the students will:
• Have good knowledge of the nutritional requirements of salmonid fish.
• Have knowledge of nutrient sources used in feed for salmonids.
• The relationship between vegetable and marine feed ingredients in fish feed.
• The importance of anti-nutrients in vegetable feed ingredients.
• The vegetable feed ingredients and intestinal health.

Program
Teaching will be a combination of lectures and exercises.

Mandatory teaching and program requirements:
Written test

External work veterinarian/breeding farm (3 ECTS, 2 weeks)

Aim and learning outcome
Provide an insight into the clinical fish health/aquatic medicine and/or production conditions in a breeding farm for fish.

After the practice period the students will have knowledge of typical, clinical problems in fish farms, understand how to analyze and diagnose disease problems under practical conditions. With the work experience on breeding farms, students will be familiar with the daily feeding and curing routines at a breeding farm.

Content
External work: Practice with a practicing veterinarian/fish health biologist with involvement in daily tasks/issues.

Breeding farm: The presence at a farm with the operator or veterinarian. Review of the daily routines on the farm (feeding, caring, care, clarifications of illness etc.).

Program
Students deliver a brief report at the end of the practice period.

Mandatory teaching and program requirements:
Mandatory attendance during the entire practice period id required.

Disease control in Aquaculture (3 ECTS, 2 weeks)

Aim
Provide an introduction to disease control in aquaculture (with emphasis on salmonids).

Content
Theoretical basis for disease control in aquaculture. The students will be introduced to the principles and tools for use in disease control in aquaculture production.
Learning outcome
After completing the course the students will:

- Have good knowledge of the principles of disease control in aquaculture.
- Have knowledge of systematization and presentation of data describing the disease in breeding farmed populations.
- Have knowledge of instruments for use in disease control.
- Have knowledge of disease control in wild fish populations (*Gyrodactylus salaris*).
- Have knowledge of methods of cost benefit analysis of the resources used in disease control.

Arrangement
Teaching will be a combination of lectures, assignments, and presentations by participants from industry, suppliers and management.

Mandatory teaching and program requirements:
The course is mandatory for students with aquaculture as a specialization. Written submission of the thesis is required.

Responsible: Arnfinn Aunsmo

Fish welfare (5 ECTS)

Aim
Provide an introduction to fish welfare in modern fish breeding (with emphasis on salmonids).

Content
Theoretical and practical foundation to understand the concept of fish welfare. Students will get an introduction to and overview of the importance of fish welfare for economic and sustainable production.

Learning outcome
After completing the course the students will:

- Have good knowledge of the criteria for the welfare of salmonoids.
- Have knowledge of the concepts used in the field of welfare and understand how it is defined.
- Know comparative aspects of welfare in modern animal husbandry.
- Harvest the practical experience of critical points during the production of salmonids that are important for fish welfare.

Arrangement
Teaching will be a combination of lectures, exercises and a field course (practical course).

Mandatory teaching and program requirements:
The field course is mandatory. Written test/submission of assignment.
Responsible: Trygve Poppe

Assessment of academic specialization topics:
To pass the academic specialization, assignments, reports and tests need to be approved in line with what has been described for each subject. Students may have to wait until next year if no assignments, reports and tests are approved after 3 attempts. In addition, the student must attend mandatory activity. If the student has a valid absence of this, it may be accepted with later work experience in the same academic year. If invalid absence, the student must wait until the next time it is held. Subject manager keeps lists of students with approved topics in the academic study and file them. Subject manager acknowledges the subject as approved on the censorship form to the student.

Thesis seminar 1.5 ECTS (1 week)
There is a review of the thesis with examples, structure, content, requirements regarding extent. The students present their own prospect.
Responsible: Øystein Evensen

Elective arrangement: 1.5 ECTS
There is a total of 1 week, 1.5 ECTS in which the student can choose from the following arrangements in the differentiation in medicine in aquaculture:

Scientific and methodological specialization related to the thesis.
(1 week, 1.5 ECTS)

Aim
Give more time associated with tasks that require extra preparation.

Content
Self-study and preparation work to accomplish a thesis within 13.5 weeks.
Scientific and methodological specialization related to the thesis through participation in conferences, meetings and self-study in a relevant subject.

Learning outcome
After the practice period the students will have detailed knowledge of the academic subject as the thesis deals with.

Arrangement
The period may include participation in meetings, work experience in administrative or production environments, or in research environments within the industry.

Mandatory teaching and program requirements:
Mandatory attendance. The student submits a brief report.

Responsible: Tutor
External work experience in companion animals/horses/aqua as an elective part (1.5 ECTS, 1 week)

Up to one week of the elective courses can be taken externally. This requires 100% attendance. It is essential that this is a full day on a small animal- or horse practice. The clinic must meet the same requirements for approval that are set in the small animal- and horse direction. The student must participate in on-call arrangements.

Responsible: Øystein Evensen

Ambulatory clinic (1.5 ECTS, 1 week)

Aim and learning outcome
Enhanced hands-on clinical work at individual levels out in the farms/fields with focus on cattle and pigs, as well as some sheep and horse-practice

After the course the student shall have extended knowledge- and skill level with regards to dealing with practical work in clinics on production animals and horses, as well as to assess this against the need to take action at the herd level and to implement such measures.

Arrangement
The teaching will take place in small groups with a lot of self-study under supervision. Time: Spring semester, or summer or December. Exact time period are agreed upon individually after agreement with Hans Petter Kjæstad, depending on the capacity of the section and adapted to the individual student’s participation in mandatory education.

Mandatory teaching and program requirements:
Attendance 4 out of 5 days a week and on-call participation. Approval of submitted records.

Assessment of the elective part
Presence and mandatory activities must be conducted. The responsible for the course hands out diploma/certificate and/or acknowledges the censorship form where the elective part is listed. Only 100% completed elective arrangement will be approved. It is not possible to take more ECTS than the differentiation year adds up to, ie 60 ECTS in total in the differentiation year (including 1,5 ECTS for the task in the state veterinary medicine).

Thesis: circa. 13.5 weeks, 20 ECTS
See guidelines

All year:
Teaching aids
This is defined by the supervisor and will consist of text books, scientific review articles and original articles, technical reports and other relevant literature.
Recommended prerequisites
Based on the examination in medicine in aquaculture from 8th semester

Requirements for own equipment
No special requirements

Evaluation
To pass the differentiation direction of medicine in aquaculture, the following 2 parts must be passed:

- Thesis (20 ECTS): Passed
  Norwegian and English names should be applied to the diploma
- Specialization in medicine in aquaculture (31.5 ECTS): Passed
  (Consists of 30.0 ECTS mandatory part and 1.5 ECTS elective part).

Censorship form and 2 copies of the thesis must be delivered SFA no later than 1 week before the end of the term for the diploma to be issued to exam completing.

Responsible
Direction responsible: Øystein Evensen
Subject responsible:
  Comparative immunology: Øystein Evensen
  Vaccinology: Øystein Evensen
  Fish welfare: Trygve Poppe
  Disease control in aquaculture: Eystein Skjerve
  Infectious diseases in bred farm fish: Espen Rimstad
  Drugs in aquaculture: Tor Einar Horsberg
  Clinical nutrition: Åshild Krogdahl
  External work: Øystein Evensen
  Pre-approval elective items: Øystein Evensen
  Thesis: Tutor
  Responsible head of the department: Mona Aleksandersen

Project-related Differentiation (51.5 ECTS)
Aim
Give the students an insight into research life and thereby create interest in research.

Project assignment: approx. 27 weeks, 40 ECTS

Elective arrangement: 11.5 ECTS
There are a total of 7 weeks, 11.5 ECTS in which the student can choose from the following programs in the direction of the program:

Scientific and methodological specialization related to the project assignment (up to 11.5 ECTS)
The optional part can both provide specialization in the subject that the thesis deals with and consist of methodological training (e.g. laboratory methodology) for use in the thesis or in the writing process (e.g. extended course in experimental design, scientific writing, etc.)
It will only be possible to participate in academic subjects taught in the other differentiation
directions when this differentiation is directly relevant to the thesis (e.g. attend on the subject
radiology on horses, if the thesis is in radiology at the horse). The exceptions are topics
related to aquatic medicine, where all mandatory subjects in the direction with the exception
of work experience is considered relevant, when the thesis deals with issues of fish.
It is not possible to take external courses/continuing education courses in the elective section.
Self-study in relevant subjects may be accepted. The tutor must ensure the quality of the
expertise the candidate has acquired in the given study period.
The elective part must be pre-approved by the tutor.

**Responsible:** Tutor

**Laboratory animals (1 week, 1.5 ECTS)**

**Aims:** To create interest and knowledge about the diverse roles that a laboratory animal veterinarian has, to increase student’s competence in handling and care of the laboratory animals species, to provide students with an ethical perspective and expertise about the use of animals in laboratory context. This will also provide a good knowledge about the rodents and rabbits as the companion animals.

**Content:** Specialization in the care of rodents and rabbits, theory around the use of laboratory animals, ethics and research design.

**Arrangement**
Theoretical review, work with the thesis and practice at laboratory animal units in the Oslo area.
There must be a minimum of 4 participants for the course to be held. Maximum 12 participant.

**Mandatory teaching and program requirements:**
Group assignment related to laboratory animals and design of animal experiments.
80 % attendance, and approved tasks are required.

**Responsible:** Kristine Eraker Aasland Hansen

**Insemination of production animals (1 week, 1.5 ECTS)**

See description in the production animals and food safety differentiation.

**All year:**

**Assessment of the elective part**
Attendance and mandatory activities must be conducted.
Tutor or the responsible for the course gives a diploma/certificate and/or acknowledge the censorship form in which the elective part is listed. Only 100 % completed elective arrangement will be approved. It is not possible to be credited for more than 10 ECTS in the elective part of the project direction.
**Evaluation**

To pass the project differentiation, the following part must be passed:

- Thesis with oral presentation (40 ECTS): Scaled grades
  Norwegian and English names should be applied to the diploma.
- Elective part (11.5 ECTS): Passed

Censorship form and 2 copies of the thesis must be delivered SFA no later than 1 week before the end of the term for the diploma to be issued to exam completion.

**Responsible:**

Responsible for the differentiation: Mona Aleksandersen
Pre-approval of elective parts: Tutor
Thesis: Tutor
Responsible head of department: Mona Aleksandersen
Appendix 6: Mandate for Curriculum development

Mandate for Curriculum Development of Veterinary Medicine Studies.
On December 13, 2012, NVH’s Board approved the School’s Study Quality Report for the academic year of 2011/12. The decision will among other things mean that NVH must begin the work on a comprehensive audit of the current curriculum of the veterinary medicine studies. I therefore ask that the Study Committee (SU) starts up this work in the spring of 2013 and initially add a plan to ensure a good process in the development work.

I would like the following general guidelines:
Proposal for a new curriculum to meet the minimum requirements for veterinary medicinal basic education as described in the EU Directive 2005/36 and EAEVEs guidelines. It will also be useful that the SU in its future work look at the requirements for veterinary education as described by AVMA.

NVH shall still have differentiated educational programmes in one form or another, in which all differentiation programmes should provide the basis for authorization from the FSA. The extent and content of differentiation programmes should be evaluated.
It must be arranged for 90 veterinary students per year group, and other matters of importance, when NVH becomes part of a university.
SU must consider whether new teaching methods can be used to renew and increase the efficiency of teaching, particularly regarding the use of IT.

A new study plan will nevertheless not increase the relative demand for teaching resources.

SU must focus on the needs of society for veterinary expertise, and build on documented need for change as they are obtained through the School's study quality work.

The Study Plan will facilitate international exchanges, allowing Norwegian students to take part in the education abroad, and allowing foreign students to do the same at NVH.

I ask that NVH’s Board of Directors get a briefing on the plan for the process at the last meeting before the summer (30 May 2013).

In this initial phase, SU needs to discuss some overarching educational policy principles for the Study Plan. It will, among other things, discuss the overall model that the curriculum will be built over. SU should also discuss whether NVH as a principle should have a graded or pass / fail grading system. SU is asked to present a recommendation about these basic principles before the Board.

I wish you good luck with your work!
Appendix 7: Manual for Block Leader

MANUAL FOR BLOCK LEADER
(and other teaching personnel)
Audited. 2.11.2011
About the Manual

A new audited version of this manual will be available at the beginning of studies each year. Suggestions for improvements of the Manual to: Ann.Kristin.Egeli@NVH.no

Purpose of the Manual:
- The Manual will provide practical help for old and new block leaders (teaching personnel) in the teaching process for all study programs.
- The Manual shall also provide assistance to ensure the quality of teaching periods seen from the block leader and teachers point of view. That is to facilitate to have as good a planning and implementation of the teaching period including the examination as possible, and evaluate results, report and improve the process next time.

That is (I.e.) the following two activities in the quality system:

Key Element 3.4 Teaching Quality:
Quality requirements: Information, education, guidance, assessment and grading should be of high quality.

Activity 1: Conduct the institutes teaching periods and assessments (exams) in accordance with plans and regulations. (Head of Department)

Activity 2: Conduct and follow up student evaluation, self-evaluation and reporting in accordance with the established plan. (Head of Department)

The use of the Manual:
The manual provides practical advice and hints, and can serve as a checklist of what one need to keep in mind in relation to the phases of the teaching process: (Phases in the quality circle)

Quality Circle:

- As a supplement to the Manual it has been developed routine descriptions of student evaluation.
- It is also developed a Manual for Students.
Terms used at NVH:

**Study program**: The various studies NVH offers. A study program at NVH is a adherent course of studies made up of different constituents. NVH currently has the following study programs: The veterinary program and the animal nurse program.

**Study Plan**: The current plan for that study.

**Block**: The studies at NVH is mainly organized in blocks. A block consists of different disciplines that integrate to a unit within a specified period. Generally, one can take the examination in the main subject which is the same as the block name. All blocks have a block manager.

**Subject, subject area, module, course**: Subdivision of a study program or a block.

**Clinic Period / rotation**: Internal practices on the colleges clinics.

**External Practice**: The studies vocational stay outside of NVH.

**Differentiation**: Specialization in one of five areas in the veterinary study in the last year of studies.

**Thesis**: Independent work with a supervisor.

**Block Leader**: Responsible for the blocks in the veterinary and animal nurse study.

**Exam coordinator**: Is responsible for a subject in the 8th and 9th semester of the veterinary studies.

**Course responsible**: Is responsible for specific subject areas within a topic or short term courses.

**Supervisor**: Have the responsibility to guide the student through the differentiation of veterinary studies and the thesis on veterinary and animal nurse program.

**Teacher**: Responsible for the teaching in a course.

**Head of Studies and SU**: Has the function of a leader for the studies in veterinary sciences.

**SU**: Advisor to the principal regarding academic and pedagogical quality on the study programs with special focus on whole of the study programs.

**LMU**: Advisor to the board regarding the physical and psychological learning environment including welfare offers and psychosocial environment.

**Study quality**: How the quality emerges to the student, how it meets the acknowledged professional goals and the way it provides social relevance to the educations in a broad sense.
The Quality System

School's vision - To be among the best and most advanced veterinary medicine institutions in Europe in research, education and dissemination of knowledge - signifies that NVH will offer studies of high quality. In the strategic plan for 2011-2013 is this among other things determined as a foal for the educational activities. NVH should educate graduates with skills at a high international level that are relevant for national and international projects in veterinary and biomedical sciences and animal care.

Quality work's main task is to ensure that School's goal of quality is achieved. Goals for quality work at NVH are according to Strategy for Study Quality Work 2007-2009: To optimize the quality of education by actively using the quality assurance system for improvement and development. Ensure that academic courses at NVH have social relevance in a broad sense.

NVH's quality system is subdivided into seven quality areas (before 2013. Not up to date). The Board has the overall responsibility for entire the quality system at NVH.

**Quality area 1: Policy**
Goals: NVH’s management systems shall ensure a good quality of education and contribute to continuous quality improvement. Overall responsibility: General Director

**Quality area 2: Admission Quality**
Goals: NVH will admit the best students to their educational provisions and arrange the admission in the qualitative best manner. Overall responsibility: General Director

**Quality area 3: Program and Result Quality**
Goals: The teaching at NVH should be based on research and maintain high academic and educational quality. Graduates will be well trained and well prepared for social tasks within the School’s respective disciplines. Overall responsibility: Rector

**Quality area 4: Internationalization.**
Goals: NVH will be an internationally oriented school, and an active promoter of student and teacher mobility and international research cooperation. Overall responsibility: Rector

**Quality area 5: Framework Quality**
5.1 Akademiske ressurser. Goals: At NVH, students should have access to academic resources that keep good academic and educational standards. Overall responsibility: General Director and Rector

5.2 Learning Environment. Goals: NVH’s learning environment will ensure the students a good learning situation. Overall responsibility: General Director

5.3 Student Administrative Services. Goals: NVH’s student administration will ensure students a good learning situation. Overall responsibility: General Director

**Quality area 6: PhD Education**
Goals: PhD Education at NVH should educate researchers at a high international level. Overall responsibility: Rector
Quality area 7: Continuing and Further Education
Goals: NVH shall have continuing and further educational programmes of high quality within their disciplines. Overall responsibility: General Director and Rector

Quality System Structurer:
You will find a description of NVH’s quality system on the internet. Each of the seven quality areas are further subgrouped into themes (key elements). For each key element there are set goals or standards (Quality requirements). For each quality requirement, there is a range of activities which need to be implemented to achieve the goals of high quality and will help to evaluate whether the goal is reached (see quality circle). Placing responsibility is also very central to a quality system. NVH’s student evaluation system will document and identify the level of quality seen from the student’s point of view. In addition, there are other programmes in the quality system to ensure the academic quality and social relevance.

The Quality Circle illustrates the thinking of the quality system.

Schematic model of the structure:
- **Quality Area 1** (Responsibility and Goals)
  - Key Element 1 (quality requirements = goals)
    - Activity 1 (responsibility)
    - Activity 2 (responsibility)
  - Key Element 2 (goals)
    - Activity 1 (responsibility)
    - Activity 2 (responsibility)
    - Activity 3 (responsibility) etc.!

Activities can either describe how the planning and execution must take place or how this will be evaluated and improved (Quality Circle). Example:

**Quality Area 3: Program and Result Quality (Rector)**
**Key Element 3.4 Teaching Quality:**
**Quality requirements:** Quality requirements: information, education, guidance, assessment and grading should be of high quality.

**Activity 1:** Implement institutes teaching periods and assessments (exams) in accordance with plans and regulations. (Head of Department) (Planning and implementation activities)
Activity 2: Implement and follow up student evaluation, self-evaluation and reporting in accordance with the established schedule. (Head of Department) (Evaluation and Improvement activities)

This Manual outlines thus a small (but central) part of the School’s quality system!

Documents
In the quality system it is also prepared a comprehensive document register, giving an overview of all key documents, forms, and procedures related to the studies. This should make it easier to get hold of the most important documents. This is thus a service, not the actual quality system. Several of the documents describe indeed the standards and procedures in quality improvement, but the document repository also contains documents that do not.

Block Leader’s responsibility:

In this manual the term Block Leader is used for the role of the one that has the overall responsibility for managing and coordinating a teaching period. In some parts of the studies, it is not appropriate to use the term block leader. But anyone who has a responsibility for teaching a subject area, course, module, semester etc., has all the duties and responsibilities described in this manual that are relevant for the implementation of this teaching period corresponding to the block leader.

The Block Leader is responsible to lead, manage, inform and assure the quality of the block according to applicable regulations.

The Block Leader has a coordinating role in interface with the Department for Academic Affairs and Research Administration (SFA), Academic Affairs Committee, other block leaders and the Department Board.

The Block Leader may delegate certain tasks to others in collaboration with Head of Department. E.g. Web-charge or who is responsible for specific modules (sub-unit), and the tasks that comes with this.

Key provisions responsibilities and tasks: R-1/04 ref: S.2004/132/A
Excerpt:

- The Block Leader has an academic and administrative responsibility for coordination of the block and is the block's contact person externally.
- The Block Leader shall coordinate the teaching programme in the block and help the block appear as a unit and with the greatest possible degree of integration of the disciplines both in terms of teaching and examination.
- The Block Leader will be responsible for information on course content and academic literature belonging to the block to the students. Information shall be provided in good time before the block begins.
- The Block Leader is responsible for the preparation of programme requirements and submitting proposals to the Study Committee about assessment methods for the block.
- The Block Leader will participate in the quality assurance of education programs and has the primary responsibility for the implementation of this acknowledge his block.
**Information:**
Visit the website: [www.NVH.no](http://www.NVH.no). Select in the left menu: Kvalitetssystemet. (This becomes operational again for 2012)

Hippocampus: Press the top meny button for the program you belong. All blocks for veterinary studies are arranged chrocologically down. For the animal nurse program (dyrepleierstudiet), you must first press the block list. This is the programs website. On top of the left menu for veterinary studies you will find teaching info. Here are all the key documents for the teacher unified. In addition, the direct link to the sites relevant information is on Hippocampus:

http://www.veths.no/Studentnett/130/Veterinarstudiet/Dokumenter/

Special documents for animal nurse program can be found here:

http://www.veths.no/Studentnett/130/Dyrepleierstudiet/Dplstud-info/

Study committee’s work: On Hippocampus, upper left menu under board and duties (utvalg og verv) are all the supporting documents, reports and papers that are included in the SU’s work.

**Different student groups:**

**Students with duties:**
Each block has its own reference group of students. The reference group should also in addition to student evaluation also be used in the planning and en route to discuss the curriculum. Reference groups are arranged after classes at Hippocampus.

The representatives are the contact person of the class. Summery over the representatives are under student posts (studentverv)

**Exchange students**
The departments are notified of exchange students when the lists of the group are ready (June and December). If there are exchange students who arrives NVH besides this, the responsible teacher will be asked whether there is space for them. Responsibility: Head of studies

If the home institution requires additional documentation for the clinic period than what NVH provides, departments must ensure that this can be obtained. Responsibility: Head of Section.

**Replacement students**
There will be admission of the replacement students to vacant study spots. Due to the different national curricula it will nearly always cause some extra work around the specific recognition and examination. Block manager is informed orally or by letter. Responsibility: Head of studies.
Additional students
NVH offers a 2 year course of study for foreign veterinarians who do not get authorization. They must provide evidence that they meet the Norwegian requirements. They start with drug legislation, then food safety in 6th semester. They take state veterinary medicine and clinical examination in 9th semester. They will be added to group lists together with other students. Additional students of the animal nurse program follow the program from the start, but can apply for exemption from subjects where similar examination was taken earlier.

Private/External Candidates
All external candidates who wish to visit or take exams on NVH must be referred to SFA. It has been prepared a private/external candidate regulation from August 2008 that regulate this.

Teaching process
Each time a block is taught or a study program is conducted, it is regarded as an independent project with four different phases: Planning, Implementation, Evaluation of achievement and Improvement. The four phases are performed each time the block is taught to ensure continuous improvement. The block Leader and the key lecturers in the clock form a project group.

The planning phase
In the planning phase, the learning outcomes for the block shall be reviewed and the means determined. Teaching and assessment form should be adapted to the learning outcome. This means that the teaching should facilitate that the students reach the goals, and the form of assessment shall be able to measure whether the objectives have been achieved. The form of assessment (exam) will not only serve as a check on the students’ learning, but also in itself contribute to learning.

Total time spent on organized teaching and students’ time to study and exam preparation should correspond to a workload for students on about 40-45 hours average per week.

Studie and semester start
Semester start: Is always first Monday from August 14th and the first Monday from January 4th. The fall semester is always 18 weeks. The spring semester is always 22 weeks (+ easter week)

The blocks always have the same amount of weeks at their disposition. This is stated in the curriculum and semester plan.

Class, group and reference group lists.
You will get access to class- and group lists at Hippocampus. These should be ready by the start of the semester. The class lists are as far as possible up to date. Responsibility: Study leader.

Study plan and subject description
By Mai 31th the study plan for the coming study year shall be available, this can be corrected for the spring subjects by November 30th. Responsibility Study leader.
The course description should contain information about:

- Block nr, name, English name, duration, credits, semester
- Aim
- Learning outcome
- Content (the subjects included, or which part of a subject)
- Teaching methods and approaches
- Teaching materials (may refer to Hippocampus)
- Recommended prerequisites
- Equipment requirements
- Mandatory teaching and program requirements (rules)
- Assessment/Examination (description, allowable utilities, grading)
- Block manager or the exam subject responsible and any course managers
- Responsible department.

Changes in the course name, credit, frames, assessments, or grading system is of a superior nature and cannot be changed by the block. Applications should be sent SU/ by study leader.

Other changes can be made by the block themselves, but this must be ready within the time limits, and after that they cannot be changed without specific reasons. Factors of particular importance to the student can only be changed past deadline if this does not cause inconvenience to students and in consultation with SFA and students. This is especially significant matters for examination and study requirements. Contact Study director if such a situation should arise.

Semester plans
The semester plans describe the block/subject time on the calendar, and the examination plan, the plan for repetition of an examination and holiday plan. This is made by SFA but sent for comment before a final plan is available. Before May 31st the semester plans for the coming study year shall be available, adjustments can be made for the spring subjects before November 30th. If this is done, the students at VSU have the opportunity to comment on the change. Responsibility: Study Manager.

Schedule
The schedule describes, what, when, where and by whom and is made by the block leader. It builds on the framework provided in the semester plan, but the block can make adjustments in the start of the semester and reading periods, and more The Schedule shall be fully completed no later than one month before the start of the block. NB! The work in the schedule must be started much earlier to finish at the prescribed time. See the document: Auditorium Order, interior.

The students gives feedback that they utilize the teaching day badly when the teaching starts at 9.15am and the lunch is 1h15min long 2 hours later. Therefore: Begin earlier in the morning, have shorter, or longer midday break to give the students more uninterrupted time to study. However, as of 7th semester in the veterinary studies the students are on a pathology demonstration from 11.30am to 12am, and there must be given time for this. Note! There are no requirements of a study free Wednesday. Because of the room division it is however desirable that the blocks vary more and coordinate among themselves. It is educational
conditions that determines how the blocks plan their schedules, provided that it occurs within the given framework and available resources.

Responsibility for the schedule: Block Leader

Booking rooms
See: Guidelines for room reservations
Responsible for ordering: Block leader

In *Microsoft Outlook* you can easily check what auditoriums are available, allowing double booking and misunderstandings to be avoided.

This is done as follows:
Click on File in the top menu, then go to Open > Other User’s Folder.
In the box that appears, type Auditorium and select Calendar.

The charts with manual for the auditorium order in Outlook, also hang on the doors of all auditoriums.

Remember that the doors to the auditorium shall be locked. Library card is obtained from the SFA.

All can reserve meeting rooms in outlook: Stoga and Hemsen. Other meeting rooms are bookable locally. The library reserves the seminar room and the public auditorium.

NB! There is a great demand for the course room. The course room should preferably not be used for any other activity than laboratory courses because of infection hygiene. There are separate laboratory coats for the course room. See the document: *Lecture room, course room, instructions.*

Computer facilities: Only the Hønseloftet can be reserved for educational purposes. At the present it is possible to have a teacher computer and 14 student computers in courses. In very special cases, the large computer rooms are reserved for teaching.

Read more about NVH rooms in the document: *Auditorium order, room overview.*

Booking of premises for examination is done automatically by the SFA when the semester plan exists. Some exams will be conducted externally. There will be given information on this. Responsibility: Study leader.

Book Store
Deadline is May 15th to guarantee that the books are in store by the start of the semester.
Remember that it is the block leaders responsibility to ensure that the required textbooks are available from the beginning of the semester. Note! Books are expensive, and can lead to large one-time expenses for the students.
Responsibility for ordering textbooks: Block leader
Requirements for equipment for the students.
This should be in the study plan or the course plan, so that the students can make their
desires on time. Be especially clear if you lend equipment, or expect students to buy it in
advance. Responsible for the correct information to be given in the study plan: Block Leader

Library
The library must be informed about the literature used.
Responsible for informing the library: Block Leader.

**Need for resources in terms of personnel, equipment or animals.**
It is the head of the department that manages the department’s personnel and financial
resources. The Block leader must address the department management with the use of
personnel and use of teaching methods that require resources beyond those adopted in the
study plan. If NVH must purchase teaching resources externally this must always clarify with
the department management. It is prepared a special form to document the agreement with the
external lecturer. Responsible for bringing it up: Block Leader,

**Students who apply for exemption from tuition and examination.**
Deadline to apply for any exemptions for subjects/areas of a subject is 1 month before the
start of the block. Students submit an application to the SFA, who will forward the application
to the block leader. The block leader has a deadline until the start of the block to reply to SFA.
Block leader will send a combined statement from the block. If the block leader has given the
students an exemption from parts of the exam it is the block leader’s responsibility to inform
the student and SFA clearly about which parts of the examination who must be answered and
the time available.
Responsible for administration: Study leader
Responsible for assessing academic equivalency: Block leader.

**Information that the students should have access to**
The study plan will provide a superior introduction to the subject and exams. Each block is
assigned an area in Hippocampus. When using multiple information channels: Have
conformity in the information.

It is extremely important that the rules for the mandatory education and the program
requirements, as well as all matters of importance for the evaluation of the candidate’s
performance is known to the student, and should be thoroughly described in the study plan.
The study plans examination description may NOT be deviated from. Literature can refer to
Hippocampus.

Responsibility for this information: Block leader

Other information such as lecture notes, old examination assignments etc., are optional for
their teacher to post online. (Students have under the Freedom of information Act a right to
have access to already given examination assignments). Inform however, of what policy you
have! Students always ask of this. There is less discussion around this if you are clear about
what you want and why.

When the teacher themselves has an intent to post lecture notes, SU expect it to happen in
advance. It provides better learning outcome to be able to write additional notes directly on
The PowerPoint presentation than traditional blackboard teaching, and it is often impossible to record without notes available.

The lecture notes are asked to be designated as single pages with pictures in full color. Students can put them in the desired number of slides per page their selves, and many will not print at all, but builds together notes themselves on the pc/mac. In addition, students themselves pay for prints, and should thus be able to decide whether they want to use their money on colors. This is most relevant in terms of lectures in which images and characters are important for understanding (for instance anatomy, cell biology, embryology and pathology).

**How to post on Hippocampus.**

Any information you submit on Hippocampus shall be marked with the date and class it applies.

A simple manual is located on Synapse, left menu: IT/manual/editing WEB. Here is the link to the guidelines for publication, reading mode and edit mode for the individual sites.

If you want to read information on Hippocampus go into: [http://www.veths.no/hippocampus](http://www.veths.no/hippocampus)

Password and user name can be obtained from SFA.

If you post information on Hippocampus contact IT for their editing user name and password. IT can assist with training and user support.

The following people on the departments can assist in laying out material:
BasAm: Julie Jansen
MatInf: Solfrid Odnes og Grethe Johansen
ProdMed:
SportFaMed: Ronny Reite

Hints on the sites: Create submenus on the left menu. Animal biology shows a simple template. Food Safety shows an advances form of schedule with clickable text. Some blocks have also made latest news sites of chronically updated information. Students report that they prefer mail when the information is urgent.

**It’s learning:**
The PhD studies use this learning platform instead of Hippocampus. The advantage of this is that it can be used interactively: you can communicate with students, post and collect assignments. In addition, students together or student-tutor give each other feedback on tasks (process input). In addition, it enables video clips and it is more visual than Hippocampus. Possibility of educational development is therefore great. The disadvantage is that in order to exploit the best, only the students who follow the course has access to the information. The system is also primarily intended for posting lecture notes and short messages. It is not good to be used as an online newspaper that Hippocampus is currently used for.

NVH is considering as a coordination process with UMB to transition to Fronter.

**The implementation phase**
Teaching

It should also be held monitoring meetings within the block to ensure that the momentum and direction is in accordance with the intended objectives. The purpose is to identify discrepancies quickly to make necessary corrections along the way. Meeting frequency is determined by the needs. The reference group may be convened to such meetings when it is required.

Cooperation with students

At the start of the block the block leader will inform on plans, expectations for students, the goals of the period, and the measures that have been implemented since the last time. This is important so that the students understand that systematically quality assurance work!

VSU proposed in the fall of 2007 that the reference groups will be responsible for the implementation of the mid-term evaluation. The proposal means that the block leader holds a short meeting with the reference group, the first day of the block. At this meeting, there will be brief information on the group’s tasks. A representative shall also be elected.

The reference group will carry a class meeting halfway in large blocks to see if there are any problem areas in the block. If necessary, the reference group requests a meeting with the block manager.

It is also important to informally take a little time to talk with students en route about the curriculum and how the students experience the situation and how to reach students, and also changing programs that do not work as well as possible.

Remember that teaching is primarily to facilitate the student’s learning. The teachers have the academic/educational responsibility for this. But that does not mean that the teacher should only satisfy the students as much as possible. The teachers shall also set requirements to the students so that they are led in the right direction.

Mandatory teaching and program requirements.

Education shall be mandatory only where teaching/learning cannot by replaced by other teaching or learning methods.

The blocks, however, are empowered to do more than courses and practice mandatory. To participate in group work, presentations and have discussions is also important, especially in professional studies where attitudes also shall be developed. It provides a different type of learning than individual learning. It may therefore be given grounds for educationally. The quality reform has led to more mandatory activities of this kind.

If the student is absent more than what’s acceptable, the SFA shall have notice of those will not have permission to take the exam, or those who are taking the exam but where the grade is not approved until the necessary mandatory education is repeated. The rules for mandatory education shall be notified in writing to the student through the curriculum. This will also explain how absence can be repeated and what the consequences of disapproval is.

Responsible: Block leader.

According to regulations, it is also an element of illness/strong welfare reasons for absence:
In case of illness or other strong welfare reasons, the head of department or his/her authorized determine that it will be implemented alternative program requirements if this is practicable and scientifically defensible.

This means that by valid absence one should be more flexible in arranging for the absence to be repeated in the current period.

**Internal and external practice**
For the veterinary studies there are given detailed rules for mandatory education, appraisal of clinical periods and replicates in the documents: clinic rotation in 8th and 9th semester, and Differentiation year, forms and guidelines.

It is prepared a practice manual for use in the animal nurse program. See Hippocampus

Forms and information relevant to practice on farms and practice with a veterinarian on the veterinary studies can be found on Hippocampus.

Rules for approval of external practices should be in the study plan

**Educational qualifications**

Monitoring of the teaching staff is a head of department responsibility and are described in the quality system under academic resources.

**Uniped course**
Everyone in a permanent academic position will undertake a course in university education no later than 2 years after employment. Responsible for implementing: The individual employee. Responsible for organizing: Head of department.

**Colleague Guidance**
As an educational competence lifting tool SU wish to introduce PAG as a method. You can read more about PAG as a method in the note: PAG. See Hippocampus.

**Educational seminars/meetings/literature**
SU will conduct seminars on educational topics about 1 time per semester. SU is responsible for facilitating the teachers across the study to come together in various occasions.

Elaborated paphlets dealing with various subjects such as learning outcomes, assessment, peer tutoring, etc. will be regularly posted on the Hippocampus and related to the role of teaching quality.

**Assessment (exam)**
Testing of the students’ skills and knowledge in the course of study will give them the opportunity to demonstrate an understanding of the contexts and ability to critical reflection, also according to their own beliefs. It will during the studies be variation in how the student learning is assessed. Examinations shall be assessed in accordance with University and College Council and the Ministry’s recommendations for the grade and in line with the law
on universities and colleges. The assessment arrangement will endure high quality, but also facilitate learning.

**Purpose of assessment**
The block should think through what the purpose of the assessment system that the block uses is. Is the main purpose control? Should it be included in the learning process? Should there be an external motivational factor? etc. How does the exam become leading to the learning?

The block should also think about whether it is the learning outcomes that are being tested through the examination? Is it parts of the learning outcomes that are not tested in the assessment arrangement that is used in the block? Is the education built on learning outcomes? The aim of the education is that all students learn what they should and that the examination is testing that these goals are achieved (possibly with different grading). It is also important to see the curriculum as a whole. Is it something that is tested later? Can you vary the test methods?

**Assessment form**
The students will have the opportunity to become familiar with the assessment form, so that the assessment form or implementation won’t affect the performance. This can for instance be done by reviewing one task set in advance, conduct test examinations or a demonstration of a clinical examination, so that the students become familiar with the form. It is also advisable to review the good and bad answers and explain the students what the teacher/censor emphasizes in the evaluation. Responsible: Block leader.

**Regulations**
The examination is important for the students and the legal rights of students are strong in the law.
The individual who participates in the processes involving the examination are required to familiarize themselves with and follow the rules and guidelines that exist at all time. It is the examination regulations that control the examination, while the details of how the exam is carried out will be explained in the study plan.
Responsible: All involved in the examination.

**Quality assurance of the examination.**
If something goes wrong on the examination it is a great misfortune for the individual student and NVH. What we have introduced of quality assurance systems will eliminate the risk of failure. The procedures are based on the experience and lessons we have at the present and will be evaluated continuously.

**Quality assurance of the assignment set.**
In the document: *Eksamination, routines, forms and templates to ensure the quality of the written examination* the quality assurance procedure is described.

The task page will contain the information that the developed template points out. It must be clear if some students should just answer parts. The information on the set must be clear and in accordance with the program.
Be especially aware that at least 2 people must read and possibly solve the assignments. It’s terribly boring to have errors in the examination tasks. If errors are detected during examination: Remember to inform of the error to all students in all rooms. The block leader must inform anyone creating examination tasks and visit the examination room about this. Responsible: Block leader.

Quality assurance of the assignment set applies to all studies and repetitions of examinations. Since there are always held repetition examinations for veterinary students, both task sets can be made, quality assured and delivered simultaneously. In that way time will be saved. The deadline to submit the repetition examinations in the veterinary program is one month after the block. Responsible: Block leader.

The assignment set must not go astray. The teachers are responsible for storing and sending proposal of the tasks in a secure way during the preparation of the set. If you use email, make sure it is encrypted. Responsible: Teacher.

If there are formal errors in an exam, the block leader writes a report about this. The examination regulations contain detailed rules on formal errors.

**Copying and delivery of examination assignments.**

The block leader sign that the task set is quality assured and delivers the assignments with a completed form no later than 9am, 3 working days before the examination. SFA thread this into the examination book.

The block can choose their selves if they want to deliver the assignment set when it’s copied or one completed copy of the assignment set. If the block delivers a finish copy the copying costs will be billed the department in line with the current rates. See the document: *Examination, routine, form and template to ensure the quality of the written exams.*

**Language variant**

The written examination shall be available in both language variants. SFA by the study consultants may be contacted to ascertain whether there in need for both language variants. Responsibility for both language variants to exist: Block leader

**Announcement of the examination assignments.**

Under the Freedom of information Act, all the students have the right to access the examination assignments that have been given to the examinations. SU has prepared a note on this. See Hippocampus.

**Other forms of examination**

Also in other forms of assessment such as oral examinations, take-home exam, and clinical/oral exams, several people must go together to discuss assignments and ensure that the difficulty is reasonably uniform and that the task formulation is evident. The exams should also be quality assured in accordance with the regulations, rules and guidelines. Responsible: Block leader

In the clinical/oral examinations the students has no access to the clinic besides to witness the examination presentation. Each teacher is responsible for the younger students not to be aware that a patient is an exam case. Responsible: Teacher.
After examination
The answers are collected after the examination and returned to SFA after censorship. SFA threads this into the exam book. Responsible: Block leader.

On an oral exam the censorship lists must be delivered as soon as they are ready. The grade will be notified the student and any justification will be given on the same day from the academic examination responsible.

Grading system
NVH uses the grading expression pass/fail and ranked grades from A to F. There have been developed criteria’s for this. See examination regulations and guidance for censors.

Censor
With tasks of higher degree (project assignments) it should always be used an external censor (Universities and College law, 2005). It is also customary to use external examiners for clinical/oral examinations, and all written exams with ranked grades. New regulations specify rules of censorship and the use of external evaluation of the arrangement.

It can be used an internal censor at regular exams, but it shall then be an external evaluation of the assessment arrangement (Universities and College law, 2005). With external evaluation of the assessment arrangement SFA shall be contacted for approval. This requirement applies regardless of examination form and grading system used, provided that the grade is recognized in the final grade or will be on the diploma.

Censor registry
SFA has created a censor registry. All censors are currently approved by the principal and appointed for up to 5 years. SFA will be notified of replacement or new censors. IF SFA is made aware of censors that quit, they will send a thank you letter. New censors will receive a letter of appointment from the principal and an information sheet.

Censor guidance/Censor information
It is developed guidelines for censors that provide information about the censor work. SU has decided that there should be a requirement for written examination guidance to all examinations at NVH. The students have by law the right to look at this after the exam.

Censorship
The censors should hold a censorship meeting after the examination to ensure the quality of the grading. The deadline is three weeks on exams and only the board may grant exemptions in special cases. It must in this case be a written reasoned application. Censorship list must be delivered SFA properly no later than 1pm. It has been established guidelines for quality assurance of censorship. Responsible for the sufficient quality assurance of the censorship: Block Leader.

During the course of the last 10 years at NVH there have been cases (though rare) where it is registered another grade on individual students than the assignment allowed for. This has been the result of careless mistakes, and should have been avoided. Studies at the University of Bergen shows that this is not unique and is perhaps more common than one might think. The
routine at SFA is that there are always 2 people that are checking that the correct grade is entered in the computer system and these 2 sign before the grade is approved. When we have several different forms of examination it is inappropriate to describe all possible imaginable circumstances that may rise, but one should try to avoid the following pitfalls:

1. Check that the grade you have set is of the basis of the whole answer.

2. For all tasks involving the summation of scores:
   • Be aware of the possibility of adding up scores wrong, and do a control calculation of this.
   • Always allow 2 persons to calculate the final score on the multiple choice exam.

3. If the examiner and teacher’s score has abnormally large discrepancy in relation to each other: Review the assignment jointly.

4. For written exams with solutions/grading guide, for instance multiple choice questions.
   • Check the task formulation/answers book one more time, if it is striking that many make the same mistake.

5. Check that the correct candidate number get the correct grade, have 2 people check that this is entered correctly on the censorship list.

**Complaint**
Appeals. Regulations at NVH describes this procedure. This refers to the role of the quality system. Students who ask for an explanation of the grading must turn to block leader. The block leader shall have good enough notes so that students know which parts of the paper that possibly is good or bad. Responsible: Block leader.

**Complaint form and information sheet.**
SFA has prepared a complaint form and information sheet for use by the students.

**Repetition examination.**
Rules in this regard are described in the examination regulations. The repetition examination in the veterinary course is laid out through the semesters. Remember that a professional must be available throughout the day of the examination, and that the SFA must have the name and telephone number of this person (mobile). For the clinical subjects the repetition examination period is at the next ordinary examination period (i.e. after ½ years). In clinical examinations, students receive clinical training before the new exam can be taken. SFA must be informed when this additional clinical training is approved. Responsible: Block leader.

**Exception handling**
With a failure rate of above 15% on the veterinary studies and 30% on the animal nurse program this shall be monitored particularly and reported to the head of department (see student evaluation routine)

**Follow-up on failure/exam review**
VSU has urged NVH to conduct exam reviews with the students. This was done for the first time in cell biology. 14 students failed. The block leader summoned the class (both those who failed and other interested parties) to undergo the examination in plenary. At the same time, those who wanted individual justification for the grading was asked to provide feedback by mail. Approximately 20 students attended the plenary review. There was set aside time to provide justification after one week, and the students were called in one by one. 4 students wanted an individual justification. Students did not know the scores, but rather what was good and why and where they were in relation to the desired grade. Experience from the block was that this rationalized the work and the student probably learned more of the subject from this.

**Assessment of the goal attainment phase**

*When the block/teaching period is completed, the project group will assess whether the objectives for the course are achieved. This is based on the student evaluation and the self-evaluation of the block. To ensure continuous improvement, the results must be followed up by reporting to the head of the department.*

**Student evaluation**

NVH uses these two forms of student evaluation of the block/period alone or in combination:

- Temperature measurement represents simple questionnaire directly after each block/period/semester to obtain a representative look of the majority of the opinion of the class. This is likely to reveal areas that require extra effort or areas where things generally go smoothly.

- The evaluation meeting represents the meeting between the (reference group) students and the teacher in the block. Here are the topics elaborated and different views aired. This can happen within a block/period or after grading. Students write the summary in cooperation with the block manager.

AT NVH the block usually has a score between 4 and 5 on the temperature measurements. If the results vary negatively from this, one should follow this up especially, as it may indicate problems (at least one has not been able to reach this group of student, and should try to determine why).

**The blocks self-evaluation**

The block/period carries out a self-evaluation and makes reports to the head of the department. It is developed a template for this report which is send to the head of the department.

Indicators of achievement is obtained in part through direct student contact, student evaluation of teaching, attendance percentage of students on voluntary teaching, examination results and students’ work effort and the teachers own assessments. With for instance a high failure rate in a subject the report must contain possible reasons and an analysis of this and consider what measures should be taken in the short and long term. NVH consider a failure rate of less than 10 is considered acceptable, 10-15 as somewhat high, and over 15 % as unacceptable by a student number of approx. 70. These limits are designed on the basis of what the failure rate
usually is. In the animal nurse program the limit is set up to 30% because of low student numbers. At too high failure rate it shall be accounted for explicitly in the report to the head of the department.

**Reporting to the Head of the department.**
The block leader sends a report to the head of the department within the end of the academic year (to be included in the study quality report, the report must be submitted by September, for blocks with examinations in June) Tables and abstracts from reference groups will be found on Hippocampus.

**Improvement phase**
The measurements which were determined after the previous cycle will be carried out. Has it come to new circumstances that make the proposed measurements inexpedient or the resource situation makes it impossible, this will be justified to the new students. During the new project cycle the new project group reflects over the effect of the measurements. This knowledge will also be incorporated in the new planning and new proposals. In this way one will have systematically quality work.

It is important to be aware of the information provided to students. How to provide the students with information and at what time this happens. Students often accept delays and changes if they know about it in advance and get an objective justification.

Students do not see the studies in a historical perspective. If the students shall feel that the quality work improves, they must know about what is being done. Only the teachers can convey this in an appropriate manner. Teachers are role models to the students. What attitudes you convey about NVH as a curricula, study plans and quality systems affects the perception the students receive.

Below the aggregation of data and results and implementation of measurements in the quality system is outlined, i.e. yearly quality work in a nutshell.

NOKUTs 10 criterion says:
*An annual report on the quality work shall be drawn out to the board of the department, which provides a comprehensive and overall assessment of the study quality of the department and overview of prospect and initiative in the quality work.*
Appendix 8: Mandate for the Study Committee for the Veterinary Medicine and Veterinary Nurse Program and School Director

Adopted by the Joint University Board 29.11.2013

Purpose
The purpose of the Study Committee is to:
- Develop and strengthen the vocational education for veterinary surgeons and veterinary nurses
- Ensure international accreditation of both study programs
- Implement NMBU’s overall education strategy for the veterinary medicine and veterinary nurse programs
- Ensure good coordination between the departments in order to secure the overall integration of the study programs

Responsibilities
The Study Committee handles and coordinates strategic, academic educational and resource questions concerning the veterinary medicine and veterinary nurse programs. The Student Committee also functions as an advisor for the School Director.

The Study Committee’s main task is to:
- Ensure the uniformity, continuity and quality of the veterinary medicine and veterinary nurse programs through working with the study plan and work to ensure that NMBU’s goal of quality in education is achieved. This includes working with:
  - Assessing, handling and proposing major revisions of the study plans for the veterinary medicine and veterinary nurse programs as needed
  - Assessing, handling and proposing minor annual changes in the study plans.
  - By working with the study plans, maintain the focus on ensuring that the learning outcomes meet the society’s needs and accreditation body’s requirements for content and learning outcomes.
  - By working with the study plans, ensure that the teaching methods facilitate the achievement of the learning outcomes and that studies have assessment methods that document this.
- Work to educate candidates that satisfy society's overall needs through the recruitment and admission of the right students as well as the development of society participants in all relevant areas during the studies.
- Follow up on the issues the quality system raises concerning the programs and help the further development of the quality system in order to meet the standards set by the accreditation bodies' requirements and NMBU’s education quality system.
- Develop pedagogical and didactic measures for the study programs in collaboration with the central study board at NMBU.
- Manage guidelines and strategies relevant for the study programs.
- Manage the programs for further education courses in veterinary medicine and veterinary nursing.
• Handle any other matters raised by the School Director, including issues regarding education politics.

The Study Committee may appoint ad hoc committees for the study of a particular matter. Any recommendations from the ad hoc committee are handled by the Study Committee.

The Study Committee is chaired by the School Director for the Veterinary Medicine and Veterinary Nurse programs. The School Director has a particular responsibility for ensuring that decisions made are supported by the students and departments. This is to be done by consulting them on relevant processes. All changes in study plans, strategies and guidelines must be sent for consultation to the all departments and students. The results of the consultation shall be presented to the relevant board before any decisions.

The department representatives and student representatives have a particular responsibility to inform the department staff and their fellow students about up-coming issues to be considered in the Committee and discussions that have been in the Committee, and to inform the committee of the departments’ and the students’ views.

The School Director and department representatives in the committee are also present at the meetings of the Central Study Committee of NMBU.

**Members of the study committee**

The study committee consists of:

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Director</td>
<td>1</td>
</tr>
<tr>
<td>Representative from the Department of Basic Sciences and Aquatic Medicine</td>
<td>1</td>
</tr>
<tr>
<td>Representative from the Department of Food Safety and Infection Biology</td>
<td>1</td>
</tr>
<tr>
<td>Representative from the Department of Production Animal Clinical Sciences</td>
<td>1</td>
</tr>
<tr>
<td>Representative from the Department of Companion Animal Clinical Sciences</td>
<td>1</td>
</tr>
<tr>
<td>Director for the Veterinary Nurse program</td>
<td>1</td>
</tr>
<tr>
<td>Student representatives</td>
<td>2</td>
</tr>
</tbody>
</table>

Each department board appoints its representative on the committee, with a personal deputy. The term is four years. The Students' Political organization VSU appoints two student representatives with a deputy for each of the representatives. If both the student representatives are veterinary medicine students, a representative of the veterinary nurse students must be present when matters concerning the veterinary nurse program are treated.

The Head of the Veterinary Medicine and Veterinary Nurse Studies in the administration functions as the secretary of the Study Committee.

The secretary is responsible for the minutes of the meetings of the committee. The minutes shall be made available on-line.

The School Director in cooperation with the secretary shall convene the meeting; a meeting must be held at least once a month.
Responsibilities of the School Director

The Chair of the Study Committee is titled School Director. The School Director is appointed by the Dean of the Faculty of Veterinary Medicine and Biosciences. The School Director must be a veterinarian with teaching, research and educational qualifications and/or experience and shall be appointed for a term of four years. School Director is responsible for ensuring that the Study Committee's tasks are attended to and responsibilities are met. The School Director takes part in meetings of the Central Study Committee of NMBU along with the four department representatives as the representatives of the veterinary medicine and veterinary nurse programs. The School Director, in cooperation with the Secretary of the Committee, has the responsibility for summoning meetings. The School Director works closely with the Heads of Departments responsible for the veterinary medicine and veterinary nurse programs, the Head of Study and the Dean of the Faculty of Veterinary Medicine and Biosciences. The School Director has a particular responsibility for ensuring that decisions made are supported by the students and departments. This is to be done by consulting them on relevant matters. All changes to study plans, strategies and guidelines must be sent for consultation to all departments and the students. The results of the consultation shall be presented to the relevant board before any decision is made.

Responsibilities:

- Chair the Study Committee.
- Adopt the minor annual adjustments to the current framework of the study- and semester plans.
- Initiate all major revisions of the study plans in the Study Committee.
- Present proposals for major changes in the study plans of the veterinary medicine and veterinary nurse programs to the Faculty Board.
- Responsible for contacts with national and international educational and accreditation bodies for veterinary medicine and veterinary nurse education. The School Director carries the responsibility for ensuring that the veterinary medicine and veterinary nurse program meet the accreditation bodies' requirements.
- Establish contact with relevant employers of graduates from programs, including businesses, government agencies and interest organizations.
- Establish contact and hold regular meetings with the veterinary student council.
- Maintain contact with the program committees of other relevant programs at NMBU, particularly within the Faculty of Veterinary Medicine and Biosciences.
- Coordinate efforts with strategies delegated by the departments within the educational activities and present this for the relevant board (department boards or faculty board).
- Decision-making authority delegated by the departments on matters relating to the establishment of the Committee for local admissions, termination of studies, study plans, study abroad, leave and facilitation of studies, language on exam, the study's assessment arrangements as described in the course description, registration of mandatory activities in the administrative system FS and the appointment of examiners to regular assessment and re-assessment as presented in NMBU’s regulations and Guidelines.
When a student applies for exemption from a subject, special adaption of the studies or for having the examination in another language, the relevant academic personnel must be consulted before making a decision in cases where it is questionable whether this is academically equivalent or if of practical/economic importance to the Department.

- Decision-making authority in matters related to students' study progression and granting of additional attempts at exams, as specified in the supplementary guidelines to NMBUs regulations and rules for this in the study plans.
- Decision-making authority delegated by the departments to approve the study's guidelines. The guidelines further specify who has the authority for decision-making.
- Decision-making authority delegated by the departments for approving further education courses.
- Responsible for the establishment of student exchanges and education agreements with national and international partners.
- Responsible for initiating replacement admission and adoption of admission frames.
- Function as an advisor for the Norwegian Food Safety Authority when consulted on authorization cases.
- The School Director may when needed appoint other permanent advisory committees.
- The School Director may receive other tasks from the Dean.

The administrative section with special responsibility for veterinary medicine and veterinary nurse programs provides administrative support and administers the regulations that are delegated to the School Director. The School Director may delegate decision-making authority to the Section where this is appropriate.
Appendix 9: Researched based education

NVH January 2013

Research-based education – January 2013

Clarification of NVH’s understanding of the term research-based education and information on the use of research-based education at NVH.

Teaching – Education
These terms are sometimes used interchangeably but content wise there is a difference in teaching and education.

The Program Quality Committee (Studiekvalitetsutvalget, 1999) uses the following distinction:

Teaching is generally used as a term for how the encounter between subject content, teacher and students is organized at a program level, i.e. at the micro level.

Education is commonly used as a collective term for broader educational groups, programs offered and teaching within these, i.e. both macro and micro level.

When NVH uses the concept of research-based education, the university college includes both issues of teaching (how the teacher organizes the teaching, supervision, monitoring, etc.) and education (program organization, learning environment and framework for teaching).

Research-based education – intention
NVH notes that the term of research-based education (research-based teaching) is understood in different ways, and it is partly somewhat unclear how the individual universities and university colleges uses the term.

After a perusal of the strategic plans of Norway’s many higher education institutions, Strømsø concludes that, “one can quickly be left with the feeling that research-based teaching is a mandatory but vague term in this type of intentional statement” (Strømsø 2006).

The descriptions (definitions), however, can be grouped into a few broader categories:

a) Descriptions with focus on institutional prerequisites.
   I.e., demands of research activities at the institution, research skills, the share of researchers participating in teaching, that active researchers actually participate in teaching, etc.

b) Descriptions with focus on teaching
   I.e., how to link research and teaching

We also find descriptions focusing on the teacher's pedagogical skills, i.e. the teachers’ skills in planning and implementing research-based teaching, but this will not be discussed in detail in this context.
A. Interpretations/descriptions focusing on institutional prerequisites

1. The teaching shall disseminate current and research-based knowledge

This is the least demanding interpretation of the concept and obviously an inadequate criterion for research-based teaching. Research-based teaching in this sense is basically no different from the education offered in other parts of the educational system.

Without documenting this further, we must determine that NVH’s teaching is based on research in this sense of the term.

One can still discuss how active the teachers (researchers) at NVH are in the process of shaping the curriculum and how well-grounded the descriptions of learning outcome are among all of those who teach.

To keep the teaching updated, those with particular expertise in the field must take responsibility for that the updated knowledge is embodied in the curriculum – in the plan for the program – and there must be an active discussion in the academic environment about what is relevant and less relevant.

2. Teaching shall be connected to a research community

The second interpretation of research based teaching requires both research and teaching in the academic and physical environment. Such institutional connection however does not guarantee contextually or methodological connection. Often it will be very difficult to get a direct correspondence between teachers' fields of research and teaching. This is mainly a problem at PhD level.

If this interpretation of the term is used, we see immediately that teaching at NVH is within the framework specified for research based teaching. This should not be necessary to document further.

3. Permanently employed teachers shall have research skills

Regarding interpretation 3 it is a known requirement at universities and university colleges that those employed have research skills, often defined as a PhD or equivalent.

This also applies NVH; therefor the university college fulfills the requirements of research based teaching in this sense.

4. Active researchers shall have the main role in teaching

The strictest interpretation of the term means that the teacher is an active researcher in the discipline he/she teaches in. This requirement proves difficult to satisfy in full by all higher education institutions, in part because research expertise in any field is difficult to implement because of resource-related reasons, and partly because the staff necessarily must teach in areas they have not done research in.
By NVH implementing the rule that the teacher is an active researcher in the discipline he/she teaches in full at the PhD education. The rule is also carried out in the veterinary medicine and veterinary nurse program, but there will also be exceptions - especially if one interprets this rule as an absolute.

Nevertheless, one could argue that the NVH’s teaching is research-based - even if we add this strict interpretation of the term used.

Summary:
When we begin with descriptions of research-based education where the emphasis is on institutional prerequisites, we see that this aspect of research-based education is addressed at NVH. NVH meets the requirements set forth in these descriptions - also if we look at the strictest interpretations of the term.

B. Interpretations/descriptions with focus on the relationship between research and teaching

We find descriptions of research-based instruction that emphasize that:

Students will develop a scientific mode of thought and get training in scientific method through close contact with active research.

In this use of the term, the student’s learning is in focus and the relationship between research and teaching is emphasized. In higher education, we see this type of "close encounter" primarily at Master and PhD level.

The choice of teaching plan, teaching methods, and ways of organizing the teaching, will be determining for whether or not students get this close contact with active research. It is not sufficient that scientists have a key role in teaching and disseminate updated knowledge, but it is also required that the two components, research and teaching, are actively linked.

In a report by a working group from the Norwegian Association of Higher Education Institutions (UHR) it is mentioned that in recent years, particularly in the UK, North America and Australia, there has been a great commitment to strengthening the relationship between research and teaching.

Research experience should be incorporated in programs of study. The goal is to modify the education in a direction where students take part in research and development (R&D), and do not just consume knowledge. This represents a fundamental shift from the notion of the student as a passive listener to an active partner in a research community, where the student activities reflect the teachers' R&D activities (Report of the working group of the UHR, July 2010).

This goal is also enshrined in the Quality Reform.

In the above mentioned report it is established that main argument for research-based education from a student perspective is that through early contact with active research communities, the students are taught to understand how research-based knowledge is produced.
Starting with Healey and Jenkins’ (2009) classification, the UHR report distinguishes between four types of research-based education that together create a good balance between research content, results, the research process and methodology:

1. Teacher-centered education where the content is research based.
2. Teacher-centered education that focuses on the research process and a scientific way of thinking.
3. Education where students actively participate in a discussion of a research-based content.
4. Education in which the student is included in an "investigative" learning processes.

The first two can be realized within the boundaries of the traditional lecture. The third type presumes group-based learning methods, while the last type means that students are involved in research or research-like processes.

In the preparation and implementation of teaching, NVH utilizes all the four forms of research-based teaching that Healey and Jenkins describe. However, because the programs taught are vocational programs – i.e. they aim to give students a basis for solving problems of a more practical nature – it is natural that the research component will be largely applied. It is therefore important that the theoretical and scientific (research-related) knowledge are relevant to the professional practice.

In the veterinary medicine program, the students get an insight into the research and development within the field of veterinary medicine, both through the content of their teaching being research based (see Healy and Jenkins category 1), but also through special teaching blocks where scientific thinking, research process and research methods are the topic (see Healy and Jenkins category 2).

In addition to this, it is common in several teaching blocks that the research that takes place at the college is referred to and integrated into the teaching, both by the lecturer raising issues by pointing to ongoing research, but also in that research results are used to animate and illustrate relevant issues. In these contexts, it is not uncommon to use educational methods that fall under category 3 in Healy and Jenkins’ list.

In the last part of the veterinary medicine program the students must write a thesis or project assignment where a key aim is for students to gain direct experience with and understanding of research, i.e. both the principles of scientific research, scientific method and process. Depending on the specialization, the thesis is awarded 15, 20 or 40 credits (ECTS). The assignment of 40 credits must be written on the basis of a research project approved by the Committee for Research and Ethics. The topics for the theses are suggested by the college's academic staff, and in many cases the research question is related to an ongoing research project that the teacher conducts.

NVH has also received approval to establish its own “research year”, but this is at present not implemented due to a lack of funding. Students who choose to do a research year will get a special base from where to continue along research and research-related career paths, in addition they will receive full certification as a veterinarian after completing the program. Both of the last two examples fall under category 4 in Healy and Jenkins’ list, i.e. they are examples of educational programs in which the student enters and plays a starring role in "investigative" learning processes.
Summary:
When we begin with descriptions of research-based education with a focus on the links between research and teaching, we see that this aspect of research-based education is well taken care of at NVH.

It is natural for NVH, as a vocational educational institution, that teaching has an emphasis on research of applied nature and research related to practical professional practice. But students also get the knowledge and experience of research that has the character of basic research, as shown by the examples of the research year and thesis or project paper.

Conclusion

1. Teaching at NVH conveys current and research-based knowledge, teaching is associated with a research environment, employees have a research expertise and active scientists have a major role in teaching.

Given interpretations/descriptions of research-based teaching with a focus on institutional assumptions, the teaching at NVH is research based.

2. The relationship between teaching and research at NVH is expressed in different ways. Teaching whose content is based on research is probably dominant, but the students also receive training in scientific method through close contact with active research.

In this way the veterinary study material and learning processes in which students reflect on knowledge correlations, its view of knowledge, science perception and professional ethics, and where students are given the opportunity to gain knowledge and direct experience with scientific standards of research and research activities.

Given interpretations/descriptions of research-based teaching with a focus on the relationship between research and teaching, the teaching at NVH is research-based, but the connection will not be as evident in all parts of the program.

References


Strømsø, Helge (2006) “Forskningsbasert undervisning” [Research-based education], in Lycke and Lauvås (eds), *Når læring er det viktigste* [When learning is the most important], Cappelen.

Working group by the Norwegian Association of Higher Education Institutions (UHR) (2010) *Utdanning + FoU = sant* [Education + R&D = True], report.
Appendix 10. List of publication

Publications 2011

Articles in international journals


Impact factor 0.939

Impact factor 1.079

Impact factor 2.044

Impact factor 2.656

Backström T, Schjolden J, Øverli Ø, Thörnqvist PO, Winberg S. Stress effects on AVT and CRF systems in two strains of rainbow trout (Oncorhynchus mykiss) divergent in stress responsiveness. Hormones and Behavior 2011; 59: 180-186.
Impact factor 3.865

Impact factor 3.322

Impact factor 1,830

Impact factor 1,115

Impact factor 3,062

Impact factor 1,918

Impact factor 1,730

Impact factor 1,561


Impact factor 1,492


Impact factor 3,013

Connelley T, Storset A, Pemberton A, MacHugh N, Brown J, Lund H, Morrison IW. NKp46 defines ovine cells that have characteristics corresponding to NK cells. *Veterinary Research* 2011; 42: 37

Impact factor 4,060


Impact factor 6,273


Impact factor 2,869


Impact factor 5,144


Impact factor 3,916


Impact factor 1,367


Impact factor 4,597


Impact factor 1,367


Impact factor 3,206


Impact factor 1,380


Fæste CK, Rønning H, Christians U, Granum PE. Liquid chromatography and mass spectrometry in food allergen detection. Journal of Food Protection 2011; 74: 316-345. Impact factor 1,937

Gabrielsen KM, Villanger GD, Lie E, Karimi M, Lydersen C, Kovacs KM, Jenssen BM. Levels and patterns of hydroxylated polychlorinated biphenyls (OH-PCBs) and their associations with thyroid
hormones in hooded seal (Cystophora cristata) mother-pup pairs. *Aquatic Toxicology* 2011; 105: 482-491.
Impact factor 3,761

Impact factor 2,041

Impact factor 4,073

Impact factor 2,201

Impact factor 2,00

Impact factor 2,046

Impact factor 1,248

Impact factor -

Impact factor 3,327

Impact factor 1,367

Impact factor 2,294
Impact factor 1,610

Impact factor 1,306

Impact factor -

Impact factor 2,239

Impact factor 0,545

Impact factor 2,041

Impact factor 2,370

Impact factor 1,367

Impact factor 3,327

Impact factor 3,327

Impact factor 5,402

Hedhammar Å, Indrebø A. Rules, regulations, strategies and activities within the Fédération Cynologique Internationale (FCI) to promote canine genetic health. *Veterinary Journal* 2011; 189: 141-146.
Impact factor 2,239

Hetland KDL, Dale OB, Skjødt K, Press CMcL, Falk K. Depletion of CD8 alpha cells from tissues of Atlantic salmon during the early stages of infection with high or low virulent strains of infectious salmon anaemia virus (ISAV). *Developmental and Comparative Immunology* 2011; 35: 817-826.
Hild S, Clark CCA, Dwyer CM, Murrell JC, Mendl M, Zanella AJ. Ewes are more attentive to their offspring experiencing pain but not stress. *Applied Animal Behaviour Science* 2011; 132: 114-120. Impact factor 1,918


Jørgensen A, Torp K, Bjørland MA, Poppe T. Wild Arctic char *Salvelinus alpinus* and trout *Salmo trutta*: hosts and reservoir of the salmonid pathogen *Spironucleus salmonicida* (Diplomonadida; Hexamitidae). *Diseases of Aquatic Organisms* 2011; 97: 57-63. Impact factor 2,201


Levoll MT, Austbø L, Jørgensen JB, Rimstad E, Frost P. Transcription of reference genes used for quantitative RT-PCR in Atlantic salmon is affected by viral infection. *Veterinary Research* 2011; 42: 8 Impact factor 4,060

Impact factor 3,300

Impact factor 2,041

Impact factor 2,076

Impact factor 2,843

Impact factor 1,115

Impact factor 2,011

Impact factor 0,914

Impact factor 1,115

Impact factor 1,115

Impact factor 1,295

Impact factor 1,367

Mellegård H, From C, Christensen BE, Granum PE. Inhibition of *Bacillus cereus* spore outgrowth and multiplication by chitosan. *International Journal of Food Microbiology* 2011; 149: 218-225.
Impact factor 3,327

Mellegård H, Kovács ÁT, Lindbäck T, Christensen BE, Kuipers OP, Granum PE. Transcriptional responses of *Bacillus cereus* towards challenges with the polysaccharide chitosan. *PLoS ONE* 2011; 6: e24304
Impact factor 4,092
Mellegård H, Strand SP, Christensen BE, Granum PE, Hardy SP. Antibacterial activity of chemically defined chitosans: Influence of molecular weight, degree of acetylation and test organism. 
Impact factor 3,327

Midtlyng PJ, Grave K, Horsberg TE. What has been done to minimize the use of antibacterial and antiparasitic drugs in Norwegian aquaculture? *Aquaculture Research* 2011; 42 Suppl 1: 28-34.
Impact factor 1,203

Impact factor 1,698

Impact factor 0,288

Impact factor 2,869

Impact factor 2,799

Impact factor 2,999

Impact factor 0,989

Impact factor 1,522

Impact factor 2,046

Impact factor 1,042

Impact factor 1,042
Impact factor 1,895

Impact factor -

Impact factor 3,369

Impact factor 3,609

Impact factor 1,079

Impact factor 1,367

Impact factor -

Impact factor 1,784

Nordstoga AB, Söderquist L, Ådnøy T, Paulenz H. Fertility results after vaginal deposition of frozen-thawed buck semen diluted with two different extenders using one- or two-step procedures. *Reproduction in Domestic Animals* 2011; 46: 82-86.
Impact factor 1,356

Nymo IH, Tryland M, Godfroid J. A review of *Brucella* infection in marine mammals, with special emphasis on *Brucella pinnipedialis* in the hooded seal (*Cystophora cristata*). *Veterinary Research* 2011; 42: 93
Impact factor 4,060

Impact factor 2,564

Impact factor 1,561


Peeler EJ, Oidtmann B, Midtlyng PJ, Miossec L, Gozlan RE. Non-native aquatic animals introductions have driven disease emergence in Europe. Biological Invasions 2011; 13: 1291-1303. Impact factor 2,896


Præsteng K, Mackie RI, Cann IKO, Mathiesen SD, Sundset MA. Variations in the 16S-23S rRNA internal transcribed spacer of fibrolytic Butyrivibrio isolates from the reindeer rumen. Canadian Journal of Microbiology 2011; 57: 617-622. Impact factor 1,363

Purcell MK, Marjara IS, Batts W, Kurath G, Hansen JD. Transcriptome analysis of rainbow trout infected with high and low virulence strains of Infectious hematopoietic necrosis virus. Fish and Shellfish Immunology 2011; 30: 84-93. Impact factor 3,322


Ropstad EO, Leiva M, Pena T, Morera N, Martorell J. Cryptococcus gattii chorioretinitis in a ferret. Veterinary Ophthalmology 2011; 14: 262-266. Impact factor 0,748
Impact factor 2,508

Impact factor 1,506

Impact factor 2,830

Impact factor 0,485

Impact factor 1,874

Impact factor 3,322

Impact factor 4,153

Impact factor -

Serrano E, Storebakken T, Penn M, Øverland M, Hansen JØ, Mydland LT. Responses in rainbow trout (*Oncorhynchus mykiss*) to increasing dietary doses of lupinine, the main quinolizidine alkaloid found in yellow lupins (*Lupinus luteus*). *Aquaculture* 2011; 318: 122-127.
Impact factor 2,041

Impact factor 5,228

Impact factor 2,213

Impact factor 3,083
Impact factor 1,367


Impact factor 1,367


Impact factor 1,367


**Book chapters. No impact factor**


Articles in Norwegian. No impact factor


Publications 2012

Articles in international journals


Andersen F, Østerås O, Fjuk GHE, Volden H. Effect of concentrate escalation postpartum on the shape of the lactation curve and health parameters of Norwegian dairy cattle. Livestock Science 2012; 143: 249-258. Impact factor 1,249


Aroua S, Maugars G, Jeng SR, Chang CF, Weltzien FA, Rousseau K, Dufour S. Pituitary gonadotropins FSH and LH are oppositely regulated by the activin/follistatin system in a basal teleost, the eel. *General and Comparative Endocrinology* 2012; 175: 82-91. Impact factor 2,823


Bjelland AM, Sørum H, Tegegne DA, Winther-Larsen HC, Willassen NP, Hansen H. LitR of *Vibrio salmonicida* is a salinity-sensitive quorum-sensing regulator of phenotypes involved in host interactions and virulence. *Infection and Immunity* 2012; 80: 1681-1689. Impact factor 4,074


Impact factor 2,924

Impact factor 5,257

Impact factor 3,258

Impact factor 6,248

Impact factor 1,422

Impact factor 2,883

Impact factor 3,104

Impact factor 2,196

Impact factor 2,064

Impact factor 2,092

Impact factor 3,127

Collignon CM, Heiene R, Queay Y, Reynolds BS, Craig AJ, Concordet D, Harran NX, Risøen U, Balouka D, Faucher MR, Eliassen KA, Biourge V, Lefebvre HP. Comparison of pharmacokinetic...

Impact factor 1,348


Impact factor 5,513

**Davidson RK, Robertson LJ.** European pet travel: misleading information from veterinarians and government agencies. *Zoonoses and Public Health* 2012; 59: 575-583.

Impact factor 2,086


Impact factor 2,947


Impact factor 4,074


Impact factor 1,147


Impact factor 2,852


Impact factor 1,345


Impact factor 2,381


Impact factor 2,009


Impact factor 2,030


Impact factor 3,678

Impact factor 2,183

Impact factor 2,389

Impact factor 2,389

Evans AL, das Neves CG, Finstad GF, Beckmen KB, Skjerve E, Nymo IH, Tryland M. Evidence of alphaherpesvirus infections in Alaskan caribou and reindeer. BMC Veterinary Research 2012; 8: 5.
Impact factor 1,861

Impact factor 3,730

Impact factor 1,345

Impact factor 1,392

Impact factor 3,216

Finstad ØW, Falk K, Løvoll MT, Evensen Ø, Rimstad E. Immunohistochemical detection of piscine reovirus (PRV) in hearts of Atlantic salmon coincide with the course of heart and skeletal muscle inflammation (HSMI). Veterinary Research 2012; 43: 27.
Impact factor 3,426

Impact factor 2,286

Fotland TØ, Paulsen JE, Sanner T, Alexander J, Husey T. Risk assessment of coumarin using the bench mark dose (BMD) approach: children in Norway which regularly eat oatmeal porridge with
cinnamon may exceed the TDI for coumarin with several folds. *Food and Chemical Toxicology* 2012; 50: 903-912. Impact factor 3,010

**Fraser TWK, Rønneseth A, Haugland GT, Fjelldal PG, Mayer I, Wergeland HL.** The effect of triploidy and vaccination on neutrophils and B-cells in the peripheral blood and head kidney of 0+ and 1+ Atlantic salmon (*Salmo salar* L.) post-smolts. *Fish and Shellfish Immunology* 2012; 33: 60-66. Impact factor 2,964


**From C, van der Voort M, Abee T, Granum PE.** Characterization of a spore-specific protein of the *Bacillus cereus* group. *FEMS Microbiology Letters* 2012; 331: 152-159. Impact factor 2,049

**Gadan K, Marjara IS, Sundh H, Sundell K, Evensen Ø.** Slow release cortisol implants result in impaired innate immune responses and higher infection prevalence following experimental challenge with infectious pancreatic necrosis virus in Atlantic salmon (*Salmo salar*) parr. *Fish and Shellfish Immunology* 2012; 32: 637-644. Impact factor 2,964


**Gjerde B.** Morphological and molecular characterization and phylogenetic placement of *Sarcocystis capreolicanis* and *Sarcocystis silva* n. sp from roe deer (*Capreolus capreolus*) in Norway. *Parasitology Research* 2012; 110: 1225-1237. Impact factor 2,852


**Godfroid J, Al Dahouk S, Pappas G, Roth F, Matope G, Muma JB, Marcotty T, Pfeiffer D, Skjerve E.** A “One Health” surveillance and control of brucellosis in developing countries: moving away from improvisation. *Comparative Immunology, Microbiology & Infectious Diseases* 2012; DOI: 10.1016/j.cimid.2012.09.001. Impact factor 1,808


Holand Ø, L’Italien L, Weladji RB, Djakovic N, Reed KH, Hovland AL, Nieminen M. Shit happens - a glimpse into males’ mating tactics in a polygynous ungulate - the reindeer. Rangifer 2012; 32: 65-72. Impact factor -


L'Italien L, Weladji RB, Holand Ø, Reed KH, Nieminen M, Côté SD. Mating group size and stability in reindeer Rangifer tarandus: the effects of male characteristics, sex ratio and male age structure. *Ethology* 2012; 118: 783-792. Impact factor 1.947


Lind AK, Houe H, Espetvedt MN, Wolff C, Rintakoski S, Thomsen P. Increases in the completeness of disease records in dairy databases following changes in the criteria determining whether a record counts as correct. *Acta Veterinaria Scandinavica* 2012; 54: 71. Impact factor 1,345


Lund H, Boysen P, Dean GA, Davis WC, Park KT, Storset AK. Interleukin-15 activated bovine natural killer cells express CD69 and produce interferon-γ. *Veterinary Immunology and Immunopathology* 2012; 150: 79-89. Impact factor: 1,877


Lybeck K, Løvoll MT, Johansen TKB, Olsen I, Storset AK, Valheim M. Intestinal strictures, fibrous adhesions and high local interleukin-10 levels in goats infected naturally with *Mycobacterium avium* subsp. *paratuberculosis*. *Journal of Comparative Pathology* 2012: DOI: 10.1016/j.jcpa.2012.05.007. Impact factor: 1,376


Løken T, Bjørnstad ER, Ersdal C. Intestinal adenocarcinomas in three generations of sheep. *Veterinary Record* 2012; 170: 54. Impact factor: 1,803

Løvdal IS, From C, Madslien EH, Romundset KCS, Klutterud E, Rosnes JT, Granum PE. Role of the gerA operon in L-alanine germination of *Bacillus licheniformis* spores. *BMC Microbiology* 2012; 12: 34. Impact factor: 3,104


Marjara IS, Chikwati EM, Valen E, Krogdahl Å, Bakke AM. Transcriptional regulation of IL-17A and other inflammatory markers during the development of soybean meal-induced enteropathy in the distal intestine of Atlantic salmon (Salmo salar L.). Cytokine 2012; 60: 186-196. Impact factor 2,518


Munang'andu HM, Siamudaala V, Munyeme M, Nalubamba KS. A review of ecological factors associated with the epidemiology of wildlife trypanosomiasis in the Luangwa and Zambezi Valley ecosystems of Zambia. *Interdisciplinary Perspectives on Infectious Diseases* 2012: 372523. Impact factor -


Muwonge A, Munang'andu HM, Kankya C, Biffa D, Oura C, Skjerve E, Oloya J. African swine fever among slaughter pigs in Mubende district, Uganda. *BMC Veterinary Research* 2012; 8: 52. Impact factor 1,861


Nonga HE, Muwonge A, Mdegela R. Tick infestations in extensively grazed cattle and efficacy trial of high-cis cypermethrin pour-on preparation for control of ticks in Mvomero district in Tanzania. *BMC Veterinary Research* 2012; 8: 224. Impact factor 1,861


Olsen CM, Braaen S, Falk K, Rimstad E. Multiple passage of infectious salmon anaemia virus in rainbow trout, *Oncorhynchus mykiss* (Walbaum), did not induce increased virus load. *Journal of Fish Diseases* 2012; 35: 827-838. Impact factor 1,591

Phung DT, Ganash M, Sedelnikova SE, Lindbäck T, Granum PE, Artymiuk PJ. Crystallization and preliminary crystallographic analysis of the NheA component of the Nhe toxin from *Bacillus cereus*. *Acta Crystallographica Section F: Structural Biology and Crystallization Communications* 2012; 68: 1073-1076. Impact factor 0,552

Phung DT, Granum PE, Dietrich R, Märtlbauer E, Hardy SP. Inhibition of cytotoxicity by the Nhe cytotoxin of *Bacillus cereus* through the interaction of dodecyl maltoside with the NheB component. *FEMS Microbiology Letters* 2012; 330: 98-104. Impact factor 2,049


Reimers E, Reed KH, Colman JE. Persistence of vigilance and flight response behaviour in wild reindeer with varying domestic ancestry. *Journal of Evolutionary Biology* 2012; 25: 1543-1554. Impact factor 3,479


Robertson LJ, Huang Q. Analysis of cured meat products for Cryptosporidium oocysts following possible contamination during an extensive waterborne outbreak of cryptosporidiosis. *Journal of Food Protection* 2012; 75: 982-988. Impact factor 1,832


Romstad AB, Reitan LJ, Midtlyng PJ, Gravningen K, Evensen Ø. Development of an antibody ELISA for potency testing of furunculosis (Aeromonas salmonicida subsp salmonicida) vaccines in Atlantic salmon (Salmo salar L). *Biologicals* 2012; 40: 67-71. Impact factor 1,616

Romstad AB, Reitan LJ, Midtlyng PJ, Gravningen K, Evensen Ø. Antibody responses correlate with antigen dose and in vivo protection for oil-adjuvanted, experimental furunculosis (Aeromonas salmonicida subsp. salmonicida) vaccines in Atlantic salmon (Salmo salar L.) and can be used for batch potency testing of vaccines. *Vaccine* 2012: DOI: 10.1016/j.vaccine.2012.11.069. Impact factor 3,492


Sekse C, Bohlin J, Skjerve E, Vegarud GE. Growth comparison of several *Escherichia coli* strains exposed to various concentrations of lactoferrin using linear spline regression. *Microbial Informatics and Experimentation* 2012; 2: 5. Impact factor -


Strand E, Skjerve E. Complex dynamic upper airway collapse: associations between abnormalities in 99 harness racehorses with one or more dynamic disorders. *Equine Veterinary Journal* 2012; 44: 524-528. Impact factor 2,286

Stuen S. Ticks and tick-borne infections in sheep in the Nordic countries. *Small Ruminant Research* 2012; 106: 14-15. Impact factor 1,124


Saøvik BK, Skancke E, Trangerud C. A longitudinal study on diarrhoea and vomiting in young dogs of four large breeds. *Acta Veterinaria Scandinavica* 2012; 54: 8. Impact factor 1,345


Tryland M. Are we facing new health challenges and diseases in reindeer in Fennoscandia? *Rangifer* 2012; 32: 35-47. Impact factor -

Tysnes K, Jørgensen A, Venold FF, Penn MH, Krogdahl Å, Overturf K. Severity of soybean meal induced distal intestinal inflammation, enterocyte proliferation rate, and fatty acid binding protein (*Fabp2*) level differ between strains of rainbow trout (*Oncorhynchus mykiss*). *Aquaculture* 2012; 364: 281-292. Impact factor 2,009

Vhile SG, Kjos NP, Sørum H, Øverland M. Feeding Jerusalem artichoke reduced skatole level and changed intestinal microbiota in the gut of entire male pigs. *Animal* 2012; 6: 807-814. Impact factor 1,648


Yousaf M, Kopppang EO, Skjødt K, Hordvik I, Zou J, Secombes C, Powell MD. Comparative cardiac pathological changes of Atlantic salmon (*Salmo salar* L.) affected with heart and skeletal muscle inflammation (HSMI), cardiomyopathy syndrome (CMS) and pancreas disease (PD). *Veterinary Immunology and Immunopathology* 2012; DOI: 10.1016/j.vetimm.2012.10.004. Impact factor 1,877


Zhang Y, Øverland M, Sørensen M, Penn MH, Mydland LT, Shearer KD, Storebakken T. Optimal inclusion of lupin and pea protein concentrates in extruded diets for rainbow trout (*Oncorhynchus mykiss*). *Aquaculture* 2012; 344-349: 100-113. Impact factor 2,009


Ørpetveit I, Küntziger TM, Sindre H, Rimstad E, Dannevig BH. Infectious pancreatic necrosis virus (IPNV) from salmonid fish enters, but does not replicate in, mammalian cells. *Virology Journal* 2012; 9: 228. Impact factor 2,092

Impact factor 2.133

**Book chapters. No impact factor**


**Articles in Norwegian. No impact factor**


