Self Evaluation Report 2
Stage two

EAEVE visit 27 September to 1 October 2010
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0. INTRODUCTION

The self-evaluation report should begin with an introduction providing an outline of the main features of the Faculty in the period since the last evaluation or, if there has not been a previous visit, in the last ten (10) years. It must clearly be stated when implementation of assessment procedures for quality control was started and when the complete programme was first implemented. Evaluation according to SER 2 requires a minimum of two (2) year’s documentation.

Major goals and objectives

University of Copenhagen

The University of Copenhagen’s most important contributions to society are outstanding basic research and education of graduates to the highest standard.

All teaching in the University of Copenhagen’s study programmes is research-based. Independent research of the highest international quality is absolutely crucial to enable the University of Copenhagen to meet its objective of attracting the best students by consciously striving to make considerable improvements to all of its study programmes.

Consequently, the University of Copenhagen is a proud member of the International Alliance of Research Universities (IARU), which is an alliance between some of the top research universities in the world. In 2009, the University of Copenhagen was ranked number 51 worldwide and number 12 in Europe on the THE-QS ranking list.

Faculty of Life Sciences

The Faculty of Life Sciences (LIFE) has its origins in the establishment of a veterinary school in 1773 – the second such school established in Europe. The school was located in Christianshavn, a district of Copenhagen. During the early years, the founder, Peter Christian Abildgaard, ran the school as a private enterprise, but in 1776 the government took over the school and granted a royal charter in 1777.

In 1856, the government acquired farmland in Frederiksberg, near Copenhagen, to build a new university.

Michael Gottlieb Bindesbøll, an important and modernising architect at the time, designed the Frederiksberg Campus of KVL, which was erected from 1856 to 1858.

After 1858, all higher education disciplines within veterinary and agricultural sciences were taught at Frederiksberg at what had become the Royal Veterinary and Agricultural University (KVL).

Today, the campus covers about 16 hectares at Frederiksberg. The Large Animal University Hospital and a research farm is located in Taastrup, about 15 km west of Copenhagen, which covers about 175 hectares, and an arboretum north of Copenhagen.

The main veterinary clinical buildings at the Frederiksberg Campus were constructed from 1963 to 1976.

After a completely new library was built, an extension and renovation project for the buildings on the Frederiksberg Campus began in 1991.

KVL came under the jurisdiction of the Ministry of Education in 1972 and became a full monofaculty university. Similar to other universities in Denmark, KVL was subject to the Danish University Act (Universitetsloven), although KVL enjoyed autonomy for a number of areas. This was established with KVL’s Statute of 1992, which also changed the organisational structure, reducing the number of departments from 39 to fourteen. The reorganisation reduced the number of departments related to animal science and veterinary medicine from seventeen to five. The Statute was revised in 1999.

The veterinary curriculum was revised in 1972 and later, in 1987-1988, evaluated by the Advisory Committee on Veterinary Training (ACVT). The main suggestions and KVL’s follow-up on these are listed in Appendix 1.

The veterinary curriculum from 1972 was revised in 1994. The revision aimed at increasing the integration and coordination of veterinary subjects taught in different departments and coordinating the structure of the veterinary programme with other study programmes at KVL. The 1994 curriculum was evaluated by the Danish Evaluation Institute (formerly the Danish Centre for Quality Assurance and Evaluation of Higher Education) in 1998, and the improvements listed in Appendix 2 were suggested.

IARU partners: University of Copenhagen, Australian National University, ETH Zurich, National University of Singapore, Peking University, University of California – Berkeley, University of Cambridge, University of Oxford, University of Tokyo, Yale University.
Veterinary Medicine at the Faculty of Life Sciences

The Veterinary Medicine programme at LIFE strives towards being among the best veterinary study programmes in the world by offering a research-based international cutting-edge level of education. It uses modern educational principles and learning platforms. From 2012, instruction in English will be offered at MSc level courses where it is meaningful and possible to conduct these studies in English. International collaboration is being developed, and the European Association of Establishments for Veterinary Education (EAEVE) evaluated and approved the programme in 2001.

The next EAEVE evaluation is scheduled for 2010. The overall mission of veterinary medicine at LIFE is to educate highly qualified veterinary surgeons who will be of use to society through the continuous improvement of animal and human health. These veterinary surgeons should have knowledge of basic animal science, disease biology and food safety as well as knowledge of the diagnosis, treatment and prevention of animal diseases.

The commitment to undergraduate education includes the commitment to provide instruction and clinical opportunities for students in a wide variety of domestic species, including both companion and production animals, as well as tracking opportunities in biomedicine and in food safety.

In order to ensure the outcome of the programmes, a set of competence profiles has been drawn up which list the academic competences that DVM candidates must have. Additionally, the Faculty wants to ensure that it continues to provide veterinary service units of high international standards and of a size necessary to fulfil our educational and research mission.

The most important goals for veterinary medicine at LIFE are:

- To develop world-class teaching and learning in line with recommendations from EAEVE and AVMA
- To be a preferred research partner within the core academic fields of veterinary sciences
- To communicate veterinary research and its importance to health and to the prevention, control, diagnosis and treatment of diseases in animals and humans
- To create an attractive university environment with a view to attracting the best scientific, clinical and technical staff to the Faculty, nationally and internationally
- To further develop the BSc and MSc curricula in line with the Bologna Declaration (EU) and Danish legislation

Historical facts

LIFE is the only veterinary teaching institution in Denmark. It has its origins in the establishment of a veterinary school in 1773 – the second such school established in Europe. The school was located in Christianshavn, a district of Copenhagen. During the early years, the founder, Peter Christian Abildgaard, ran the school as a private enterprise, but in 1776 the government took over the school and granted a royal charter in 1777.

After 1858, all higher education disciplines within the agricultural sciences, including veterinary medicine, were taught at Frederiksberg at what had become the Royal Veterinary and Agricultural University (KVL).

In 1856, the government acquired farmland in Frederiksberg, near Copenhagen, to build the university. Today, the campus covers about 16 hectares. LIFE also has a research farm in Taastrup, about 15 km west of Copenhagen, which covers about 175 hectares, and an arboretum north of Copenhagen.

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Quality Assurance and Evaluation of Higher Education) in 1998, and the improvements listed in Appendix 2 were suggested.

Main features of the history of the Faculty in the period since the last evaluation visit

Major organisational changes

2004: Departmental structure
In 2004, KVL again reorganised the departmental structure. The number of departments was reduced to eleven with the five mainly veterinary departments being reorganised to the four present departments, i.e.:

- The Department of Basic Animal and Veterinary Sciences
  - Anatomy, Cell biology, Biochemistry, Physiology, Genetics, Animal nutrition
- The Department of Veterinary Disease Biology
  - General and special pathology, Microbiology, Parasitology, Immunology, Food hygiene and food safety, Meat inspection, Pharmacology, Toxicology
- The Department of Large Animal Sciences
  - Large animal medicine and surgery, Reproduction, Veterinary jurisprudence, Epidemiology, Herd health, Ethology
- The Department of Small Animal Clinical Sciences
  - Small animal medicine and surgery, Exotic pet animals, Clinical pathology, Diagnostic imaging

The following new departments also contribute to the curriculum:
- The Department of Basic Sciences and Environment
  - Chemistry, Physics, Statistics
- The Department of Agriculture and Ecology
  - Zoology
- The Institute of Food and Resource Economics
  - Theory of science, Ethics

2005: New Act on Universities (University Act)
In 2005, the Danish University Act was revised significantly, and it followed from the new Act that universities are independent institutions under the public-sector administration and supervised by the Minister for Science, Technology and Innovation.

The new Act also stated that the Board of the University is the highest authority of the university and that the board must comprise a majority of external members with the chair being elected from among its external members.

Rector, deans and heads of department were now to be appointed specifically to the respective positions and could no longer be appointed by way of internal elections.

The new Act also introduced the director of studies, appointed by the dean. In cooperation with the study board, the director of studies must undertake the practical organisation of teaching and tests and other assessment forming part of the exams. The director of studies must approve the problem formulation and submission deadline for the Master’s thesis, as well as a plan for the supervision of the student.

2007: Merger with the University of Copenhagen and the Danish Pharmaceutical University
On 1 January 2007, KVL merged with the University of Copenhagen and the Danish Pharmaceutical University and became the Faculty of Life Sciences (LIFE). Subsequently, the Rector of KVL became Dean of the Faculty.

New buildings and major items of equipment

Buildings
In 2003, KVL began to plan a gradual increase of the number of veterinary students from 120 per year to 180 per year, with the admission of 180 first-year students from 2006. This necessitated new buildings and remodelling of existing buildings.

Facilities for microscopy (e.g. histology and cell biology), dissections (anatomy), microbiology and poultry diseases were expanded and rebuilt in the existing buildings at Frederiksberg Campus, while parts of the Department of Large Animal Sciences moved to Taastrup Campus in February 2008, where the new Large Animal Teaching Hospital is situated. The Department of Small Animal Clinical Sciences will move into renovated facilities at Frederiksberg Campus in 2010.

A new patho-anatomical theatre was built in 2007.

Major items of equipment
2005: Facilities and equipment for histology and cell biology (186 student places)
2005: Diagnostic imaging – CT scanner
2007: Diagnostic imaging – MR scanner
2009: Clinical pathology – interactive computer-based microscopy (35 student places)

Main changes to the study programme

2005: New Act on Universities (University Act)
The new Danish University Act dictated that all university study programmes should adapt to the Bologna Declaration in respect of a 3-year (180 ECTS) Bachelor programme and a Master’s programme (typically 2 years (120 ECTS), but 2½ years and 150 ECTS for the
veterinary MSc programme). The new Act also dictated that a Bachelor thesis (at least 10 ECTS) and a Master’s thesis (at least 30 ECTS) should be included in each Bachelor and Master’s programme, respectively.

The new University Act also stated that elective courses should be part of the study programmes, and, as concerns the veterinary MSc programme, KVL decided to aggregate the electives into the following differentiations (minor tracks composed of two modules of 9 ECTS and 23 ECTS, respectively): Biomedicine, Production animal health and diseases, Equine diseases, Small animal diseases and Food safety.

KVL further decided to modulate all curricula into four 9-week blocks with an interim week, each block consisting of 15 ETCS and courses being adapted to credits of 7.5, 15 and 30 ETCS.

A detailed description of the 2005 veterinary curriculum was presented in the Journal of Veterinary Medical Education, a copy of which is included as Appendix 3.

2007: Ministerial Order on the Grading Scale and Other Forms of Assessment of University Education
In 2007, the Ministerial Order on the Grading Scale and Other Forms of Assessment of University Education (Bekendtgørelse om karakterskala og anden bedømmelse ved universitetsuddannelser) dictated that the grading scale be changed from the previous scale (13-point grading scale) to the 7-point grading scale. Further, this Ministerial Order dictated that the rules for the individual study programme must contain precise descriptions of objectives and criteria for assessing the fulfillment of the objectives for the individual subjects/subject elements which are concluded with a test. This had a significant impact on the individual course descriptions and paved the way for constructive alignment, i.e. alignment between learning objectives, teaching and examination methods.

2007: Act on the accreditation of university study programmes
In 2007, a new Danish Act on the Accreditation Agency for Higher Education (Accreditation Act) (Lov om Akkrediteringsinstitutionen for videregående uddannelser (Akkrediteringsloven)) was adopted by the Government. The responsibility for implementing the Act lies with the Ministry of Science, Technology and Innovation. In the Danish accreditation system, the primary aim of the Act is to create a system with a view to ensuring and documenting the quality and relevance of higher education study programmes in the Danish educational institutions. According to the Accreditation Act, the Accreditation Council is the specific unit which makes the decisions regarding accreditation of all higher education study programmes. Decisions are made on the basis of accreditation reports prepared by accreditation operators.

In Denmark, two accreditation operators head the accreditation process and prepare the accreditation reports, which form the basis of the Accreditation Council’s decisions:

- For university study programmes under the Ministry of Science, Technology and Innovation, ACE Denmark prepares the accreditation reports
- For higher education study programmes within the fields covered by the Ministry of Education and the Ministry of Culture, the Danish Evaluation Institute (EVA) prepares the accreditation reports

Further information can be found at: http://www.acedenmark.dk/index.php?id=277#c1101.

According to the plan prepared by the accreditation operator, the Veterinary Medicine programme is to be accredited in 2013.

2008: Amendment of the procedure to select new veterinary students
In 2008, the Faculty of Life Sciences was granted an exemption from the official regulation on the selection of new students. Accordingly, the Faculty was allowed to select 50 % of the new veterinary students based on grades and 50 % of the new students based on a specific selection procedure involving multiple choice questions, a personal application and an interview.

2009: Introduction of elite module in the Production animal health and disease track
In 2008, the Ministry of Science, Technology and Innovation allowed and supported the creation of elite modules. Elite modules should give talented students a possibility to replace ordinary modules in their Master’s programme with more demanding and challenging modules of approx. 20-30 ECTS. The Faculty applied for an elite module in Production animal health and disease. The Ministry approved the application, and the elite module was introduced in spring 2009.

2009 (autumn): Faculty of Life Sciences changes the veterinary study programmes
In 2007, the Faculty decided to plan for changing the veterinary study programmes. The reasons for this were to:
- eliminate the problems experienced in the 2005 study programmes (e.g. uneven student workload, complex course arrangements)
- further adapt to the Faculty’s curriculum module structure
- make the veterinary MSc programme an English-speaking programme
- further advance constructive alignment
- include teaching offered by the veterinary department of the Danish Technical University
- comply with accreditation standards set by the
Major strengths and weaknesses encountered by the Faculty

Strength

- Dedicated and highly qualified staff
- Highly motivated students based on a high number of qualified applicants for each class every year
- Strong, research-based education
- Unified and broad veterinary study programme incorporating food hygiene and safety and public health
- A central location in the capital of Denmark
- A large clinical case load, including a very large percentage of primary cases in companion animals and production animals
- A high degree of acknowledgement by the municipality
- A continuous need for veterinary medicine and education in society

Weaknesses

- The curriculum is crowded in a complex structure
- Recruitment and retention of faculty for specific veterinary disciplines are difficult
- There are relatively few international students (apart from Swedish students) and faculty
- A lack of halls of residence for international students, which affects international recruitment

Recommendations

- Strengthening of the recruitment of students with a main interest in production animals and food safety
- Development of recruitment and retention strategies (faculty)
- Strengthening of the cooperation with the Danish Veterinary Association on continuing education
- Strengthening of the recruitment of international students

The Faculty of Life Sciences has decided to obtain the AVMA accreditation for its veterinary education. A consultative site visit by the AVMA was carried out in September 2009. The outcome of the consultative site visit has lead the Faculty to apply for a full AVMA accreditation in 2011/2012, the main challenges being that the AVMA standard dictates a veterinary surgeon to be dean, which is not possible according to the Danish University Act.
Overview of quality assessment systems for quality control

Summary of procedures

Table 0.1 summarises the key tools for quality assurance and quality enhancement and the main persons or organisations responsible for each assessment procedure (AP) at the Faculty of Life Sciences. The procedures mentioned in table 0.1 have been in operation for a minimum of two years.

**Table 0.1: Quality assessment systems for quality control**

<table>
<thead>
<tr>
<th>Assessment procedure number (AP no.)</th>
<th>Key tool for quality assurance and quality enhancement</th>
<th>Responsible</th>
<th>Initiated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Policy statement; overall quality</td>
<td>Danish University Act (Universitetsloven)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>2005</td>
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<tr>
<td></td>
<td>Legislation on accreditation of university study</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>2007</td>
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<td>programmes</td>
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<td></td>
<td>University of Copenhagen; Policy statement</td>
<td>University management (Rector)</td>
<td>2007</td>
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<td></td>
<td>Departmental strategies</td>
<td>Heads of department</td>
<td>2005</td>
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<td></td>
<td>Regulations for the University of Copenhagen</td>
<td>Board of the University of Copenhagen</td>
<td>2008</td>
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<td></td>
<td>Faculty level: Evaluation and quality assurance of</td>
<td>Associate Dean for Education</td>
<td>2007</td>
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<td></td>
<td>courses, exams and study programmes</td>
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<td></td>
<td>Teaching environment evaluation</td>
<td>Associate Dean for Education</td>
<td>2005</td>
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<tr>
<td>2a. Admission of students</td>
<td>Grades from, e.g., upper secondary school (this</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>Before 1980 (revised several times)</td>
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<td></td>
<td>procedure is used for quota II)</td>
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<td></td>
<td>Selection procedure including multiple choice and</td>
<td>Director of studies</td>
<td>2007</td>
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<td></td>
<td>interview (this procedure is used for quota II)</td>
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<td></td>
<td>Danish educational standard used for pre-university</td>
<td>Ministry of Education</td>
<td>2008</td>
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<td>basic subjects</td>
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<td>Ministerial Order on Admission and Enrolment</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>Before 1980 (revised several times)</td>
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<td>(Adgangsbekendtgørelsen)</td>
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<tr>
<td>2b. Assessment of the performance</td>
<td>Ministerial Order on University Examinations (Examination</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>Since 1980 (revised several times)</td>
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<td>of enrolled students</td>
<td>Order) (Eksamensbekendtgørelsen)</td>
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<td>Ministerial Order on Bachelor and Master’s Programmes</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>Since 1980 (revised several times)</td>
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<td>(Candidatus) at Universities (Ministerial Order of the Study</td>
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<td>Programmes) (Uddannelsesbekendtgørelsen)</td>
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<td>The annual report of the director of studies (Den</td>
<td>Director of studies</td>
<td>2005</td>
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<td>årlige studielederredegørelse)</td>
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<td>3a. Postgraduate student evaluation, academic track</td>
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<td>Danish University Act (Universitetsloven)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>Before 1980 (revised several times)</td>
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<td>Danish Accreditation Act (Akkrediteringsloven)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>2007</td>
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<tr>
<td>Ministerial order on the PhD Programme at the Universities (Ph.d.-bekendtgørelsen)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>Before 1990 (revised several times)</td>
<td></td>
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<tr>
<td>Half-year assessment of PhD students</td>
<td>Supervisor</td>
<td>2005</td>
<td></td>
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<tr>
<td>Final assessment (PhD)</td>
<td>Supervisor</td>
<td>2005</td>
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<tr>
<td>Final exam (PhD thesis)</td>
<td>Associate Dean for Research</td>
<td>Before 1990</td>
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<tr>
<td>Danish University Act (Universitetsloven)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>Before 1980 (revised several times)</td>
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<tr>
<td>Ministerial order on Master’s Programmes under a Continuing Education Scheme at Universities (Masterbekendtgørelsen)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>1996 (revised several times)</td>
<td></td>
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<tr>
<td>Ministerial Order on Part-time Programmes at Universities (Bekendtgørelse om deltidsuddannelse ved universiteterne)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>Latest edition 2009</td>
<td></td>
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<tr>
<td>Ministerial Order on Flexible Curricula in Continuing Education for Adults (Fleksmasterbekendtgørelsen)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>2000</td>
<td></td>
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<tr>
<td>3b. Postgraduate student evaluation: professional track</td>
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<td></td>
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<tr>
<td>Residents are evaluated according to their educational plan and their final examination</td>
<td>The respective European veterinary colleges</td>
<td>2007</td>
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<td>4. Student welfare</td>
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<tr>
<td>Danish Working Environment Act (Arbejdsmiljøloven)</td>
<td>Ministry of Employment</td>
<td>Before 1990 (revised several times)</td>
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<tr>
<td>Teaching environment evaluation</td>
<td>Associate Dean for Education</td>
<td>2005</td>
<td></td>
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<tr>
<td>Student participation on study board, faculty teaching committee, departmental teaching committee (required by the Danish University Act)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>Before 1980 (revised several times)</td>
<td></td>
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<tr>
<td>Student advisory service</td>
<td>Associate Dean for Education</td>
<td>Before 1980</td>
<td></td>
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<tr>
<td>Teaching safety procedures at departmental level</td>
<td>Head of department</td>
<td>2005</td>
<td></td>
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<tr>
<td>Course evaluations (students’ course evaluations, the department’s course assessment and the approval of the Veterinary Study Board)</td>
<td>Associate Dean for Education</td>
<td>Before 1995 (modified several times)</td>
<td></td>
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<tr>
<td>5. Assessment of teaching staff</td>
<td></td>
<td></td>
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<tr>
<td>Memorandum on job structure (Cirkulære om stillingsstrukturet)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>Before 1980 (revised several times)</td>
<td></td>
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<tr>
<td>Ministerial Order on the Employment of Academic Staff at Universities (the Appointment Order) (Ansættelsesbekendtgørelsen)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>Before 1980 (revised several times)</td>
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<tr>
<td>Higher Education Teaching and Teaching Practice Programme for assistant professors and postdocs (Adjunkt/pædagogikum)</td>
<td>Dean</td>
<td>1994</td>
<td></td>
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<tr>
<td>Annual Employee Appraisal Interview (MUS)</td>
<td>Rector</td>
<td>Approx. 1995</td>
<td></td>
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<td>Dean</td>
<td>Approx. 1995</td>
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<tr>
<td>LIFE: Lecturer of the year (Golden Bull Award (Den Gyldne Tyn))</td>
<td>Students’ Association (De Studerendes Råd)</td>
<td>1990</td>
<td></td>
</tr>
<tr>
<td>University of Copenhagen: Lecturer of the year (Harald of the Year (Årets Harald))</td>
<td>University of Copenhagen</td>
<td>1988</td>
<td></td>
</tr>
<tr>
<td>Course evaluations (students’ course evaluations, the department’s course assessment and the approval of the Veterinary Study Board)</td>
<td>Associate Dean for Education</td>
<td>Before 1995 (modified several times)</td>
<td></td>
</tr>
</tbody>
</table>
### 6. Assessment of Learning Opportunities

<table>
<thead>
<tr>
<th>Legislation on accreditation of university study programmes</th>
<th>Ministry of Science, Technology and Innovation</th>
<th>2007</th>
</tr>
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<tbody>
<tr>
<td>Course evaluations (students’ course evaluations, the department’s course assessment and the approval of the Veterinary Study Board)</td>
<td>Associate Dean for Education</td>
<td>Before 1995 (modified several times)</td>
</tr>
<tr>
<td>Teaching environment evaluation</td>
<td>Associate Dean for Education</td>
<td>2005</td>
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<tr>
<td>Annual Employee Appraisal Interview (MUS)</td>
<td>Rector, Dean, Heads of department, Section heads</td>
<td>Approx. 1995</td>
</tr>
<tr>
<td>Workplace assessment</td>
<td>Rector, Dean, Heads of department</td>
<td>Before 2000</td>
</tr>
</tbody>
</table>

### 7. Assessment of Training Programme and the Award of the Title of Veterinary Surgeon

<table>
<thead>
<tr>
<th>Danish University Act (Universitetsloven)</th>
<th>Ministry of Science, Technology and Innovation</th>
<th>Before 1980 (revised several times)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministerial Order on Bachelor and Master’s Programmes (Candidatus) at Universities (Ministerial Order of the Study Programmes) (Uddannelsesbekendtgørelsen)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>Since 1980 (revised several times)</td>
</tr>
<tr>
<td>Danish Accreditation Act (Akkrediteringsloven)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>2007</td>
</tr>
<tr>
<td>Course evaluations (students’ course evaluations, the department’s course assessment and the approval of the Veterinary Study Board)</td>
<td>Associate Dean for Education</td>
<td>Before 1995 (modified several times)</td>
</tr>
<tr>
<td>Curriculum evaluation by the Veterinary Study Board</td>
<td>Associate Dean for Education</td>
<td>Before 1995 (modified several times)</td>
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<tr>
<td>The annual report of the director of studies (Den årlige studiedederredegørelse)</td>
<td>Director of studies</td>
<td>2005</td>
</tr>
<tr>
<td>The External Veterinary Advisory Panel</td>
<td>Associate Dean for Education</td>
<td>2008</td>
</tr>
<tr>
<td>The annual report from the external examiners</td>
<td>Associate Dean for Education</td>
<td>Before 1995</td>
</tr>
<tr>
<td>Ministerial order on Master’s Programmes (Candidatus) at Universities (Ministerial Order of the Study Programmes) (Uddannelsesbekendtgørelsen)</td>
<td>Ministry of Science, Technology and Innovation</td>
<td>Since 1980 (revised several times)</td>
</tr>
</tbody>
</table>

### 8. Assessment of Quality Assurance Systems for Clinics, Laboratories and Farm

<table>
<thead>
<tr>
<th>Small Animal Teaching Hospital – internal procedures</th>
<th>Head of department, Section heads, Hospital director</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Animal Teaching Hospital and mobile practice – internal procedures</td>
<td>Head of department, Section heads, Hospital director</td>
<td>2005</td>
</tr>
<tr>
<td>Other clinical premises – internal procedures</td>
<td>Head of department, Section heads</td>
<td>2005</td>
</tr>
<tr>
<td>Laboratory services Pathology – internal procedures</td>
<td>Head of department, Section heads</td>
<td>2005</td>
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<td>Microbiology – internal procedure</td>
<td>Head of department, Section heads</td>
<td>2005</td>
</tr>
<tr>
<td>Parasitology – internal procedures</td>
<td>Head of department, Section heads</td>
<td>2005</td>
</tr>
<tr>
<td>Clinical pathology – internal procedures</td>
<td>Head of department, Section heads</td>
<td>2005</td>
</tr>
<tr>
<td>Other laboratory service premises – internal procedures</td>
<td>Head of department, Section heads</td>
<td>2005</td>
</tr>
<tr>
<td>9. Assessment of continuing education</td>
<td>Legislation on Master's programmes under a continuing education scheme</td>
<td>Ministry of Science, Technology and Innovation – and University of Copenhagen</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------------------------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Danish Accreditation Act (Akkrediteringsloven)</td>
<td>Ministry of Science, Technology and Innovation – and University of Copenhagen</td>
</tr>
<tr>
<td></td>
<td>Danish University Act (Universitetsloven)</td>
<td>Government</td>
</tr>
<tr>
<td></td>
<td>Development contract (University – Government)</td>
<td>Ministry of Science, Technology and Innovation – and University of Copenhagen</td>
</tr>
<tr>
<td></td>
<td>University strategy</td>
<td>University of Copenhagen</td>
</tr>
<tr>
<td></td>
<td>Faculty strategy</td>
<td>Faculty Board</td>
</tr>
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<td></td>
<td>Development contract (University- Faculty)</td>
<td>University of Copenhagen – Faculty Board</td>
</tr>
<tr>
<td></td>
<td>Departmental strategy</td>
<td>Heads of department</td>
</tr>
<tr>
<td></td>
<td>Development plan (Faculty – departments)</td>
<td>Faculty Board – heads of department</td>
</tr>
<tr>
<td></td>
<td>Employee Appraisal Interview (MUS)</td>
<td>Head of department, section heads and heads of group – employee</td>
</tr>
<tr>
<td></td>
<td>Two-year developmental plan and budget (departments)</td>
<td>Faculty Board – heads of department</td>
</tr>
<tr>
<td></td>
<td>Yearly report to the Rector on the Faculty’s research production</td>
<td>Dean</td>
</tr>
<tr>
<td></td>
<td>Yearly report to the Dean on the department’s research production</td>
<td>Heads of department</td>
</tr>
<tr>
<td></td>
<td>Bibliometric data</td>
<td>Heads of department, Faculty Board</td>
</tr>
<tr>
<td>10. Assessment of research</td>
<td>PhD students must participate in active research environments, including stays at other, mainly foreign, research institutions (cf. section 7(2)(3) of the PhD Order).</td>
<td>Ministry of Science, Technology and Innovation</td>
</tr>
<tr>
<td></td>
<td>Statistics on incoming and outgoing students</td>
<td>Student administration at Faculty Service</td>
</tr>
<tr>
<td>11. Assessment of internationalisation of education and research</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Assessment of cooperation with stakeholders and society</td>
<td>Yearly curriculum and course descriptions</td>
<td>Student administration at Faculty Service</td>
</tr>
<tr>
<td></td>
<td>Information to prospective students</td>
<td>Student administration at Faculty Service</td>
</tr>
<tr>
<td></td>
<td>Information on admission and student progress</td>
<td>Student administration at Faculty Service</td>
</tr>
<tr>
<td></td>
<td>Information on course grades</td>
<td>Student administration at Faculty Service</td>
</tr>
<tr>
<td></td>
<td>Alumni association (Kubulus Alumni)</td>
<td>University of Copenhagen</td>
</tr>
</tbody>
</table>
1. POLICY STATEMENT

Bearing in mind, that postgraduate education and research are the basis for the advancement of veterinary science and hence have a great impact on undergraduate education, as laid down in the Principles and of the Evaluation of Veterinary Education in Europe, the Faculty must provide a clear policy and set of procedures for internal quality control and quality assurance of its teaching and research programme. The policy should have a formal status and be publicly available. It should also include a role for students and other stakeholders. The policy statement is expected to include the:

- relationship between teaching and research so that an established definition of research education and research quality is evident
- 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

Factual information

Relationship between teaching and research so that an established definition of research education and research quality is evident

Being university study programmes, the veterinary BSc and MSc programmes at LIFE must be research-based according to the Danish University Act\(^1\) where Section 2 states:

“The university shall conduct research and offer research-based education at the highest international level in the disciplines covered by the university. The university shall ensure a balanced relationship between research and education, on a regular basis screen for the relevancy of its research and educational disciplines, prioritise and develop them further, and disseminate knowledge of academic methods and results”.

Further, the legislation on accreditation\(^2\) of university study programmes dictate that university study programmes should be research-based\(^3\).

The principle that teaching should be closely linked to research exists at all levels, including at the University of Copenhagen itself, the LIFE Faculty, all of the departments involved in teaching animal science, both directly and indirectly, the directors of studies, who implement and further develop the veterinary study programmes, the course coordinators and the individual lecturers. All of these aspects will be described briefly here. The University of Copenhagen has a strong commitment to the principles and practice of research-led teaching. The following statements are taken from the University website (http://introduction.ku.dk/presentation/education/):

“…education at the University covers specific skills and scientific methods as well as other more theoretical skills that will enable graduates to improve their qualifications. Teaching and research are closely integrated in order to achieve this, first and foremost by assigning them equal importance in the daily work of the academic and scientific staff and whenever possible basing the teaching on research” and “Independent, high-quality research is a prerequisite for being able to educate students to the highest level”.

At departmental level, the four departments most closely associated with the veterinary study programmes are:

- The Department of Basic Animal and Veterinary Sciences
- The Department of Large Animal Sciences
- The Department of Veterinary Disease Biology
- The Department of Small Animal Clinical Sciences

\(^1\) Ministerial Order concerning the Act on Universities (the University Act) (Bekendtgørelse af lov om universiteter (Universitetsloven))

\(^2\) Ministerial Order on Criteria for the Relevance and Quality of University Study Programmes and on Procedures for Approval of University Study Programmes (Bekendtgørelse om kriterier for universitetsuddannelser relevans og kvalitet og om sagsgangen ved godkendelse af universitetsuddannelser)

\(^3\) The veterinary study programmes at LIFE are closely associated with active and relevant veterinary, animal and natural science research. There are two components to this relationship. Some parts of the programmes are research-oriented, teaching skills that prepare the student for a potential career in research. The remainder of the programme is research-led, meaning teaching that is inspired by current research and taught by individuals engaged in that research, at postdoctoral through to professorial level.
All four have active research programmes in areas relevant to the study programmes. As an example, the mission statement for the Department of Basic Animal and Veterinary Sciences includes “…to provide research and research-based teaching within basic and applied anatomy, physiology, biochemistry, cell biology, nutrition, genetics and bioinformatics in the area of veterinary and animal sciences, biotechnology and comparative aspects thereof”, and the vision comprises the following statement regarding education: “Our teaching is research-based by which we mean that our teaching is of high quality and that the majority of our teaching is handled by active researchers. Our teachers are capable of exemplifying their teaching so that it is relevant to veterinary, animal science and biotechnology educations.”

At course level within the veterinary BSc and MSc programmes, all courses are taught by research-active scientists appointed at LIFE, all of whom have participated in active research projects in their areas of specialisation (see the section ‘Assessment of research’ in this report).

Within the study programmes, there are also disciplines and courses which are research-oriented, i.e. specifically teaching skills needed for research. Examples are the Biostatistics and epidemiology course during the BSc programme, the Veterinary introductory course, also at BSc level, where students learn about research theory and methodologies. The students are further taught how to critically evaluate scientific sources and experience research through their written BSc work (10 ECTS) and finally through their veterinary MSc thesis work (30 ECTS). Through this exposure, they experience the full impact of research on the veterinary profession as well as get inspiration to pursue a research education programme.

Research is thus an indispensable and essential part of all activities within the veterinary programmes. Research results are used in all parts of the veterinary courses to provide the students with the most recent and evidence-based information. Each scientific lecturer has a responsibility to include relevant aspects of the latest research knowledge and research methods in his/her teaching. The extent to which this is achieved is assessed in the course evaluations and during the associated discussions at faculty level (Veterinary Study Board and Faculty Teaching Committee) and the departmental levels (Departmental Teaching Committees).

**Faculty’s strategy for quality and standards for Bachelor and Master’s programmes**

**National level**
In Denmark, university study programmes are regulated by the Danish University Act with appurtenant orders, which set out uniform, precise and detailed rules on the quality, relevance, structure and content of study programmes, exams, grading, access, admission etc.

In 2007, the Danish Ministry of Science, Technology and Innovation established a new independent accreditation institution, ACE Denmark. All Danish university study programmes must be accredited at least every six years to ensure that the programmes are relevant for the Danish labour market, that the programmes are based on high-quality research, that the structure and academic profile of the programmes comply with requirements and that the programmes are subject to ongoing quality assurance. ACE Denmark also ensures that the programmes comply with all provisions set out in the orders, cf. above. The BSc and MSc programmes in Veterinary Medicine are to be accredited for the first time by ACE Denmark in 2014.

**University level**
The University of Copenhagen wants to offer research-based programmes of the highest international level. This requires, among other things, a quality assurance system which meets two central requirements:
1. The quality assurance system must at all times be capable of documenting the quality and relevance of the programmes offered by the University of Copenhagen.
2. The quality assurance system must be capable of supporting the ongoing quality development of programmes.

It must be clearly stated which persons and bodies are responsible for the different elements involved in quality assurance and development of programmes. Quality assurance of programmes requires a clear and unambiguous management and organisational structure. This is, among other things, specified in the statute of the University of Copenhagen of 1 January 2008\(^4\), according to which the overall responsibility for quality assurance of programmes lies in the faculties with the dean, study boards and directors of studies.

**Faculty level**
Quality assurance of programmes is thus mainly a faculty matter at the University of Copenhagen. Until 1 January 2007, LIFE was an independent university and has, as a university, over the years developed an efficient and comprehensive quality assurance system. Following the merger with the University of Copenhagen, LIFE’s quality assurance system has been further developed, both to form part of the joint procedures of the University of Copenhagen and as a natural consequence of the continued focus on this area.

LIFE’s quality assurance policy and the related procedures are laid down at faculty level and apply to all the Faculty’s programmes, study boards and departments. They thus also cover the BSc and MSc programmes in Veterinary Medicine, which fall under the auspices of the Veterinary Study Board. The study board has the overall responsibility to pursue a research education programme.

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\(^4\)Statute of the University of Copenhagen
responsibility for quality assurance of the programmes falling under the auspices of the study board.

Evaluation of study activities and programmes

One of the most important quality assurance elements is the compulsory procedures set up for the evaluation of the teaching/supervision provided in connection with courses and BSc projects/MSc theses/master’s projects. LIFE's procedures for evaluation of study activities and programmes are published on LIFE's website. The procedures clearly describe the division of responsibility in connection with the evaluation, and a description is also provided of each individual department’s procedures for following up on the evaluation results vis-à-vis the individual lecturers.

The LIFE evaluation procedures have existed for many years, and were subject to a minor revision in August 2009 in connection with the introduction of the University of Copenhagen’s joint procedures for evaluation of teaching. For detailed description, see chapters 2, 3, 4 and 5.

Dialogue with external parties

LIFE has a close dialogue with the Chairmen of the External Examiners in respect of the corps of external examiners to which LIFE’s programmes are attached. The Veterinary Medicine programme is attached to the corps of external examiners for Veterinary Science. The Chairmen of the External Examiners prepare an annual report, and the examiner assessments from the individual exams support the course evaluations. A representative for the Chairmen of the External Examiners is adviser to the Education Committee, which establishes the overall framework for the Faculty’s quality assurance of programmes, cf. below.

LIFE has four panels of employer representatives, which cover the various academic areas at the Faculty. The Veterinary Medicine programme is attached to the employer panel for the veterinary medicine area. The employer panel serves as a forum for systematic dialogue with the employers who employ the Faculty’s graduates and/or use the Faculty’s offers within continuing and further education.

The employer panels and the Faculty must be in dialogue about:

- The quality, relevance and development of the programmes, including the competence descriptions, content and exams of the programmes, to ensure that the graduates have the competences in demand in the labour market

- Development of new programmes, including relevance and need

- Other issues concerning the educational area. Both the Faculty and the employer panel can bring up issues.

In addition to the formalised dialogue with the employer panel, the veterinary community is in close contact with the profession through participation in national and international conferences, planning and carrying out of supplementary training activities for veterinary surgeons, presentations by lecturers at local veterinary associations and telephone/email consultations for veterinary graduates.

Figure 1.1 shows LIFE’s organisation. The overall responsibility for the quality assurance system at LIFE lies with the Associate Dean for Education. The Associate Dean consults and is the chairman of the Education Committee, which also consists of the chairmen and deputy chairmen of all study boards as well as a student from the Academic Council. The Education Committee lays down the Faculty’s joint procedures for quality assurance which apply to all programmes, study boards and departments of the Faculty (cf. above), and the study boards report to the Education Committee on the evaluation results etc. to allow the Education Committee to assess, on an ongoing basis, whether the quality of the programmes and the teaching meets the requirements and whether the procedures work. Based on the feedback from the study boards, it is regularly assessed whether the procedures should be adjusted.

Within the framework of the joint procedures, the study board is responsible for the quality assurance of the programmes belonging under the study board, cf. the procedures for evaluation of study activities and programmes above.

The heads of department are responsible for the teaching. All departments have an education committee which provides advice to the head of department in matters relating to the range of programmes offered and their quality. The departments submit reports to the study boards on the results of the evaluation of study activities, cf. above.

In addition to this formalised division of responsibility, the Associate Dean for Education also holds regular meetings with directors of studies and the chairmen of the education committees. These meetings ensure that the Associate Dean is in direct dialogue with all parties involved in programmes and teaching.
Organisation of the quality assurance system, and responsibilities of organisational units and individuals for the assurance of quality

Involvement of students in quality assurance

The students at LIFE are involved in all phases of the quality assurance work. Half of the members of the Education Committee and the study boards are students, and they are thus involved in both the development of the quality assurance procedures and the specific follow-up.

There is an ongoing dialogue with the students at LIFE. LIFE’s management holds regular dialogue meetings with the chairmen of the students’ academic associations where issues relating to the quality of the programmes can also be discussed. At least once a year, each director of studies holds a meeting with the students on the programme or with year group representatives to discuss any problems relating to the programme.

Upon completion of each study activity, the students can express their opinion in the evaluation form, cf. the above procedure for evaluating study activities.

At least every three years, a survey of the teaching environment is conducted where the students answer questions relating to the physical, psychological and aesthetic teaching environment at LIFE. Based on the teaching environment survey, an action plan is prepared to improve the study environment areas with which the students were particularly dissatisfied.

Figure 1.1: Lines of authority and responsibility at the Faculty of Life Sciences

Square boxes illustrate decision-making bodies, circles illustrate advisory bodies and rhombuses illustrate academic bodies with academic decision-making authority but with no management power. The Director of veterinary studies is not depicted in the above figure. The Director of veterinary studies is appointed by the Dean and acts as study coordinator and bridges the gap between the Veterinary Study Board, the departments, the students and the course coordinators.
Ways in which the policy is implemented, monitored and revised

As mentioned above, LIFE’s quality assurance procedures are laid down by the Associate Dean for Education following a thorough dialogue with all parties involved. The procedures can be changed on an ongoing basis if the process proves inappropriate. See also the Introduction chapter: Summary of procedures.

LIFE’s procedures for quality assurance of programmes are monitored by ACE Denmark, cf. above. The Danish accreditation procedures ensure that the universities comply with the European standards and guidelines for internal quality assurance within higher education institutions laid down by the members of the European Network for Quality Assurance in Higher Education in 2005.

Comments

As a supplement to the above quality assurance procedures, LIFE laid down a formal procedure for the evaluation of programmes in 2009. The evaluation consists of procedures for quality assurance of the programme’s curriculum and its coherence across the semesters as well as procedures for lengthwise quality assurance. The evaluation consists of five subelements:

- Quality check of each curriculum every second years (internal)
- Evaluation of course description every second years (internal)
- Annual meetings with student year groups (internal)
- Almost-BSc/MSc graduate surveys every four years (internal)
- Graduate surveys every four years (external)

The results of these subelements are summarised in the director of studies’ annual report to the study board. In 2011, the first graduate survey among veterinary medicine graduates will be conducted, see also Chapter 10.

Suggestions

LIFE has established a number of procedures for quality assurance of programmes and evaluation, but LIFE has not formulated an overall quality assurance policy. In 2010, LIFE will thus, as part of the strategic action plan, formulate an overall quality assurance policy for LIFE, which includes evaluation procedures for teaching and programmes, language certification and educational/didactical supplementary training of lecturers as well as quality assurance of international educational collaboration and student mobility.
2. ASSESSMENT OF STUDENTS, POSTGRADUATE 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 competences;
• have clear and published criteria;
• where appropriate, not rely on the judgements 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.

Postgraduate 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

Postgraduate student education; professional track
Information of the following topics is required:
• types of programmes offered and admission procedures for national and foreign student
• cooperation with other institutions
• student assessment procedures and results

Student welfare
Information of the following topics is required:
• measures taken to prevent zoonoses
• general and specific student counselling

Assessment of applicants and undergraduate students

Admission procedures for BSc and MSc study programmes

The ordinary student admission is administered centrally for all BSc programmes at the University of Copenhagen by the Guidance and Admissions Office, University of Copenhagen. The application procedure for the veterinary BSc is identical to the general BSc application procedure at all other Danish universities.

Admission into the veterinary MSc programme or admission into already started BSc and MSc programmes is administered by Study and Students’ Affairs at LIFE.

All applicants for the veterinary BSc programme must fulfil a set of general and specific requirements regulated by Danish legislation in order to be admitted. These requirements are published on the LIFE and the University of Copenhagen websites, including necessary information about application deadlines, forms etc. The information about admission is also available to all Danish upper secondary students through the national student guidance system at all upper secondary schools.

All information about admission into a higher study level of the BSc programme and into the MSc programme is found on the LIFE website.

Tables 2.1a and 2.1b show the 2008 and 2009 admissions statistics for the veterinary BSc and MSc programmes, respectively.

Admission into the BSc programme

General requirements
A) A national, recognised university entrance exam from one of the member countries of the European Union. A conclusive list is accessible at www.ciriusonline.dk under ‘Get an assessment of your qualifications’. All applicants with entrance exams different from the ones on the list are encouraged to contact the University of Copenhagen prior to applying.

6 Pursuant to Danish legislation.
Table 2.1a: Assessment of admission of students into the BSc programme

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Quota I</th>
<th>Quota II</th>
<th>Admitted into BSc, Year 2008</th>
<th>Year 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total applicants</td>
<td>2008</td>
<td>2009</td>
<td>2008</td>
<td>2009</td>
<td></td>
</tr>
<tr>
<td>Danish students (1)</td>
<td>463</td>
<td>611</td>
<td>463</td>
<td>611</td>
<td></td>
</tr>
<tr>
<td>(% of applicants)</td>
<td>(57)</td>
<td>(72)</td>
<td>(57)</td>
<td>(72)</td>
<td></td>
</tr>
<tr>
<td>Nordic students (2)</td>
<td>266</td>
<td>438</td>
<td>266</td>
<td>438</td>
<td></td>
</tr>
<tr>
<td>(% of applicants)</td>
<td>(57)</td>
<td>(72)</td>
<td>(57)</td>
<td>(72)</td>
<td></td>
</tr>
<tr>
<td>Other EU students</td>
<td>192</td>
<td>173</td>
<td>192</td>
<td>173</td>
<td></td>
</tr>
<tr>
<td>(% of applicants)</td>
<td>(42)</td>
<td>(28)</td>
<td>(42)</td>
<td>(28)</td>
<td></td>
</tr>
<tr>
<td>Total admissions</td>
<td>186</td>
<td>191</td>
<td>93</td>
<td>93</td>
<td>92</td>
</tr>
<tr>
<td>Danish students (1)</td>
<td>141</td>
<td>152</td>
<td>74</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>(% of admissions)</td>
<td>(73)</td>
<td>(76)</td>
<td>(73)</td>
<td>(75)</td>
<td></td>
</tr>
<tr>
<td>Nordic students (2)</td>
<td>44</td>
<td>38</td>
<td>19</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>(% of admissions)</td>
<td>(26)</td>
<td>(23)</td>
<td>(27)</td>
<td>(25)</td>
<td></td>
</tr>
<tr>
<td>Other EU students</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(% of admissions)</td>
<td>(&lt;1)</td>
<td>(&lt;1)</td>
<td>(1)</td>
<td>(1)</td>
<td></td>
</tr>
</tbody>
</table>

1 The total refers to the number of individual students applying; thus a student applying in both quota I and II only counts for one. All quota II applicants are automatically included in quota I applications.
2 See text below for explanation of quota I and II admission
3 Six students from the waiting list admitted on 1 February 2009
4 Eight students from the waiting list admitted on 1 February 2010

Table 2.1b: Assessment of admission of students into the MSc programme

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total applicants</td>
<td>103</td>
<td>177</td>
</tr>
<tr>
<td>Danish students (1)</td>
<td>59</td>
<td>104</td>
</tr>
<tr>
<td>(% of admissions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nordic students (2)</td>
<td>43</td>
<td>73</td>
</tr>
<tr>
<td>(% of admissions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other European students</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>(% of admissions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total admissions</td>
<td>91</td>
<td>141</td>
</tr>
<tr>
<td>Danish students (1)</td>
<td>55</td>
<td>77</td>
</tr>
<tr>
<td>(% of total)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nordic students (2)</td>
<td>36</td>
<td>64</td>
</tr>
<tr>
<td>(% of total)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other European students</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(% of total)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 The significant difference between the 2008 and 2009 intakes is due to the division of the veterinary study programmes into BSc (3 years) and MSc (2½ years) programmes in 2005 and the increased student intake from 140 to 180 in 2006.
2 Admission of students with a Danish BSc degree initiated in 2005. Another 25 veterinary students following the 5½ year veterinary curriculum (2001) were also admitted into the MSc programme.

B) International diplomas, i.e. Baccalauréat avec Option Internationale (BO/OIB), Danish/French Baccalaureate (DBF), European Baccalaureate (EB), International Baccalaureate (IB) and other diplomas/certificates from countries which have signed the European Convention on the Equivalence of Diplomas leading to Admission to Universities. If a university entrance exam or preparatory exam is required for university entrance in the home country, applicants may be required to have passed this exam sufficiently well to be eligible for admission.

C) Apart from the above-mentioned diplomas and certificates, the following foreign certificates and diplomas from the USA may be considered as valid qualifications: High School Certificate, followed by one year of university or college studies, preferably in relevant subjects, High School Graduation Diploma (general academic, university preparatory or honours programme) followed by Advanced Placement Tests (full-year college course) passed with at least grade 3, and High School Certificate followed by a 2-year Associate Degree (academic programme).
D) Applicants from other countries than those mentioned above will not be considered eligible for admission unless they have completed 1-2 years of university studies, preferably in relevant subjects in their home countries.

**Specific requirements**
In addition to the general admission requirements, all applicants must document a specific level of competences\(^7\) in Danish (i.e. A level), English (B level), mathematics (A level), physics (B level) and chemistry (B level) or biotechnology (A level) in the upper secondary school qualification or in specific entrance exams. Foreign applicants must include information and transcripts about the levels (A/O level, higher/subsidiary level, number of years studied at secondary school or university) in relevant subjects.

**Danish language requirements**
The BSc programme in Veterinary Medicine is taught in Danish. All foreign applicants must show proficiency in Danish. Students from the Nordic countries with Danish, Norwegian or Swedish included in their upper secondary school exam are not required to do a Danish test. Danish nationals are not required to do a test in Danish provided they can document being native speakers or having learned Danish at school. All other foreign applicants must pass a Danish language test before being admitted. The required Danish test is: ‘Studieprøven i dansk som andetprog for voksne udlændinge’ (The study test in Danish as secondary language).

**The student selection process**
The number of study places available each year is limited (i.e. 180 students per year). For this reason, it is not possible to offer all qualified applicants, Danish or foreign, admission to the BSc programme in Veterinary Medicine. Students are selected using the procedures described below.

EEC nationals are evaluated for admission on the same terms as Danish nationals with a Danish entrance exam on the basis of the EU/EEC Convention on the Recognition of Qualifications concerning Higher Education in the European Region. Applicants with entrance exams or in specific entrance exams (see ‘A’ and ‘B’ under ‘General requirements’ above) are evaluated for admission only via quota I (see below) on the basis of their qualifying exams. Admission through quota I is possible only when the grading system of the applicant’s qualifying exam is translatable to the Danish grading system. Applicants with qualifying exams from countries with grading systems that are incompatible with the Danish grading system must apply in quota II.

**Quota I**
Applicants who apply in quota I are evaluated exclusively on the basis of their qualifying exams. Admission through quota I is possible only when the grading system of the applicant’s qualifying exam is translatable to the Danish grading system. Applicants with qualifying exams from countries with grading systems that are incompatible with the Danish grading system must apply in quota II.

**Quota II**
All applicants in quota II must also fulfill the general and specific admission requirements listed above. Quota II applicants are subsequently evaluated and selected on the basis of the following stepwise procedure:

- Grade point average of 6 or above from the entrance exam in order to proceed to the next step
- Multiple choice test: The best 180 applicants are invited to the following interview
- Interview by a panel consisting of one senior academic staff appointed by the veterinary departments, one veterinary surgeon appointed by the Danish Veterinary Association and one veterinary MSc student appointed by the Veterinary Students Organisation
- Selection of the 90 students with the best combined score from the multiple choice test (weighted 1/3) and the interview (weighted 2/3)

In the interview, which lasts about 20 minutes, the applicant must be able to explain his or her personal motivation for choosing the BSc programme in Veterinary Science, show study preparedness and account for and reflect on qualifications and experiences relevant for veterinary studies. The interviews follow a common guide with specific issues that the panel must bring into discussion in order to subsequently assess the applicant’s qualifications and competences in respect of these matters. The applicants are scored individually by each panel member.

**Admission into higher levels of the BSc programme**
Undergraduate students may be admitted into higher levels of the BSc programme if there are vacant slots, if they fulfill the Danish language requirements and if they have passed relevant veterinary BSc courses equivalent to 90 ECTS. These admissions must be approved by the Veterinary Admission Board.

**Admission into the MSc programme**
All students obtaining a Danish veterinary BSc degree are guaranteed admission into the MSc programme.

EEC students with a BSc degree complying with the
EAEVE standard are admitted into the Danish MSc programme if there are vacant slots (the maximum uptake is 180 students per year). Other students with equivalent degrees may be admitted after individual evaluation by the Veterinary Admission Board if slots are vacant.

English language requirements
From 2012, the MSc programme in Veterinary Medicine will be taught in English. Therefore, all applicants must show proficiency in English according to the common University of Copenhagen rules for admission into English BSc and MSc programmes:
Applicants from Denmark or the Nordic countries must document proficiency in English corresponding to English at B level.\(^8\)

Other applicants whose mother tongue is not English must document proficiency in English corresponding to:
- The International English Language Testing System (IELTS) with a minimum score of 6.0,
- The Internet-based TOEFL® Test (IBT) – Test of English as a Foreign Language™ with a minimum score of 83, or
- The written TOEFL® Test (IBT) – Test of English as a Foreign Language™ with a minimum score of 560.

At the date of application, the test taken must not be older than 2 years.

Assessment of enrolled undergraduate students
According to Danish legislation\(^9\), the assessment of university students is based on the following evaluations:
- Course exams by teaching staff and an internal or external examiner who are responsible for assuring the standard and quality of exams
  - External examiner in at least one third of exams (calculated as the sum of course ECTS divided by total curriculum ECTS). The examiner must be approved by the Ministry of Science, Technology and Innovation. BSc and MSc theses must be assessed by an external examiner
  - Exams can be (i) oral, written or practical, (ii) project reports and presentations, oral exams, practical tests, clinical exams, competence-based training, (iii) continuous assessment based on multiple choice tests (i.e. written or web-based), project reports and presentations, oral exams, practical tests, clinical exams, competence-based weekly or monthly assessment of students’ progress.

\(^8\) A, B and C levels refer to the common Danish educational standard used for pre-university basic subjects (Ministerial Order no. 741 of 30 June 2008).

\(^9\) Ministerial Order on University Examinations (Examination Order) (Eksamensbekendtgørelser) no. 867 of 19 August 2004 and Ministerial Order on Bachelor and Master’s Programmes (Candidatus) at Universities (Ministerial Order of the Study Programmes) (Uddannelsesbekendtgørelser) no. 338 of 6 May 2004.

Course exams
According to Danish legislation\(^10\), the assessment of university students is based on the following evaluations:
- Course exam procedures are designed to measure the achievement of the intended learning outcomes and other programme objectives, including day 1 competences. By law, course syllabus, learning outcomes and exam methods must be constructively aligned. The veterinary curriculum comprises all the above-mentioned exam methods, e.g. written papers and multiple choice tests (i.e. written or web-based), project reports and presentations, oral exams, practical tests, clinical exams, competence-based weekly or monthly assessment of students’ progress.

\(^10\) Ministerial Order on University Examinations (Examination Order) (Eksamensbekendtgørelser) no. 867 of 19 August 2004 and Ministerial Order on Bachelor and Master’s Programmes (Candidatus) at Universities (Ministerial Order of the Study Programmes) (Uddannelsesbekendtgørelser) no. 338 of 6 May 2004.
in meeting the course requirements and portfolios.

- **Ordinary exams** are scheduled as part of the common university block structure for the last week of the block in which a course ends. **Re-exams** take place in predetermined teaching-free interim weeks, so students have at least one block between the ordinary exam and the retake. The exact dates and times for written exams are published 3 weeks after the course/re-exam registration deadlines. For other types of exams, exact dates and times must be within the predefined exam weeks of the block structure and must be published at least 2 weeks before the exam takes place. Second retakes are referred to next year’s ordinary course exams. The Veterinary Study Board may approve exam dates outside the block structure if necessary in order to ensure appropriate completion of the exam. All information mentioned is published electronically on Absalon (the common LMS system) or on the faculty website.

- **Exam results** must be available for students within 3 weeks after the week of the exam. They are published electronically via the STADS online student services system, i.e., an Internet-based service system for general course and exam registration, where students can also follow their personal study record and common course statistics. Students’ written exam answers are stored at the respective departments for at least 3 years.

- **Requirements for course attendance** are described in the course syllabus. 80% attendance is required for most practical exercises and all clinical work. A course attendance list is commonly used as verification of attendance. In some courses, student attendance and participation is measured based on the student’s activity in the learning management system. Varying methods are in use for replacing absences.

**Complaints about exam**

Complaints about exam procedures and grades are regulated by law11. Complaints must be motivated and forwarded in writing to Study and Students’ Affairs within 2 weeks of the exam results being published. If the complaint concerns legal matters, the University makes the decisions which may be brought before he Ministry of Science, Technology and Innovation. If complaints concern academic matters, e.g., procedures, exam content and exam grades, they are forwarded to the course coordinator and involved lecturer(s) and the internal/external examiners, who, within 2 weeks, must carry out an exam reassessment, offer the student a re-exam or dismiss the complaint. The student may appeal this decision, in which case the Faculty appoints a Board of Appeal comprising two external examiners approved by the Ministry of Science, Technology and Innovation, the involved course coordinator or lecturer and a veterinary student. The Board of Appeal makes a final decision within 2 months.

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11 Ministerial Order on University Examinations (Examination Order) (Eksamensbekendtgørelsen) no. 867 of 19 August 2004.
Assessment of exam procedures

At LIFE, the following formal procedure concerning course evaluation and coordination is active:

- Once a year, the course coordinator reviews the course syllabus and organisation, including exam procedures and content, which by law\(^\text{12}\) must be in alignment with the course syllabus and didactics. The results of the student’s evaluation and the exam results must be considered.

- Twice a year, the Departmental Teaching Committee discusses the course evaluations, including exam results relevant to the department. The courses are categorised as A (none or minor details to be improved), B (moderate to major details to be improved) and C (critical – major details to be improved). If a course is graded ‘C’, the course coordinator must draw up and initiate a plan of action for improvement. The results of the departmental course evaluation are reported to the head of department and the Veterinary Study Board.

- Students and faculty staff are equitably represented in both the Departmental Teaching Committee and the Veterinary Study Board.

- On the basis of the reports from the Departmental Teaching Committee and on input from members, the Veterinary Study Board reviews and assesses the curriculum courses and provides feedback to the Departmental Teaching Committee on any plans for improvement initiated.

- At least every second years, the Veterinary Study Board must assess the full curriculum. The Chairman of the Danish Veterinary Association has been asked to participate in these meetings. The Study Board makes decisions on changes of curriculum and course plans, including exam procedures.

- At least once a year, the director of studies holds an informal plenary discussion and evaluation of educational matters, including exam procedures related to the BSc and MSc programmes, with students representing year groups 1 to 5 and the chairman of the Veterinary Student Organisation.

- Every second years, the director of studies prepares reports regarding the veterinary BSc and MSc programmes, respectively. These reports include a review of student admission procedures, uptake and study progress, possibilities and visions regarding the curriculum, follow-up from previous years, critical points/issues from the preceding year and suggestions for future initiatives and/or corrections.

The report is discussed by the Veterinary Study Board and in the Faculty Educational Committee headed by the Associate Dean for Education.

Study progress

Students’ study progress is automatically registered via the STADS online student services system. Students failing to meet the regulatory terms in the legislation are informed about the violation and must apply to the Veterinary Study Board for a dispensation from the regulation in order continue their studies.

Postgraduate student education

PhD programme

The PhD programme is the primary postgraduate education at LIFE. A PhD programme at the Faculty comprises:

- Completion of independent research work (the PhD project) under supervision of senior faculty.

- Completion of PhD courses adding up to approx. 30 ECTS.

- Participating in active research environments, including stays at other, mainly foreign, research institutions.

- Gaining experience of teaching or other types of knowledge dissemination, which is, as far as possible, related to the student’s PhD project.

- Completion of a PhD thesis on the basis of the PhD project.

- Assessment of the PhD thesis.

LIFE presently distributes around 80 ordinary PhD scholarships per year in four rounds. Twenty-eight of these scholarships are earmarked for veterinary MSc graduates. An additional 100-120 PhD students are financed by full or partly external funding. LIFE covers one-third of the expenses for a number of the externally funded PhD scholarships.

Admission procedures

Having completed the veterinary DVM programme or another relevant MSc programme, the student is eligible for a PhD programme. In Denmark, PhD students are almost always employed as PhD scholars and paid a normal salary. Therefore, PhD positions are announced in ordinary job advertisements.

PhD scholars financed by external funding are employed on the basis of job interviews with a 2-3 member
committee, including the potential PhD supervisor and the scientific responsible Principle Investigator for the relevant project. Other members may be the head of department and the departmental PhD coordinator. The admission requires subsequent approval from the PhD Board and the Head of the Graduate School at LIFE. The PhD Board at LIFE consists of seven PhD students and seven senior faculty.

PhD scholars financed by LIFE are selected among the most qualified applicants for PhD scholarships by the Associate Dean for Research based on an evaluation by the PhD Board and the Head of the Graduate School at LIFE. The applicants are prioritised on the basis of the following principles:

- For applicants holding a Danish BSc and MSc degree with more than ten exams graded according to the 7-point grading scale, the score is calculated as the average of the course grades obtained weighted by the course ECTS plus other academic qualifications (see below).
- For other applicants – Danish or foreign – holding an MSc degree, the PhD Board grades applicants into five categories: Very qualified (VQ), Qualified (Q+, Q, Q-) and Less Qualified (LQ) on the basis of a) the exam results (both the BSc and MSc degree), b) other academic qualifications (see below) and c) a statement from the department of the potential supervisor.

Other qualifying academic activities that add to the adjusted scores:
- Transfer of credit for research and/or PhD courses
- Scientific publications in peer reviewed international journals
- Relevant work experience following the MSc exam
- Additional education relevant for the project

As a general rule, the applicant is qualified if the adjusted exam score is 8.2/Q- or above. However, in reality, applicants with adjusted scores of less than 10 or VQ will likely not be selected, due to the high numbers of applicants.

Figures for the PhD studies in 2008 and 2009 are shown in Table 2.2.

Table 2.2: Figures for postgraduate academic education*

<table>
<thead>
<tr>
<th>Year</th>
<th>Type of programme</th>
<th>Number of students enrolled</th>
<th>Number of PhD graduates</th>
<th>Mean number of papers per student¤</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>PhD candidates at the four veterinary departments</td>
<td>73</td>
<td>39</td>
<td>4.1</td>
</tr>
<tr>
<td></td>
<td>PhD candidates holding a DVM degree</td>
<td>34</td>
<td>15</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>Total number of PhD candidates enrolled at LIFE</td>
<td>207</td>
<td>97</td>
<td>3.9</td>
</tr>
<tr>
<td>2008</td>
<td>PhD candidates at the four veterinary departments</td>
<td>39</td>
<td>26</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>PhD candidates holding a DVM degree</td>
<td>16</td>
<td>11</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>Total number of PhD candidates enrolled at LIFE</td>
<td>129</td>
<td>80</td>
<td>4.4</td>
</tr>
</tbody>
</table>

*) Calculation of ‘mean number impact factor ‘as requested by EAEVE is neither applicable to single persons nor possible to calculate until publication have a certain age according to the chief research librarian at LIFE.
¤) Papers submitted / published. Since 2006, 410 PhD theses have been handed in. 390 of the theses were based on articles and only 20 were monographs.
seven senior faculty. The members are elected among colleagues and formally appointed by the Dean. The student members are appointed for 1 year, the faculty members for 3 years.

**Financial basis**
Due to the fact that PhD students are employed as scholars as well as being enrolled as PhD students, the funding body provides a full salary for 3 years and also covers the tuition and bench fees.

A PhD scholarship in Denmark costs approx. EUR 225,000 for the 3-year period. To secure the presence of adequate funding for the entire PhD programme, no PhD programme is initiated before the Faculty has received a signed guarantee from the funding body.

Of the 207 PhD students enrolled in 2009 – LIFE financed 110 fully-paid PhD scholarships, which means that external funding bodies financed 97 scholarships. In 2009, more than 50 % of the PhD intake was financed by LIFE.

**Training**
The PhD student is supposed to be attached to a scientific environment at the department which offers opportunities for the student to discuss the scientific matters and difficulties with other staff members. This is recognised as very important in order to avoid social and scientific isolation.

The training takes place under supervision led by a principal supervisor (who is qualified at the level of associate professor or higher and is responsible for the general PhD programme). The LIFE Graduate School recommends that PhD students at LIFE have more than one supervisor affiliated with the PhD project.

**Supervisors**
The principal supervisor must have conducted several years of active research at academic level and must, as a minimum, be an associate professor or a senior researcher. The principal supervisor must be a researcher within the field, be employed at the Faculty and have knowledge of the PhD programme.

**PhD plan**
The content of the PhD programme is defined and described in a PhD plan (a contract made by the student and the supervisors). In the PhD plan, the objective and hypotheses of the PhD project are formulated as well as the project’s background, state-of-the-art and relevance. Initial research plan and methods must also be outlined.

**Assessment during the study period**

**Half-year assessment**
Every six months, the Faculty (principal supervisor) evaluates whether the PhD student fulfils the requirements and expectations agreed upon in the PhD plan. The PhD plan is a dynamic document, which implies that the plan can be altered and changed if required. Normally, alterations are implemented in connection with the half-year-assessments.

The principal supervisor is responsible for ensuring that a half-year (on 1 March and 1 September) assessment of the progress of the PhD programme is submitted to Study and Students’ Affairs via the department. At the same time, the department must submit a copy to the grant recipient at LIFE or at an external institution. The assessment must reflect to which extent the PhD student fulfils the requirements set out in the PhD plan, placing special emphasis on adherence to the schedule.

This assessment is based on an opinion from the principal supervisor, who, after having consulted the PhD student and any co-supervisors, confirms with his or her signature that the PhD programme is following the PhD plan or gives an account in writing of any adjustments made. The assessment of whether the progress of the programme is satisfactory must take documented illness, parental leave and other approved leave of absence into account. The PhD student must be given the opportunity to submit his or her comments on the opinion within a deadline of at least two weeks.
Final assessment
After 3 years, the PhD student hands in the thesis to an assessment committee. Within two months of the submission of the thesis, the assessment committee must make its recommendation to the Faculty as to whether the PhD thesis fulfils the requirements for the award of the PhD degree. If the assessment is negative, the committee must make suggestions for improvements, and the PhD student can resubmit the thesis after a given period of time. If the assessment is positive, a public defence is scheduled.

After having passed the defence, the LIFE Academic Committee awards the PhD degree to the student.

Assessment committee
The PhD thesis and the defence are assessed by an assessment committee. A three-member assessment committee is appointed no later than immediately following the submission of the PhD thesis. The members must be at least at the level of associate professor or senior researcher within the relevant field of study. Two of the members must be external researchers, i.e. they must not be employed at the University of Copenhagen. At least one of the members must be from outside Denmark, unless this is not practicable considering the subject in question. The third member is usually from the Faculty and is appointed chair of the assessment committee by the Faculty. Efforts should be made to ensure that both genders are represented on the committee. Persons who are co-authors of articles included in the PhD thesis may not be on the assessment committee. The PhD student’s supervisors may not be on the assessment committee; however, the principal supervisor assists the committee without voting rights. As assistant, the principal supervisor must be available for answering questions to clarify the underlying PhD programme and the academic progression of the PhD student’s research project. The principal supervisor may be invited to any meetings held by the assessment committee for this purpose. The supervisor cannot act as secretary to the committee.

Postgraduate Master’s programmes

Introduction
Postgraduate Master’s programmes are regulated by law. At the Faculty of Life Sciences, there are currently two ministry-approved veterinary Master’s programmes taught in English. They are:

- The Master of Veterinary Public Health programme
- The Master of Laboratory Animal Sciences programme

LIFE also offers the Master of Food Quality and Food Security (Master i Fødevarekvalitet og -sikkerhed (conducted in the Danish language)), which includes modules of veterinary relevance.

Finally, LIFE offers a Flexible Master’s Programme which allows for an individual curriculum – also within veterinary medicine.

Pursuant to the Danish University Act, the postgraduate Master’s programmes are part-time programmes, i.e. they are offered to people working professionally full-time concurrently with postgraduate Master’s studies at the university.

A postgraduate Master’s programme equals a one year full-time study period, but may be completed over several years. Thus, a Master’s programme equals 60 ECTS of 27.5 hours of work each, i.e. a total of 1,650 hours of study. This covers courses and a Master’s project, including teaching, homework and exams. The university must organise each Master’s programme so that it can be completed within a period of maximum 3 years. Each Master’s programme is structured in thematic modules with one or more courses. Mandatory courses account for a minimum of 30 ECTS, elective courses account for a maximum of 18 ECTS, and the Master’s project must be within 12-20 ECTS.

Admission procedures
Admission to Master’s programmes requires a relevant BSc and/or MSc degree and a minimum of 2 years of relevant professional experience. These rules apply to...

14 Note: In Denmark, academics holding a post-graduate Masters are addressed by the title of “Master of [subject of programme], while graduates holding a Master of Science (MSc) degree are addressed as “Candidate of [name of MSc-programmes], e.g. DVM in Danish is “can. med. vet”.
15 Ministerial Order on Master’s Programmes under a Continuing Education Scheme at Universities (Masterbekendtgørelsen) no. 1187 of 7 December 2009.
national as well as international participants. Admission can be given to single courses or an entire programme enrolment.

**Admission to the programme.** A BSc or MSc degree in veterinary or human medicine or in agricultural, natural or engineering sciences plus at least two years of relevant full time working experience is required. Following specific assessment, LIFE can admit applicants who do not comply with all requirements if they satisfy comparable educational accomplishments. However, the requirement for 2 years of relevant working experience cannot be deviated from. Good English language skills enabling the applicant to follow teaching in English are required.

**Enrolment on the programme.** The programme courses can be followed in the order in which they are given. Enrolment can take place any time of year in accordance with deadlines for forthcoming planned courses and modules. These deadlines can be found at [http://www.life.ku.dk/English/education/continuing_education/](http://www.life.ku.dk/English/education/continuing_education/) or in Danish at [http://www.life.ku.dk/efteruddannelse](http://www.life.ku.dk/efteruddannelse).

**Enrolment on single courses and modules.** It is also possible to enrol on single courses and/or modules according to the deadlines referred to above, i.e. without enrolling on the full programme. In such cases, deviation from the admission requirements is possible.

The legal basis for enrolment, conduct and admission into continuing education (postgraduate Master’s studies) within the Danish university framework comprises the following act and ministerial orders:

- **Ministerial Order concerning the Act on Universities (University Act) (Lov om universiteter) no. 985 of 21 October 2009.**
- **Act on the Accreditation Agency for Higher Education (Lov om akkrediteringsinstitutioner for videregående uddannelser) no. 294 of 27 March 2007.**
- **Ministerial Order on Part-time Programmes at Universities (Bekendtgørelse om deltidsuddannelse ved universiteterne) no. 1188 of 7 December 2009.**
- **Ministerial Order on Master’s Programmes under a Continuing Education Scheme (Bekendtgørelse om masteruddannelser ved universiteterne) at Universities no. 1187 of 7 December 2009.**
- **Ministerial Order on Flexible Curricula in Continuing Education for Adults (Bekendtgørelse om fleksible forløb inden for videregående uddannelse for voksne) no. 1206 of 15 December 2000.**

There is ongoing enrolment on Master’s programmes and single courses. Applicants must fill in a standard form and submit it to the Office of Continuing Education, Faculty of Life Sciences. Applications are evaluated by the Office of Continuing Education and the Study Director of the Master’s programme.

**Financial basis**

The participants pay tuition (roughly DKK 100,000 = EUR 13,333 per full programme), and participation is also subsidised by the Ministry of Science, Technology and Innovation (DKK 57,000 = EUR 7,600 per full programme) for EU participants. The participants pay per course to the administration of LIFE.

**Description of the quality of the programmes, the involvement of faculty, the type of training provided, the course work required and the procedures for assessment of the underlying scientific programme and assessment of the postgraduate students**

From ‘idea’ to ‘Master’s programme’. Ideas for new programmes may arise from individual researchers or from organisations/companies or groups of people with a common need for professionals with certain qualifications, training and education. The ‘idea’ is discussed with the Associate Dean for Education as the responsibility for study programmes is placed at faculty level. The ‘idea’ is also discussed with the head of the department that covers the relevant scientific disciplines as the economic responsibility for running Master’s programmes is placed at department level. If there is a general consensus that the ‘idea’ is good, the proposer is asked to write a more thorough proposal with a curriculum outline and submit it to the Master’s Study Board. The Master’s Study Board evaluates the proposal and may suggest coordination with related existing programmes. Depending on the feedback submitted to the proposer for improvements and coordination, the plan is sent to the Faculty’s Education Committee for evaluation and advice as well as to the Associate Dean for Education. Finally the proposal is considered by the Faculty Management Board. If approved there, the proposal with the curriculum for the Master’s programme and statistical information (e.g. market surveys) confirming the need for such a programme is sent to the accreditation institution for accreditation. This institution makes the final decision before final acceptance by the Ministry of Science, Technology and Innovation.

**Courses.** Proposals for new Master’s courses are submitted to the Master’s Study Board for evaluation and approval. Master’s courses must be linked to one of the existing Master’s programmes. As an example, a new course in toxicology was linked to the Master of Laboratory Animal Science and to the Master of Veterinary Public Health programmes as there is no Master’s programme in toxicology. Each Master’s course has its own course description with a unique course number in the Faculty Course Database. All course descriptions are considered for revision once a year and
thus include recent adjustments in the course curricula. The course coordinator submits the updated course description to the Department Study Board. After approval, the course description is sent to the Master's Study Board for evaluation and approval, and the updated course description is uploaded to the Faculty Course Database. This process ensures the best possible quality of the courses. The course coordinator is responsible for conducting the course, including for developing the teaching plan, i.e. timetable, lectures, assignments and exam, and is also responsible for all practical arrangements.

Evaluation of courses. Course evaluation takes place after the completion of a course. All participants are asked to evaluate the course by completing a questionnaire (either on paper or electronically), and the class and the lecturer(s) usually have a common discussion about the content and conduct of the course. The course coordinator summarises the results of the evaluation and reports this to the Department Study Board, which forwards it (with comments/approval) to the Master's Study Board for final evaluation with either an acceptance or a request for improvements the next time the course is offered.

Evaluation of programmes. Quality assurance of all Danish study programmes is mandatory. All existing Danish study programmes must, repeatedly and within certain time intervals, be evaluated, approved and accredited by an independent accreditation institution. New study programmes must be approved before they are offered. The accreditation institution is appointed by the Minister for Science, Technology and Innovation. The accreditation institution works independently and reports directly to the Minister. Master’s programmes are evaluated by the individual programme participants once they have completed their studies. The evaluations are used by the Master’s director of studies for future adjustments of the programme, and an annual discussion in the Master’s Study Board also takes place. Once a year, the Associate Dean for Education invites all Master’s directors of studies for an individual, thorough discussion of programme activities during the past year. This process is beneficial for the directors of studies and gives the Faculty Management Board a good insight into all study programmes as a basis for decisions on future adjustments and strategic planning.

Evaluation of course participants. By the end of each course, each participant is graded with a pass/fail or based on the 7-point grading scale, which is internationally accepted. The evaluation varies from written exams to portfolio exams.

Participation during 2008 and 2009
Figures for participation in Master’s programme courses during 2008 and 2009 are given in Tables 2.3a and 2.3b.

### Table 2.3a: Veterinary Master’s courses offered in 2008*

<table>
<thead>
<tr>
<th>Course number</th>
<th>Course title</th>
<th>Period</th>
<th>No. of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>T50221</td>
<td>Course on disease outbreak management</td>
<td>June</td>
<td>27</td>
</tr>
<tr>
<td>T50221</td>
<td>Veterinary epidemiology, part 1</td>
<td>September - October</td>
<td>1</td>
</tr>
<tr>
<td>T50222</td>
<td>Veterinary epidemiology, part 2</td>
<td>October - November</td>
<td>1</td>
</tr>
<tr>
<td>T50150</td>
<td>Master’s thesis</td>
<td>Autumn</td>
<td>1</td>
</tr>
</tbody>
</table>

*The ‘Mean number of papers per student’ and ‘Mean number impact factor obtained per student’ as requested by EAEVE do not apply to the post-graduate Master’s programmes.
<table>
<thead>
<tr>
<th>Course number</th>
<th>Course title</th>
<th>Period</th>
<th>No. of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Master of Veterinary Public Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>150231</td>
<td>Course on disease outbreak management</td>
<td>April – June</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Flexible Master's Programme</td>
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</tr>
<tr>
<td>150221</td>
<td>Veterinary epidemiology, part 1</td>
<td>September - October</td>
<td>1</td>
</tr>
<tr>
<td>150222</td>
<td>Veterinary epidemiology, part 2</td>
<td>October - November</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Master of Laboratory Animal Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>150116</td>
<td>Ethics and legislation in relation to laboratory animals</td>
<td>Autumn</td>
<td>17</td>
</tr>
<tr>
<td>150125</td>
<td>Laboratory animal maintenance, breeding and biology</td>
<td>Autumn</td>
<td>6</td>
</tr>
<tr>
<td>150134</td>
<td>Laboratory animal anaesthesia and experimental surgery</td>
<td>Autumn</td>
<td>9</td>
</tr>
<tr>
<td>150135</td>
<td>Laboratory animal pathology and health</td>
<td>Autumn</td>
<td>9</td>
</tr>
<tr>
<td>150144</td>
<td>Microsurgery</td>
<td>Autumn</td>
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<tr>
<td>150150</td>
<td>Master's thesis</td>
<td>Autumn</td>
<td>1</td>
</tr>
</tbody>
</table>

**The ‘Mean number of papers per student’ and ‘Mean number impact factor obtained per student’ as requested by EAEVE do not apply to the post-graduate Master’s programmes."
Postgraduate student education: professional track

The residency programmes at the Large and Small Animal Teaching Hospitals are in their early phases of development.

Admission into the programmes follows the University regulations for employment of staff. The residents receive a salary that, for some of the residents, is financed through the industry or partly through grants.

Cooperation with other institutions and colleges is often included in the individual programmes. All residency programmes are approved by the European Board of Veterinary Specialisation.

### Table 2.4: Figures for postgraduate professional specialisation

<table>
<thead>
<tr>
<th>Diplomate title offered</th>
<th>Number of diplomates on staff</th>
<th>Number of interns 2009</th>
<th>Number of interns 2008</th>
<th>Number of residents 2009</th>
<th>Number of residents 2008</th>
<th>Success rate 2009</th>
<th>Success rate 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>DECVIM-CA</td>
<td>2</td>
<td>0</td>
<td>0</td>
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<td>1</td>
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</tr>
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</tr>
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<td>0</td>
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<td>1</td>
<td>1 (passed 2010)</td>
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<tr>
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<tr>
<td>DACVIM-LA</td>
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<td>0</td>
<td>0</td>
<td>n/a</td>
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</tr>
</tbody>
</table>

n: year preceding evaluation.  
n/a = not applicable

Student welfare

### Student health

All students with a Danish residence permit are covered by the common Danish health insurance. The university is not required to take out specific student insurance, which the Faculty therefore has chosen not to do. The students must therefore take out their own personal insurance covering the presence at the Faculty. No special considerations are taken with respect to veterinary students.

Like the university staff, the students are covered by the Danish Working Environment Act (Arbejdsmiljøloven) when conducting laboratory exercises, workshop exercises, practical field exercises and work in the clinics and barns.

The Faculty as well as the departments follow the very strict safety measures and regulations required by Danish legislation. The safety measures in all relevant areas (e.g. laboratories, dissection and post-mortem halls and isolation facilities) are in accordance with the very strict Danish safety legislation. Each department has appointed safety supervisors among the academic as well as the technical staff. All relevant protocols for safety procedures are

posted in the respective facilities for safety and education purposes, and students are instructed in safety procedures prior to their work in such areas.

**Student affairs and counselling**  
Already upon admission, the students receive information about their future place of study as well as practical information with reference to the relevant information for new students available on the website. It is, however, important to highlight the new students’ first couple of months. A very large group of older students handles the introduction, which includes a programme with practical information and socialising on campus followed by a freshers trip of a couple of days duration in small groups. The programme for this trip is also a combination of academic and social activities. The older fellow students also remain in contact with the newly admitted students for a long period of time when the everyday work begins.

During the entire introduction period, the students’ work is backed up by Student Services, the Faculty’s central student and career counselling service for all students. Student Services is part of Study and Students’ Affairs which is responsible for all tasks related to students, from enrolment, planning of exams, consideration of applications for exemptions and credit transfer to issuing diplomas and career counselling. The students’ progress is continuously monitored, and delayed students are offered counselling based on the specific circumstances. In addition to academic supervision, the students also have access to special supervision/counselling in connection with major project assignments with focus on the actual process as well as a number of joint events with focus on study technique, stress management, job search etc. Student counselling is provided by employees and specially trained students as well as the permanent staff at Student Services. If required, students can also be referred to a psychologist. Students with disabilities have access to special educational support to assist them in their studies.

Student Services offers counselling to all students, national as well as international. In addition, Study and Students’ Affairs offers a number of services to international students, both exchange students and international students enrolled on a BSc or MSc programme, e.g. in connection with allocation of accommodation, special introduction courses and, in general, with special focus on the welfare of the individual international student.

There is a close collaboration between directors of studies and Study and Students’ Affairs, including Student Services. The student counsellors, for example, participate in the directors of studies’ meetings with groups or year group representatives, and the student counsellors can also provide the directors of studies and the study boards with feedback if the curricula or the course periods relative to each other prove inappropriate.

**Assessment of student welfare**  
LIFE regularly conducts teaching environment assessments, and the assessment conducted in 2007 showed that LIFE’s students are very satisfied overall with the physical study environment (89 %), including library facilities, reading spaces as well as access to IT facilities on campus. As for the psychological study environment, the veterinary students complained about stress – in particular in connection with exams – which was incorporated in an overall action plan for all the areas requiring follow-up. In spring 2009, the University of Copenhagen followed up on the action plan and this showed that the revision of the curriculum for the Veterinary Medicine programme (2009) addresses the stress problems indicated.

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17 The first teaching environment assessment was conducted in 2005, the most recent in 2007 and the next will be conducted in 2010.
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 has 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 specialisation 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.

Factual information

Employment of teaching staff at universities is regulated by ministerial orders 18, e.g. appointment of a specific employment committee, requirements for pedagogical assessment.

The Copenhagen University Strategic Action Plan of September 2008 includes ‘Educational Quality - the high-quality teaching’. This states: “The University of Copenhagen will further develop the quality of education. This will happen through the adoption of 1) a common University strategy regarding an educational-didactic profile, 2) strengthening the focus on educational competences in the recruitment process and 3) further development of teaching competences. Central to the educational strategy is also the competences of the university researchers regarding teaching in foreign languages.”

At LIFE, a major part of the common educational goals of the University have already been implemented.

Pedagogical measures at employment

LIFE focuses on lecturers’ pedagogical skills already at the recruitment for the Faculty. In their application, applicants for professorships and associate professorships must document and explain their educational qualifications in separate annexes to the application. The appointed Recruitment Appraisal Committees include a representative from one of the study boards with specific knowledge and interest in teaching and education. In addition to the general professional appraisal work, this committee member is responsible for focusing on the candidates’ educational qualifications.

LIFE’s Terms of Reference regarding recruitment interviews for professorship positions states that the applicant’s teaching and communication skills must be addressed and documented, including the applicant’s ability to teach in English.

Competence development strategy

The personnel policy at LIFE states that competence development must be in line with the goals of the University and benefit both the Faculty as a whole and the individual. Furthermore, it is stressed that competence development must be both strategic and systematic. Strategic in the sense that the development programmes are in line with the strategic goals of LIFE and rooted in the problems to be solved at LIFE, and systematic as the competence development programmes must be planned and continuous.

Each employee is responsible for assessing his/her own need for competence development with due respect to the departmental needs. At the same time, the department management must focus on competence development of the employees; generally as part of their daily commitment and specifically by addressing competence development at the annual employee appraisal interviews.

It is the responsibility of both the management and the employee to follow up on the decisions made at the interviews.

Higher Education Teaching and Teaching Practice Programme

At LIFE, the Higher Education Teaching and Teaching Practice Programme (Adjunkt-pædagogikum) 19 is a compulsory educational training programme for assistant professors, who must complete this course within the first couple of years of their employment in order to qualify for the position. Postdocs are also encouraged to participate in the programme. The learning objectives of the Higher Education Teaching and Teaching Practice Programme is to qualify young lecturers within natural science to prepare, implement and evaluate a study programme in a manner that best supports student learning in relation to the formulated learning objectives for the respective subjects. Furthermore, it is a goal that the participants can contribute to developing the curriculum of the subject at the Faculty.

The programme consists of (i) a practical part where the lecturer receives pedagogical supervision of his or her own teaching from senior colleagues and establishes a teaching portfolio and (ii) a theoretical part containing two courses: (1) A course in Introduction to University

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18 Ministerial Order no. 284 of 25 April 2008 on the Appointment of Academic Staff at Universities (Appointment Order) (Ansættelsesbekendtgørelser) and Memorandum on Job Structure for Academic Staff at Universities.

19 See http://www.ind.ku.dk/undervisning-kurser/adjunkt-pædagogikum/
Pedagogy and (2) a course in University Science Teaching and Learning. The total workload of the programme is equivalent to 10 ECTS.

PhD students must attend the Introduction to University Pedagogy at the Department for Science Didactics equivalent to 2.5 ECTS at the Science Faculty (see above) as a part of their PhD programme.

Pedagogical and practical use of IT and audio-visual tools in the teaching programme

The IT Learning Center (ITLC) at LIFE advises and mentors LIFE lecturers in the pedagogical and technical use of IT in teaching. On the basis of modern learning theory and current understanding of IT, the IT Learning Center makes IT and media tools available and offers training and guidance in the use of tools to LIFE’s lecturers (see also Chapter 4: Factual information and Comments).

Certification of English teaching competences

As a consequence of the MSc study programme being taught in English from 2012, veterinary lecturers will be certified in English over a 4-year period in order to teach the MSc programme. The certification process has already started.

The English certification is carried out by the Centre for Internationalisation and Parallel Language Use (CIP), Faculty of Humanities, University of Copenhagen (http://cip.ku.dk/english/). Besides English certification of university lecturers, the CIP Centre undertakes research-based English and Danish language courses for university staff.

Assessment of teaching staff

Evaluation by students

In accordance with LIFE’s formal procedure for the evaluation of curriculum activities, each course is evaluated by the students by means of an electronic survey at the end of the course. This evaluation concerns evaluation of lecturers, didactics, student preparedness, student workload, student’s appreciation of the relevance of what has been learned and suggestions for improvement of the course.

It is the task of the course coordinator to set up the evaluation electronically at Absalon (i.e. the learning management system at LIFE) using a common template. Included in this questionnaire are specific questions regarding the didactics and professional performance of the individual course lecturers. As concerns courses taught in English, the evaluation questionnaire includes an evaluation of the quality of the lecturer’s English skills.

For a detailed description of course and teaching assessment procedures, see Chapter 4 “Assessment of learning opportunities”.

Evaluation by teaching success

The head of department is responsible for ensuring the quality and accomplishment of the departmental teaching. This includes evaluation of courses and lecturers and possible improvement of critical conditions regarding lecturers’ pedagogical/didactic or linguistic skills. The head of department receives the results of course evaluations from the Departmental Teaching Committee and has the formal responsibility for following up with individual employees (or with his/her course director) on matters of concern.

Furthermore, the teaching performance is discussed and reviewed in line with a review of research activities, social behaviour and wellbeing etc., as part of the yearly departmental appraisal interviews. On this basis, plans for personal development of teaching skills and competences are established for each academic staff member, e.g. participation in didactic and pedagogical courses and workshops, language courses etc.

For more details about routine assessment procedures for courses including lecturers and didactics, see Chapter 5: Procedures for curriculum and teaching programme assessment and approval.

Reward of teaching excellence

The ‘Golden Bull Award’ (Den Gyldne Tyr) is awarded once a year by a student jury at LIFE to ‘The Lecturer of the Year’.

A similar award, ‘The Harald of the Year’ (Årets Harald), is awarded at the University of Copenhagen among all lecturers at all faculties.

Comments

The student evaluations are one of the main pillars of the running assessment procedures at LIFE. Hence, it is important that the evaluation rate is adequate. Within the last couple of years, the evaluation rate has been critically low (< 30 %) at certain courses.

See Chapter 5: Comments and Suggestions for further details on this matter.
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.

Factual information

The technical term ‘Learning opportunities’ encompasses a number of aspects, beginning with the provision of and advice on learning material to individual lecturers, the provision of IT and library facilities at Faculty level and the creation of the academic environment that provides adequate opportunities for student self-studies and interactions with the teaching staff. Therefore, the following describes both learning opportunities in relation to lecturers and to students.

Learning opportunities

Lecturers have the freedom to choose their own didactic methods within the University of Copenhagen course structure and the individual course descriptions. However, by law, a constructive alignment of teaching methods, learning goals and exam methods must exist.

Apart from traditional lecturing, there is a long tradition at LIFE for using the case study method, problem-based learning and other activities which ensure active involvement of students and enhance their learning. LIFE meets the international recommendations for university pedagogical practice by formulating learning outcomes for each course offered at LIFE. John Biggs’ model of constructive alignment and structure of intended learning outcomes are used for this.

All lecturers and students at LIFE must use a Learning Management System (LMS) called Absalon. The system is used in traditional courses with face-to-face teaching as course message board and file and media-server for uploaded course materials. However, the LMS is also used to create virtual classrooms for blended learning and distance learning sessions. One example of this use are the courses ‘Basic clinical surgery methodology’, ‘Clinic and pathology: Small animal clinic’ and Anatomy and physiology I and II, where lecturers upload PowerPoint presentations with speak and educational instruction videos to the LMS. These learning resources are used by students both as compulsory preparation prior to participation in practical exercises and for revising after exercises and lecturing. Another example is the structured interactive e-learning sessions in clinical pathology and physiology. A third example is the nine successive Internet-based tests that are part of the Anatomy and physiology I and II courses.

In all courses that include theoretical aspects, textbooks play an important role in the students’ course preparation. All course descriptions contain a reference list of textbook materials on which the course syllabus is based. For some courses, the theoretical exam requirements are linked specifically to certain textbook material.

Course notes (e.g. PowerPoint handouts, compendia, exercises) uploaded to the LMS system feature in nearly all courses in conjunction with lectures, seminars or exercises. Furthermore, supplementary audio-visual material (e.g. videos of demonstrations and non-clinical/clinical practical exercises, PowerPoint presentations with speak, audio files) is used in an increasing number of courses.

Library facilities

The Library is open for 76 hours per week during the semester. Semester opening hours are 8.00-20.00 Monday-Friday and 10.00-17.00 on weekends. Outside the semester, the Library is open from 10.00-18.00 on Mondays and 10.00-14.00 Tuesday-Friday. Remote access to all library services online when studying at home is available to faculty and students on a 24/7 basis.

At LIFE, all students are expected to own a laptop computer as an important studying tool, and, consequently, the Library is covered by a wireless network (Eduroam) as is the entire campus. Furthermore, the Library makes 70 public access computers available to students (and other users) for access to electronic resources as well as two dedicated computers for CD-ROM-based materials. All working areas with computers are wired with power and network points.

The Library offers all students at Bachelor level a course in Information Literacy. The Library building is gradually transformed into a learning facility, as more and more information is provided via servers, which decreases the demand for physical space for information media. The library transforms this extra space into learning facilities, powered by IT, for the students at LIFE.

IT learning facilities

The IT Learning Center is an e-learning development and

20 Danish Accreditation Act no. 1402, 2009.
support unit situated under the Life Science Library. The centre was established in 2005 to support lecturers in the use of ICT in their teaching. The centre works continuously to find models for combining modern learning theories with ICT together with the lecturers. The main tasks of the IT Learning Center are to:

- Provide lecturer support, pedagogically and technically
- Operate, manage and support the online communication system for education, the LMS
- Conduct courses in the use of the LMS system and in the use of other programmes relevant for the lecturers
- Test new educational methods, theories, technologies and software

Assessment of learning opportunities

The assessment of students’ learning opportunities is, for a large part, included in the formal procedures for assessment of the study programme, e.g. students’ course evaluations, curriculum assessment by the Veterinary Study Board and review of the curriculum and student welfare by the director of studies. For more details of the routine assessment procedures, see Chapter 5: Procedures for curriculum and teaching programme assessment and approval.

Study environment survey

Since 2005, LIFE has conducted two surveys among students regarding the study environment. The latest survey from 2007 showed that LIFE’s students are generally very satisfied with the physical study environment, including library facilities, spaces for study and IT facilities on campus, i.e. 89 % responded positively to that question. In relation to questions about the psychological environment, veterinary students in particular expressed stress-related problems, specifically around some of the exam periods. These statements have been seriously considered by the University and were incorporated in a subsequent action plan for improvements. The latest curriculum revision addresses these problems as student workload and course exams have been distributed evenly within the block and semester structure.

Appraisal interviews

Appraisal interviews are carried out for all staff at LIFE once a year. Personal learning needs and opportunities are integrated parts of the interview. For the individual staff members, the result is the establishment of plans for personal development, e.g. teaching skills and competences, through participation in didactic and pedagogical courses and workshops. For the executive staff conducting the interviews, the outcome is an overview of the learning needs and possibilities among the staff at LIFE; thus, an important part of the quality assurance system at LIFE.

Workplace assessment

It has been decided that the University of Copenhagen shall carry out workplace assessments every three years. The latest assessment at the Faculty of Life Sciences was conducted in autumn 2009. One of the subjects of the workplace assessment was “Teaching” or the learning opportunities of the lecturer regarding the teaching assignment. All employees were asked to answer the following questions:

- Are you satisfied with your current teaching assignments?
- Do you have enough time to work on your teaching assignments?
- Do you have sufficient influence on the teaching assignments you are given?
- In the department, do you work together well on teaching?

The results are found in a joint report comprising the whole Faculty and separate reports concerning each department. The total response rate was 73.4 %. The report concerning the whole Faculty has been discussed in the Faculty work committee, which concluded that the scientific staff in general are satisfied with their teaching assignments, although 50 % find that they have enough time for their teaching assignments to a somewhat extent. The answers can be interpreted in numerous ways. The reports concerning each department have been discussed in work committees under each department.

External accreditation

Part of LIFE’s quality control strategy is to seek evaluation and accreditation of its educational programmes by relevant external organisations:

- In 2001, the veterinary programme was evaluated by EAEVE, and now again in 2010, including accreditation assessment
- In 2009, LIFE’s veterinary programme was evaluated by an AVMA pre-visit team. LIFE is planning for a final accreditation visit in the beginning of 2012
- In 2014, the veterinary programme will be assessed for accreditation by ACE Denmark

Ad hoc consideration of cases

Students and students’ organisations, faculty and departments at LIFE may contact the Departmental Teaching Committee, the head of department, the Veterinary Study Board, the director of studies and the Dean at any time and bring up cases concerning education and work at LIFE. This possibility is considered as an integrated part of the daily quality control at LIFE.

21 The first teaching environment assessment was conducted in 2005, the most recent in 2007 and the next will be conducted in 2010.
Comments

IT learning opportunities
The IT Learning Center and the Department of Veterinary Disease Biology collaborate on a pilot project concerning the use and sharing of e-learning and blended learning in teaching. The goal of the project is to identify the e-learning technologies that may be used most successfully within the different types of courses offered by the department.

Study facilities
LIFE has initiated the process that shall to lead to the completion of the study and student facilities at Taastrup Campus in 2015-2016. The initialising report has suggested the implementation of an integrated study and teaching environment with emphasis on online transmission of lectures from lecture halls and offices to the intranet/Internet, so students may participate in teaching using a computer at home or in groups at the study units at campus.
5. ASSESSMENT OF TRAINING PROGRAMME 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 Annex IV.
- 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

Factual information

The current veterinary curriculum as shown in Figure 5.1 was implemented in 2009 and will gradually replace the old Curriculum 2005. By law\(^\text{22}\), the curriculum implements the structure provided by the Bologna Declaration and constitutes a 3-year BSc curriculum of 180 ECTS (European Credit and Transfer (and Accumulation) System) and a 2.5-year MSc curriculum of 150 ECTS. Thus, a full study year is equivalent to 60 ECTS, and 1 ECTS is equivalent to an estimated student workload including course preparation of 27.5 hours per week and 1,650 hours per year. The BSc and MSc curricula are developed in accordance with this.

Participation of students in quality assessment activities
The students play an active and essential role in the quality assurance system of the study programmes, as they make up 50% of the educational boards and committees, i.e. departmental teaching committees, study boards and the Faculty Educational Committee.

Publication of the curriculum and courses
All curricula and course syllabi are published on the LIFE website. Among other details, the course descriptions must include the course load (in ECTS), exam procedure, course content, didactic approach, suggested textbooks and intended learning outcomes, including a description of the expected gain of knowledge, skills and reference to the expected Day 1 competences at the end of the course. The underlying basis for intended learning outcomes, including expected competences, are the EAEVE Day 1 competences which have been considered during the development of the courses (see below: ‘Recent major curriculum revisions’).

An English translation of all course descriptions will be available at the time of the accreditation visit.

Recent major curriculum revisions
The veterinary curriculum as formulated in 1994 was evaluated by EAEVE in 2001. A potential Category 1 deficiency regarding students’ participation in clinical teaching was identified. This deficiency was instantly corrected\(^\text{23}\). The veterinary education was subsequently approved by EAEVE.

The EAEVE evaluation in 2001 also suggested potential areas where the curriculum could be improved. Actions were taken, and most improvements were realised in the 2005 curriculum revision in which the BSc and MSc educational structure of the Bologna Declaration was also adopted, and the common block structure of the University of Copenhagen was implemented.

In 2007, the latest curriculum revision process was initiated and led by the Veterinary Study Board and the director of studies. The purpose was
- To ensure that new EAEVE Day 1 competences were included in the curriculum and course descriptions.
- To fulfil the standards set by AVMA.
- To align the veterinary courses to the overall course structure at the Faculty, i.e. courses of either 7.5 or 15 credits.


\(^{23}\) In 2001, the curriculum was changed so students have to be present at least 80% of the time in the practical clinical teaching in order to pass.
**Figure 5.1: Overview of the veterinary curriculum 2009**

<table>
<thead>
<tr>
<th>Year/ veterinary programme</th>
<th>Block</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1 BSc</strong></td>
<td>1</td>
<td>Veterinary introductory course (7.5 ECTS), Veterinary chemistry and biochemistry (7.5 ECTS)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Cell biology, general histology and genetics (15 ECTS), Veterinary anatomy and physiology 1 (15 ECTS)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Veterinary anatomy and physiology 2 (15 ECTS)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Immunology, general pathology and pathophysiology (15 ECTS), Pharmacology, toxicology and pharmacy (7.5 ECTS)</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Biostatistics and epidemiology (7.5 ECTS), Infection microbiology (15 ECTS)</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Nutrition and breeding (7.5 ECTS), Microbial food safety (7.5 ECTS)</td>
</tr>
<tr>
<td><strong>Year 2 BSc</strong></td>
<td>1</td>
<td>Small animal medicine, surgery and reproduction (15 ECTS), Large animal medicine, surgery and reproduction (15 ECTS)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Practical herd health consultancy and meat inspection (7.5 ECTS)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Veterinary imaging (7.5 ECTS)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Differentiation courses (26.5 ECTS): Equine clinic, Advanced companion animals, Herd health and veterinary public health, Biomedicine</td>
</tr>
<tr>
<td><strong>Year 3 BSc</strong></td>
<td>1</td>
<td>Immunology, general pathology and pathophysiology (15 ECTS), Pharmacology, toxicology and pharmacy (7.5 ECTS)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Special pathology and poultry diseases (15 ECTS), Basic clinical theory: small animals (15 ECTS)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Herd health and public health (7.5 ECTS), Veterinary jurisprudence and ethology (5 ECTS)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Biostatistics and epidemiology (7.5 ECTS), Infection microbiology (15 ECTS)</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Nutrition and breeding (7.5 ECTS), Microbial food safety (7.5 ECTS)</td>
</tr>
<tr>
<td><strong>Year 4 MSc</strong></td>
<td>1</td>
<td>Large animal general clinical practice (15 ECTS), Small animal general clinical practice (15 ECTS)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Veterinary imaging (7.5 ECTS)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Differentiation courses (26.5 ECTS): Equine clinic, Advanced companion animals, Herd health and veterinary public health, Biomedicine</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Veterinary jurisprudence and assessment of animal welfare (3.5 ECTS)</td>
</tr>
<tr>
<td><strong>Year 5 MSc</strong></td>
<td>1</td>
<td>Large animal general clinical practice (15 ECTS), Small animal general clinical practice (15 ECTS)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Veterinary imaging (7.5 ECTS)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Differentiation courses (26.5 ECTS): Equine clinic, Advanced companion animals, Herd health and veterinary public health, Biomedicine</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Veterinary jurisprudence and assessment of animal welfare (3.5 ECTS)</td>
</tr>
<tr>
<td><strong>Year 6 MSc</strong></td>
<td>1</td>
<td>MSc thesis (30 ECTS)</td>
</tr>
</tbody>
</table>
|                            | 2     | BSc courses (grey) are elective, but compulsory for students enrolling on veterinary MSc programmes. MSc courses (black) are elective. Courses surrounded by arrows rotate within the four blocks involved.

- To secure a minimum of one year of clinical work (i.e. a total of 60 credits including the student’s course preparation) as formulated in EAEVE SOP Annex III. Further, as a guideline for the relative contributions of the categories basic subjects and basic sciences; animal production; food hygiene; and clinical sciences to the curriculum, the study board decided that these categories should cover 82.5 credits; 15 credits, 22.5 credits and 135 credits, respectively. These guidelines were based on EAEVE SOP Annex 1, item 1.4, which states that “The time allotted for training in clinical sciences should account for at least 40% of the entire curriculum”.
- To further improve the curriculum as suggested by EAEVE in 2001 Four working groups were established, i.e. basic subjects and basic sciences; animal production; food hygiene; and clinical sciences, in order to cover the scientific subjects mentioned in EAEVE SOP annex 1.

Each working group had the following members:
- A chairman – associate professor or full professor from the Veterinary Study Board
- A student assigned by the students on the Veterinary Study Board
- One representative from each department contributing to the veterinary curriculum

---

1 Clinical work: These are strictly hands-on procedures by students which include work on normal animals in a clinical environment, on organs and clinical subjects, including individual patients and herds, and making use of the relevant diagnostic data. Surgery or propaedeutical hands-on work on organ systems on cadavers to practise clinical techniques are also classified as clinical work.
• One person from the Danish Technical University that also contributes to the veterinary curriculum

In 2008, proposals for the new curricula were subjected to an internal consultation process which resulted in some changes. Subsequently, the proposals were submitted for external consultation at the Danish Veterinary and Food Administration, the Danish Veterinary Association, the Veterinarian Corps of External Examiners and the Faculty Advisory Board on veterinary subjects, and finally approved by the Dean.

Procedures for curriculum and teaching programme assessment and approval

The quality control system for study programmes and study activities at LIFE comprises several formal assessment procedures that take place at fixed intervals. It engages students and includes both internal and external evaluation procedures. However, informal activities such as regular dialogue with internal and external stakeholders and ad hoc considerations concerning educational matters forwarded to relevant boards (e.g. teaching committees, study boards) or responsible persons (e.g. director of studies, head of department, Dean) also play an important role in the continuous improvement of the study programme.

An overview of quality control procedures is shown in Figure 5.2.

The formal procedural organisation is, as mentioned earlier, dictated by the Danish University Act. The Dean is responsible for the management of the main academic areas and for ensuring the interaction between research and education and the quality of education and teaching as well as the cross-disciplinary development of the quality of the education and research within the main academic area. The Dean is also responsible for approving curricula, subject to proposals from the Veterinary Study Board.

To safeguard student influence on the study programmes, including teaching and learning opportunities, the Dean is responsible for setting up the necessary number of study boards. Each study board must comprise equal numbers of representatives of the academic staff and the students, selected by and from the academic staff and the students, respectively. The chairman of the study board is appointed among its academic members and a vice-chairman is appointed among the student members.

The study board is responsible for ensuring the organisation, realisation and development of educational and teaching activities, including aims to:

• assure and develop the quality of education and teaching, and follow-up on evaluations of education and teaching
• produce proposals for curricula and changes thereof
• approve the organisation of teaching and assessments forming part of the exams;
• handle applications concerning credit and exemptions
• make statements on all matters of importance to education and teaching within his/her area and discuss issues related to education and teaching as presented by the Rector or the person authorised by the Rector to do so.

The head of department is responsible for ensuring the quality and interaction between the research and education at the department and for following up on evaluations of education and teaching in consultancy with the study board and the director of studies.

On this formal basis, a number of specific quality control procedures are active in order to assess and improve the quality of the study programme. The procedures are:

• Course evaluation process, twice a year
• Curriculum evaluation process, every second year
• Memorandum on veterinary curriculum and student welfare by the director of studies, every second year
• Meetings with the External Veterinary Study Advisory Panel, twice a year
• Assessment survey among newly graduated alumni, once every 4 years starting autumn 2010
• External accreditations, every few years
• Ad hoc consideration of cases

Each course is evaluated internally by the students using an electronic survey at the end of the course. This evaluation concerns evaluation of didactics, lecturers, student preparedness, student workload, students’ appreciation of the relevance of what has been learned and suggestions for course improvements. It is the task of the course coordinator to set up the evaluation in the LIFE learning management system, encourage the students to evaluate and to take action on specific problems identified by the evaluation. For courses running over two blocks, a midway evaluation must be conducted.
At the end of the course, the course coordinator is obliged to submit a review of the course evaluations and exam results to the department teaching committee. The review must reflect unusual exam results and any points of criticism that may occur in evaluations as well as an outline of actions for improvement.

The Department Teaching Committee follows up on the course evaluations and reviews and prepares final action plans for improvement in collaboration with the course coordinator. If course evaluations concern didactic or language qualifications of individual lecturers, the head of department is involved.

Since 2006, the learning process of Bachelor and Master’s thesis work (e.g., time spent, supervision, learning opportunities) has been evaluated by the student via a paper-based evaluation system.

Twice a year, the Department Teaching Committee gives department courses a score of ‘A’, ‘B’ or ‘C’ on the basis of the respective course evaluations, exam results and evaluation reviews. The committee reports to the Veterinary Study Board on the present state of the courses, including planned improvements.

The Veterinary Study Board discusses and approves any new action plans as well as follows up on former plans. A summary of the course revisions and discussions is submitted to the Faculty Educational Committee.

Table 5.1 shows a summary of the Departmental Teaching Committee’s course evaluations that were forwarded to the Veterinary Study Board in 2007/2008 and 2008/2009. An example of the electronic student course evaluation is provided in Appendix 6.

External examiner’s evaluation
External examiners of specific courses evaluate the exam process and its results in a written report submitted to the study boards. Finally, once a year, the Veterinarian Corps of External Examiners submits a general assessment report regarding exams with external grading to the Faculty Educational Committee. These reports are included in the assessment of the courses.

The representative of the Veterinarian Corps of External Examiners is appointed member of the Faculty Educational Committee, which lays down the framework for the educational quality assurance system at LIFE.
Meetings with department advisory boards
Each department has its own advisory board, with international and national veterinary surgeons and other professionals as its members. These boards are consulted regularly (i.e. once or twice a year) on assessments of the teaching, research and services provided by the departments, including the two animal hospitals.

Course evaluation procedures
A flow diagram of the course evaluation process is shown in Figure 5.3.

Comments
No further suggestions.

Suggestions
No further suggestions.

<table>
<thead>
<tr>
<th>Course</th>
<th>2007/2008 evaluation</th>
<th>2008/2009 evaluation</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Department score</td>
<td>Student score</td>
<td>Average grade (%) passed at ordinary exam</td>
</tr>
<tr>
<td>Veterinary Zoology</td>
<td>A/B 4.1</td>
<td>94.5%</td>
<td>71.58%</td>
</tr>
<tr>
<td>Veterinary Ethics and Philosophy of Science</td>
<td>A/B 90%</td>
<td>63%</td>
<td>76%</td>
</tr>
<tr>
<td>Veterinary Biophysics</td>
<td>A/B 85%</td>
<td>61%</td>
<td>A/B 4.1</td>
</tr>
<tr>
<td>Chemistry for Veterinary Students</td>
<td>A/B 4.9</td>
<td>(67.1%)</td>
<td>56%</td>
</tr>
<tr>
<td>Veterinary Cell Biology</td>
<td>A/B 7.7</td>
<td>(80.8%)</td>
<td>60%</td>
</tr>
<tr>
<td>Veterinary Anatomy</td>
<td>A/B 80.1</td>
<td>66.7%</td>
<td>60%</td>
</tr>
<tr>
<td>Special Histology and Embryology</td>
<td>A/B 89%</td>
<td>30%</td>
<td>31%</td>
</tr>
<tr>
<td>Biostatistics for Veterinary Students</td>
<td>A/B 8.3</td>
<td>(90.7%)</td>
<td>48%</td>
</tr>
<tr>
<td>Basic Genetics</td>
<td>A/B</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The course coordinator has made a plan of action to address all the critical points. However, the Departmental Teaching Committee will be monitoring this closely as several of the problems have been recurring over the years.

A line plan of action has been established. The students are very upset that the excursion was cancelled and the lecturers are encouraged to try to find other possibilities. Lecturers must remember to take breaks in the lectures – recurring point of criticism!

Students have filed complaints, the course coordinator has promised to correct the problem areas

The block structure is supposedly the reason for the problems in this course. But because there is a new structure on its way, no changes will be made in the course, but there will be focus on it in general

The students would like to get feedback on their reports.
<table>
<thead>
<tr>
<th>Course</th>
<th>A/B</th>
<th>3.69</th>
<th>92.7%</th>
<th>43.65%</th>
<th>A/B</th>
<th>3.86</th>
<th>96.2%</th>
<th>58.28%</th>
<th>Wishes for fewer cases will be considered.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology and Pharmacy</td>
<td>A/B</td>
<td>4.32 (80.8%)</td>
<td>84%</td>
<td>Criticism of the curriculum textbook; until it is possible to find another textbook, a detailed 'skip list' should be drawn up.</td>
<td>A/B</td>
<td>4.3 (74.4%)</td>
<td>84%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic Clinical Course</td>
<td>A/B</td>
<td>3.46</td>
<td>61.1 (96.9%)</td>
<td>54.96%</td>
<td>A/B</td>
<td>2.9</td>
<td>7.5 (96%)</td>
<td>5.3 (100%)</td>
<td>79.4%</td>
</tr>
<tr>
<td>Misc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The course is divided between two departments. The exercises are good. The curriculum is experienced as very overwhelming due to the many textbooks and subjects, and the coordination between the two departments is bad. The curriculum and book list will be simplified and all lecturers must set up learning goals before course start. To facilitate the coordination, the course will, in future, be divided into small and large animals, with a halfway exam.</td>
</tr>
<tr>
<td>General Small Animal Clinical Practice</td>
<td>A/B</td>
<td>100%</td>
<td>63.64%</td>
<td>62.07%</td>
<td>A/B</td>
<td>91.3%</td>
<td>92.3%</td>
<td>100%</td>
<td>43.48%</td>
</tr>
<tr>
<td>Large Animal Clinical Practice</td>
<td>A/B</td>
<td>100%</td>
<td>50%</td>
<td>20%</td>
<td>A/B</td>
<td>3.67</td>
<td>98.7%</td>
<td>35.71%</td>
<td></td>
</tr>
<tr>
<td>Special Pathology</td>
<td>A/B</td>
<td>3.51 (73.8%)</td>
<td>65.98%</td>
<td>A/B</td>
<td>3.1 (58.3%)</td>
<td>74.02%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poutry diseases</td>
<td>A/B</td>
<td>89.2%</td>
<td>73%</td>
<td>31.43%</td>
<td>A/B</td>
<td>95%</td>
<td>92%</td>
<td>100%</td>
<td>80%</td>
</tr>
<tr>
<td>Fish diseases</td>
<td>A/B</td>
<td>96.4%</td>
<td>82%</td>
<td>59.26%</td>
<td>A/B</td>
<td>95%</td>
<td>95.5%</td>
<td>100%</td>
<td>92%</td>
</tr>
<tr>
<td>Hygiene seminara</td>
<td>A/B</td>
<td>90.3%</td>
<td>94.5%</td>
<td>25%</td>
<td>A/B</td>
<td>95.4%</td>
<td>100%</td>
<td>100%</td>
<td>80%</td>
</tr>
<tr>
<td>Clinics, small animals</td>
<td>A/B</td>
<td>95.1%</td>
<td>89%</td>
<td>46.34%</td>
<td>A/B</td>
<td>95.1%</td>
<td>95.4%</td>
<td>29.17%</td>
<td>Chosen as 'The course of the year' at the department.</td>
</tr>
<tr>
<td>Clinics, large animals</td>
<td>A/B</td>
<td>100%</td>
<td>60%</td>
<td>The two last evaluations were on paper.</td>
<td>A/B</td>
<td>100%</td>
<td>28%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veterinary Reproduction</td>
<td>A/B</td>
<td>4.28</td>
<td>89%</td>
<td>45%</td>
<td>A/B</td>
<td>4.5</td>
<td>7.3 (90.1%)</td>
<td>58.54%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A/B</td>
<td>4.28</td>
<td>91.9%</td>
<td>45%</td>
<td>A/B</td>
<td>4.64</td>
<td>7.3 (90.1%)</td>
<td>36.67%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A/B</td>
<td>4.39</td>
<td>87.2%</td>
<td>72%</td>
<td>A/B</td>
<td>4.9</td>
<td>5.4 (64.9%)</td>
<td>55.26%</td>
<td></td>
</tr>
</tbody>
</table>

a Chosen as 'The course of the year' at the department.
<table>
<thead>
<tr>
<th>Track</th>
<th>Module 1</th>
<th>Module 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track; Advanced Small Animals Clinics</td>
<td>A/B</td>
<td>A/B</td>
</tr>
<tr>
<td>Track; Veterinary Food Safety</td>
<td>A/B</td>
<td>A/B</td>
</tr>
<tr>
<td>Track; Veterinary Jurisprudence</td>
<td>A/B</td>
<td>A/B</td>
</tr>
<tr>
<td>Track; Equine Clinics</td>
<td>A/B</td>
<td>A/B</td>
</tr>
<tr>
<td>Track; Biomedicine</td>
<td>A/B</td>
<td>A/B</td>
</tr>
<tr>
<td>Track; Laboratory Animal Science</td>
<td>A/B</td>
<td>A/B</td>
</tr>
</tbody>
</table>

Curriculum 2005 courses. Scores are translated into the 2009 ranking system: A, B and C, where A = excellent course; B = acceptable, only minor improvements are implemented; and C = unacceptable, major improvements are implemented – action plan has been made. Thus, former scores are translated as A old = A/B new and B old = C new.
6. ASSESSMENT OF QUALITY ASSURANCE SYSTEMS FOR CLINICS, LABORATORIES AND FARM SERVICES

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

Factual information

Clinical area

Small Animal Veterinary Teaching Hospital

General quality assurance

The Small Animal Veterinary Teaching Hospital is constantly seeking to provide the highest level of patient care available in an environment that is ideal for student learning. Quality assurance at many levels within the hospital is essential for this goal to be met. The staff reports unexpected events to the head of the corresponding unit and, in matters concerning health and safety, to a member of the Occupational Health and Safety Committee. Reports of events needing special attention concerning administrative matters, financing, staff, and rosters are submitted to the Hospital Director. In the event of problems concerning buildings and maintenance, reports are submitted to the Head Building Supervisor.

A diagram explaining the organisational structure of the department and teaching hospital is published on a webpage on the department’s intranet.

Patient care

The quality of patient care and client service is continuously assessed. Cases are discussed and assessed within the POMR format during case rounds attended by a senior clinician in each unit. Specialists from other units can be consulted when necessary. Cases that merit special attention are discussed in detail and provide younger clinicians with an excellent opportunity to gain insight into the complexity of advanced patient care.

Clinicians are encouraged to consult the literature when assessing the quality of patient care. The hospital’s library has many relevant journals and textbooks. Relevant textbooks can also be found in the intensive care unit, surgery unit, and hospital laboratory. Internet access, access to electronic patient records and the department’s intranet are provided throughout the hospital. The university’s library provides access to journals and texts that the department may not have. Online access to specific procedure protocols is available and the number of procedures will be expanded in 2010.

The electronic patient record system is an essential element in the quality of care and service provided by the hospital. Although it has its weaknesses, it provides reasonable quality assurance with regard to physical examinations, laboratory and imaging results, client communications and patient data archiving and retrieval.

Workshops are held to help the staff stay up to date with hospital procedures.

The department’s ethics committee must approve all research projects prior to launching. Special attention is given to matters such as animal welfare, safety, client consent, financing, and conflict of interest.

Clinicians are encouraged to calculate and present a low and high cost estimate to clients prior to admission of patients to the hospital. Prior to dosing or dispensing, a veterinary surgeon must approve all medication of patients. All clients receive written material concerning patient care upon discharge. Plans for a client satisfaction survey to be conducted in 2010 are underway. Clients can give feedback to the Hospital Director by telephone, email or appointment. The Hospital Director is responsible for the processing of client complaints. For each complaint, the veterinary surgeon or another relevant staff member is asked to provide a written statement about the case. If an agreement cannot be made between the hospital and the client, the case can be sent to the Board of Appeals for Veterinary Treatment, which is a private body approved by the Danish Ministry of Economic and Business Affairs.

A manual for students concerning hospital procedures and other information relevant to students on clinical rotations is updated annually and available on the Internet. Student evaluations of clinical rotations are processed electronically and assessed by faculty and staff upon completion of their clinical rotation, and adjustments can be made if the need should arise.

Employee welfare

The department’s Local Collaboration Committee is a forum where general staff-related issues are evaluated and solutions are discussed with representatives from the hospital staff and its administration. It has recently assisted in the creation of guidelines for welcoming new employees to the department.

The department’s Occupational Health and Safety Committee is responsible for developing, communicating and maintaining safety and bio-security guidelines within the department.

A job satisfaction survey and a health and workplace survey were conducted in 2007-2008 and 2009,
respectively. The department’s Local Collaboration Committee and the department’s Occupational Health and Safety Committee, together with the department’s administration, analysed the results of both surveys and found, among other things, that there was a need to address a growing concern amongst the staff that there were too many tasks to perform in the time allocated. The hospital is currently trying to identify unnecessary time consuming activities and streamline its functions in an attempt to address the problem.

In-house communications between the front desk and all hospital units depended on old technology that could not meet the demands of a large teaching hospital. A new mobile phone system has been installed that allows for functionality between phones, giving all hospital units a better means of being in contact with one another and staying in touch with clients.

**Large Animal Teaching Hospital, including mobile clinic**

**General quality assurance**

At the Large Animal Teaching Hospital, quality assurance is ensured on a daily basis, partly as written statements (‘procedures’) agreed upon by the hospital director and the professors, partly as senior members participating in the daily round, but also at weekly meetings among the veterinary surgeons and technicians. New procedures are introduced at monthly meetings among the staff members. Lack in quality is addressed immediately, at morning rounds or, at the latest, at the weekly meetings. Everybody is responsible for ensuring that lack in quality is addressed and the management has the obligation to act on such notice.

**Students**

All students are introduced to the hospital as a workplace by the hospital director with special emphasis on the working environment. Each student is given handouts about the subject and is encouraged to report all near-accidents. Guidelines and clinical instructions are posted on Absalon (LIFE’s learning management system) and students are encouraged to prepare for the clinical work. The students are never left without guidance.

**Clients**

A written procedure of how to handle clients and how to react in connection with near/cases of complaint is presented to all involved in client handling at the hospital. The procedure is posted in the reception area. All files contain a sheet with the following information: date and time of all client contact, details of case discussion and details of economy. The hospital director is informed by mail of all cases which may potentially result in a subsequent complaint and the proper way to handle the cases is agreed on. All cases of formal complaint involving elements of either neglect or of a financial nature should be in writing and forwarded to the hospital director. If necessary, the hospital director will seek legal advice from the Faculty. The Large Animal Hospital handles approximately 10 written complaints every year. All complaints have an economic element and a reduction in price has only been given due to lack in communication.

**Administrative procedures**

All administrative procedures are in writing and available to all staff members in laminated sheets as well as on the intranet.

**Clinical procedures**

The most frequently used clinical practical procedures are in writing and available as laminated sheets as well as on the intranet. All veterinary surgeons meet once a week to discuss clinical subjects, they have a journal club once a week, and they meet once a month to discuss subjects within clinical teaching, clinical problem solving and research.

**Hygiene**

All students are introduced to normal hygiene procedures on their first day and subsequently when required. The bio-security programme has special focus on zoonotic infection (ringworm, salmonellosis, Bluetongue), and on nosocomial infections.

**Employee welfare**

The hospital follows all guidelines issued by the University regarding the working environment, physical or psychosocial. A high level of information is achieved by holding regular staff meetings planned well in advance. Especially non-academic staff members are offered further training by fellow staff members, members of the academic staff or invited guests.

**Other premises**

**Quality assurance of the cardiovascular examinations**

All the echocardiography examinations at the Department of Basic Animal and Veterinary Sciences are performed by the same veterinary surgeon and with the same ultrasound machine. The veterinary surgeon’s main research area is mitral valve disease in dogs (since 1996) and has performed minimum 150 echocardiographic examinations in dogs per year since 2004. Advanced cases are discussed with colleagues with long-standing echocardiographic experience. Further training of the veterinary surgeon is obtained through international meetings and echocardiographic courses. Videos or DVDs with echocardiographic recordings of the mitral valve are sent to the Department of Basic Animal and Veterinary Sciences from a limited number of veterinary practitioners (n=5), who have been trained at the Department of Basic Animal and Veterinary Sciences especially to obtain good images of the mitral valve. These recordings are all evaluated by the same veterinary surgeon at the Department of Basic Animal and Veterinary Sciences. None of the dogs are treated with medicine at the

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*The Faculty of Life Sciences (LIFE) University of Copenhagen | EAEVE stage two*
Department of Basic Animal and Veterinary Sciences. In some cases, medication is recommended and the owner is informed that it should be performed in agreement with the dog’s own veterinary surgeon. A letter with results from the cardiac examination and recommendations are given to the dog owner and/or to the dog’s own veterinary surgeon. In acute severe cases, it is recommended to contact the clinic of the Faculty.

Assessment of quality assurance systems for laboratory animal facilities
All experimental animals used in teaching and research are kept according to the Danish legislation. Initially, researchers send an application, and the Laboratory Animal Facility at the Department of Veterinary Disease Biology convenes a meeting to ensure that licenses are precise and valid, and that the researchers involved have completed the correct and required courses.

All employees at the Laboratory Animal Facility meet Danish legal requirements in terms of education and training. There is a veterinary surgeon responsible for animal welfare, training and guiding staff, researchers and students involved in animal experiments.

The facilities do, as a minimum, meet legal requirements with focus being on animal welfare in the daily work, as well as on working conditions for the staff.

One of the goals is renovation of the facility, one room at a time, to improve animal welfare and working conditions.

The Laboratory Animal Facility will inspect our suppliers of animals, in order to make sure that we use high quality animals.

Laboratory diagnostic services

Pathology
Service in Pathology includes necropsy and evaluation of biopsies from domesticated mammals. Material originates primarily from the Teaching Hospitals at LIFE; however animals and samples from slaughterhouses throughout the country are also received regularly for a second opinion. At the Section of Pathology, all Danish cases with reference to forensic pathology are dealt with, too.

Undergraduate students participate in all areas of necropsy work under the supervision of senior lecturers, but the responsibility for the report rests on the lecturers. Evaluation of biopsies is carried out by staff members only. Undergraduate students normally do not deal with the evaluation of case-related histology, but are exposed to series of histological slides of general relevance for diagnoses of diseases related to different organ systems. During the time spent in the post mortem room, the diagnoses and differential diagnoses are discussed with the students and often also with the clinicians, and it is decided what kind of material that should be sampled and sent for supplementary examinations like, for example, histology and microbiology.

The head of Special Pathology, Professor, DVM, PhD, DrVetSci, Henrik Elvang Jensen is also a Diplomate of the European College of Veterinary Pathology.

Microbiology
The Section for Microbiology, department of Veterinary Disease Biology provides diagnostic services in clinical bacteriology for clinical departments, the Section of Pathology and external users (veterinary surgeons, zoos and the pharmaceutical industry). Internal quality control programmes are in place, while no external (audit) is used. A majority of relevant media are bought from commercial sources, relying on the quality control systems of the company. Media produced internally are prepared according to written protocols. Recognised international reference strains are used routinely to document performance of tests, including antimicrobial resistance testing according to CLSI.

Parasitology
The Section of Parasitology, Health and Development at the Department of Veterinary Disease Biology provides diagnostic services in parasitology. It is a small-scale activity that consists mainly of sample analysis referred from the Teaching Hospitals, private practitioners or Copenhagen Zoo, and involves a small number of faecal or ectoparasite samples. Diagnostics follow written procedures. Available staff includes 1 technician and 4 academics (Diplomates (3) or Associate Diplomate (1) of EVPC). Safety instructions are handed out to all students in the section. GLP is presently not implemented but the majority of the staff have attended appropriate courses in GLP.

Clinical pathology (Central Laboratory, Department of Small Animal Clinical Sciences)
Since 2006, the Central Laboratory has been recognised by the Laboratory Standards Committee of the European College of Veterinary Clinical Pathology (ECVCP) as a training site for interns and residents within clinical pathology (Appendix 7). The laboratory uses internal and external quality control in following areas

- Clinical Chemistry/Serology
- Haematology
- Endocrinology

Internal controls only
- Haemostasis

Haematology
Quality control procedure: Every day, a level of control material (normal range) is analysed. The basis of acceptance is a result within a 2SD range of the target of each parameter. Only if all parameters are within this range is the result accepted and routine work is started. If only one control is reported ‘out of range’ cleaning measures are taken and the control is reanalysed. When cleaning measures fail to clear the problem, a new vial of control material is opened and the results are checked. If scattergrams or other indicators reveal that optical calibration may be the problem, then the OPTIpoint and SETpoint standards are run and the optical settings are corrected according to results. When a related group of parameters is out of range in the control, a systematic error is assumed and the respective measures are taken. The daily quality control results are stored in the instrument’s QC file. The procedure has been used since 1998 (analyzer changed during that period form CellDyn3500 (Abbott) to the present analyzer).

As a further quality procedure, the appropriateness of cell count numbers is assessed subjectively on blood film slides on all samples where a leukocyte differential count has been requested.

**Clinical Chemistry/Serology**
Analyzer: ADVIA1800 (Siemens)

Procedure: Analyses are controlled every morning and calibrated every day plus at reagent changes. The quality control system of the ADVIA 1800 is programmed to monitor significant deviations from the expected control values (means ± 2SD). If a control run is rejected, systematic troubleshooting is performed for random and systematic sources of error, respectively (the most likely attended first). Control material is mainly commercially available standardised and traceable human material at normal and abnormal levels. For single tests, the controls provided with the kit are used and results only accepted with satisfying results of controls. The procedure has been used since 1974 (on a variety of analyzers).

**Endocrinology**
Analyzer: Immulite 2000

Procedure: Endocrine analyses are controlled after calibration every Monday with commercially available animal control material (canine). The basis of acceptance is results within the stated ranges provided with the control material. If any parameter is ‘out of range’, routine work is not initiated whereas error detection is performed. The procedure has been used since 1997 where the Immulite 1000 was purchased and endocrine testing employed at the central laboratory.

**Haemostasis**
Analyzer: ACL TOP 500 – (Instrumentation Laboratory (IL))

Procedure: A local internal aliquot of pooled citrated plasma from healthy dogs is analysed on a daily basis and if the result is outside the measured mean value ± 2SD of the pooled plasmas previously measured, a human based control (normal range and abnormal range) is assayed to assure that the analysis is working correctly. If the human controls are out of range, SOP troubleshooting is carried out. The procedure has been used since 2000.

Analyzer: Thrombelastographs, TEG 5000 – (Haemoscope)

Procedure: Ordinary quality control based on mean ± 2SD using quality control material from the manufacturer (Haemoscope).

**External Quality Control**

The Central Laboratory has since 1998 participated in a veterinary animal specimen-based external quality control programme: Veterinary Laboratory Association Quality Assurance Program®, Canada (VLA). Prior to that, participation in external quality control programmes was restricted to clinical chemical analyses using Seronorm in collaboration with Danish hospitals. The Veterinary Laboratory Association Quality Assurance Program is an external quality control programme specifically designed for veterinary laboratories. Its goal is to provide a confidential method by means of which a veterinary laboratory can compare its internal test results to those of other laboratories. Samples are sent to participants four times per year, and the participants analyse the samples and return their results within a two-week period. Data are pooled and statistically analysed by the Atlantic Veterinary College, and a confidential, individualised report along with review articles are mailed back to the participants within two to three weeks.

The basis of adequate performance is to deliver results within mean ± 2SD of the population of results from all participating laboratories, allowing only non-repeated single outlying results. If outlying performance is identified the result is compared with results from laboratories using same apparatus/method to identify possible apparatus/method dependency. Unexplained outliers receive special attention at next external control and at internal control procedures until next internal control is performed.

The Central Laboratory has had acceptable performance throughout the whole participating period (1998 to the present)

**Cytology**

Intra-observer variability is controlled by having veterinary surgeons from the laboratory assessing and evaluating cytology specimens. Most have at least two years’ experience in clinical pathology and clinical cytology. A Diplomate of the European College of Veterinary Clinical Pathology (Asger Lundorff Jensen, DVM, PhD, DrVetSc) is affiliated with the laboratory. Cytology cases are followed on a regular basis and the results of histopathology are compared and recorded.
To control inter-observer variability, bi-weekly cytology rounds, including blood smears, are used. Microbiological and parasitological results are examined when cytological diagnosis indicates that there may be a problem within these areas.

**Blood smears**

Intra-observer variability is controlled by having veterinary surgeons from the laboratory assessing and evaluating blood smears. Most have at least two years’ experience in clinical pathology and clinical cytology. A Diplomate of the European College of Veterinary Clinical Pathology is affiliated with the laboratory.

To control inter-observer variability, bi-weekly cytology rounds including blood smears are used.

Whole blood smear evaluation (qualitative features and manual leukocyte differential count) is also a component of the external quality control programme and the results are compared against all the other laboratories in the external quality control programme.

**Other premises**

*Parentage testing and species identification* (Genetics at the Department of Basic Animal and Veterinary Sciences)

This work is conducted at three different laboratories:

1. DNA is extracted from blood and/or tissues and PCR reactions for the analysis in question is set up (B 203)
2. PCR is run in a PTC-20 apparatus from MJ-Research
3. PCR reactions is run on an ABI Prism 3130 xL Genetic Analyzer

Quality assurance: DNA is isolated under conditions that ensure that contamination is avoided (sterile equipment and use of gloves). Control samples and blind samples are set up together with test samples during all laboratory procedures.

**Farm services**

*Large Animal Teaching Hospital*

The department does not provide farm services to farms. Farm services are provided in collaboration with local veterinary practitioners and their actions are further regulated by law.

**Comments**

All clinics and laboratories have systems that ensure quality in patient care and work, some being more developed and more sophisticated than others.

**Suggestions**

Further development of quality assurance systems and procedures can be suggested in some areas, e.g. external audits in microbiology and parasitology.
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 and whether there is a legal basis or other official requirement for continuing education.

The documentation should be accompanied by a list of courses offered in the preceding year (year n) and their assessment by the participants.

Factual information

Continuing professional development programmes (continuing education) are offered in three forms:

- As Master programmes offered by the faculty
- As continuing education courses offered by either the Department of Small Animal Clinical Sciences or the Department of Large Animal Sciences in collaboration with the Danish Veterinary Association
- As participation in the ‘Fagdyrlæge’ programme offered by Danish Veterinary Association (‘Fagdyrlæge’ = Acknowledged veterinary surgeon)

Legal basis for Master programmes (continuing education)

The legal basis for continuing education (postgraduate Master studies) within the Danish university framework comprises the following legal orders:

- The Danish University Act: No. 985, 21 October 2009 (Lov om universiteter)
- The Danish Act on the Accreditation Agency for Higher Education: No. 294, 27 March 2007 (Lov om Akkrediteringsinstitutionen for videregående uddannelser (Akkrediteringsloven))
- Ministerial Order on Part-time Programmes at Universities: No. 1188, 7 December 2009 (Bekendtgørelse om deltidsuddannelse ved universiteterne).
- Ministerial order on Master’s Programmes under a Continuing Education Scheme at Universities: No. 1187, 7 December 2009 (Bekendtgørelse om masteruddannelser ved universiteterne).
- Ministerial Order on Flexible Curricula in Continuing Education for Adults: No. 1206, 15 December 2000 (Bekendtgørelse om flexibele forløb inden for videregående uddannelse for voksne).

There is no legal basis for mandatory continuing education for Danish veterinary surgeons.

The Faculty of Life Sciences currently offers two English-language veterinary Master programmes approved by the Ministry. They are the Master of Veterinary Public Health and the Master of Laboratory Animal Sciences programmes. LIFE also offers Master of Food Quality and Food Security (Master i Fødevarekvalitet og -sikkerhed (instruction in Danish)), which includes modules of veterinary relevance. Finally, LIFE offers a Flexible Master Programme which allows for an individual curriculum – also within veterinary medicine.

According to the Danish University Act, the postgraduate Master programmes are part-time job-oriented programmes, i.e., they are designed for people working professionally full-time concurrently with their Master studies at the university. The participants pay tuition fees, and the programmes also receive national subsidies.

A postgraduate Master programme equals a one-year full-time study period, but may be completed over several years. Thus, the Master programmes equal 60 ECTS at 27.5 hours of study, i.e. a total of 1,650 hours of study. This covers courses and a Master project, including teaching activities, homework and exams. The university must organise each Master programme so that it can be completed within a maximum period of 3 years. Each Master programme is divided into thematic modules comprising one or more courses. Mandatory courses account for a minimum of 30 ECTS, elective courses account for a maximum of 18 ECTS, and the Master project must be completed within 12-20 ECTS. Admission to Master programmes requires a relevant BSc and/or MSc degree and a minimum of 2 years of relevant professional experience.

Quality assurance to monitor and promote the design, implementation and quality control of Master programmes

From ‘idea’ to ‘Master programme’

Ideas for new programmes may arise from individual researchers or from organisations/companies or groups of people with a common need for professionals with certain qualifications, training and education. The ‘idea’ is discussed with the Associate Dean for Education because responsibility for teaching programmes is placed at faculty level. The ‘idea’ is also discussed with the head of the department covering the relevant scientific disciplines because the financial responsibility for the Master programmes is placed at department level. If there is a general consensus that the ‘idea’ is good, the proposer
is asked to write a more thorough proposal, including a curriculum outline, and submit to the Master Study Board. The Master Study Board evaluates the proposal and may suggest coordination with related existing programmes. Depending on the feedback to the proposer for improvements and coordination the plan is sent to the Faculty Education Committee (Uddannelsesudvalget) for evaluation and advice to the Associate Dean for Education. Finally, the proposal is considered by the Faculty Management Board. If approved here, the proposal with the curriculum for the Master programme and statistical information (e.g. market surveys) confirming the need for such a programme is sent to the Accreditation Agency for accreditation. This institution has the final decision before final acceptance by the Ministry of Science, Technology and Innovation.

**Courses**

Proposals for new Master courses are submitted to the Master Study Board for evaluation and approval. Master courses must be linked to one of the existing Master programmes. As an example, a new course in toxicology was linked to the Master of Laboratory Animal Science and to the Master of Veterinary Public Health, because there is no Master programme in toxicology. Each Master course has its own course description with a unique course number in the Faculty Course Database. All course descriptions are considered for revision every two years and thus include recent adjustments to the course curricula. The course coordinator submits the updated course description to the Department Study Board. Following approval, the course description is sent to the Master Study Board for evaluation and approval, and the updated course description is uploaded to the Faculty Course Database. This process ensures the best possible quality of the courses. The course coordinator is responsible for conducting the course including developing the teaching plan, i.e. time plan, lectures, assignments and exams, and is also responsible for all practical arrangements.

**Evaluation of courses**

Course evaluation takes place after the completion of a course. All participants are asked to evaluate the course by responding to a questionnaire (either on paper or electronically), and usually the class and the lecturer(s) have a common discussion about the content and conduct of the course. The course coordinator summarises the results of the evaluation and reports this to the Department Study Board, which forwards it (with comments/approval) to the Master Study Board for final evaluation with either an acceptance or request for improvements the next time the course is offered.

**Evaluation of programmes**

Quality assurance of any Danish study programme is mandatory. All existing Danish study programmes must repeatedly and at certain intervals be evaluated, approved and accredited by the independent Accreditation Agency. New study programmes must be approved before onset. The Accreditation Agency is appointed by the Minister for Science, Technology and Innovation.

The Accreditation Agency works independently and with direct reference to the minister. Master programmes are evaluated by the individual programme participants once they have completed the programmes. The evaluations are used by the Master Study Director for future adjustments of the programme, and an annual discussion by the Master Study Board takes place. Once a year, the Associate Dean for Education invites all Master Study Directors to an individual and thorough discussion of programme activities during the past year. This process is beneficial for the Study Director and provides the Faculty Management Board with helpful insights into all study programmes as a basis for deciding on future adjustments and strategic planning.

**Master Programmes at the Department of Veterinary Disease Biology**

**Master of Food Quality and Safety**

The programme is headed by Department of Human Nutrition, and it is a part-time programme comprising modules and courses of two to five days’ duration taking place at the university. The programme is for students having many different educational backgrounds including veterinary surgeons. The Department of Veterinary Disease Biology is responsible for the 'Microbial and chemical food safety' course. The topics are persistence and transmission of zoonotic bacteria as well as advanced molecular techniques to detect microorganisms in food and the use of these methods in the prevention and control of pathogenic bacteria in food. Furthermore, the course includes chemical pollution of food, toxicological detection methods and legislation. The language of instruction is Danish, and the tuition fee is approx. EUR 22,000 for this course.

**Master of Laboratory Animal Science**

The programme is accredited by the Federation of European Laboratory Animal Science Associations (www.FELASA.eu) as category D education, i.e. education as expert according to the requirements of the European Convention for the Protection of Vertebrate Animals used for Experimental and other Scientific Purposes, ETS no. 123, which states that a laboratory animal facility must have a specialist – a competent person – who is responsible for the health and welfare of the animals. The topics are advanced techniques on laboratory animals, genetics, breeding, biology and the welfare of laboratory animals, legal and ethical aspects, experimental design, management and development of a laboratory animal facility – and in addition dialogue with the surrounding society. It is a part-time programme comprising modules
The Faculty of Life Sciences (LIFE) University of Copenhagen

and courses of two to five days’ duration taking place at the university. The aggregated duration of the full programme is one year of study over a period of two to six years. Each course will be offered at least every other year – and can be attended as single courses. The language of instruction is English. Tuition fee is approx. EUR 13,500 or from EUR 750 for single courses. The programme modules and courses are shown in table 7.1.

Table 7.1. Programme modules of the Master of Laboratory Animal Science course

<table>
<thead>
<tr>
<th>Module</th>
<th>Course</th>
<th>ECTS points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>Laboratory animal maintenance, breeding and biology</td>
<td>6</td>
</tr>
<tr>
<td>1B</td>
<td>Laboratory animal pathology and health</td>
<td>6</td>
</tr>
<tr>
<td>2A</td>
<td>Ethics and legislation in relation to laboratory animals</td>
<td>6</td>
</tr>
<tr>
<td>2B</td>
<td>Laboratory animal anaesthesia and experimental surgery</td>
<td>4</td>
</tr>
<tr>
<td>3A</td>
<td>Design and evaluation of animal experiments</td>
<td>4</td>
</tr>
<tr>
<td>3B</td>
<td>Animal models in research</td>
<td>6</td>
</tr>
</tbody>
</table>

In addition, the student must do 8 ECTS points of relevant elective courses, and a Master thesis of 20 ECTS points. Pre-accepted elective courses are in vivo pharmacology, toxicology and microsurgery.

The students on each course spend some intensive days at the Faculty after having followed Internet-based e-lectures and self-study according to a suggested reading list. After the teaching days, the students do Internet-based exercises and own reading according to suggestions. Each course if followed up by an exam, which can be online or over a video-link. For some courses the evaluation is based upon report writing. The thesis must be defended at the Faculty.

A typical course is structured is shown in figure 7.1.

Figure 7.1. Typical structure of the Master of Laboratory Animal Science course

Master Programmes at the Department of Large Animal Sciences

Master of Veterinary Public Health

The Master of Veterinary Public Health programme was approved in 2001 by the Ministry of Science, Technology and Innovation and by the Royal Veterinary and Agricultural University – now the Faculty of Life Sciences (LIFE) after the 2007 merger with the University of Copenhagen. The teaching started in 2002, and so far more than 162 different persons have completed one or more courses with a total of 230 course participations in the programme.

Further information on the Master of Veterinary Public Health programme can be found in Appendix 8.

Continuing education courses in collaboration with the Danish Veterinary Association

There is no legal basis for mandatory continuing education courses in collaboration with the Danish Veterinary Association.

From idea to course

Every year continuing education programmes in a variety of subjects are offered through the Danish Veterinary Association. The idea for each course usually comes from the course manager, but topics are also requested from practitioners as they evaluate courses they have participated in.

Courses

Courses are offered in a variety of subjects within the major fields of the veterinary profession, including successive courses of two to five courses within one particular topic or field which build upon the knowledge gained in a previous course.

Evaluation of courses

After participation in a course each participant is asked to evaluate the course using a form elaborated by the Danish Veterinary Association. The participants are, among other things, asked to score and comment on the quality of the overall course, the course materials, presentations, presentation techniques, lecturers, knowledge gained, and are also invited to submit proposals for new courses. The evaluations are always reviewed by the course manager and lecturers so as to continuously improve the courses.
Table 7.2: Information about the Master of Veterinary Public Health programme

<table>
<thead>
<tr>
<th>Title of the education</th>
<th>Master of Veterinary Public Health (MVPH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>The Master of Veterinary Public Health programme focuses on control of contagious animal diseases and zoonotic diseases. Control is imperative for food production of sufficient quantity and quality, as well as for farm economy and animal welfare. The programme teaches students how to undertake intervention at disease suspicions and outbreaks, and to evaluate the economic implications. This includes data collection and analysis to obtain epidemiologic information on types and frequency of diseases in different animal species and the different conditions under which diseases occur, in order to understand the biology and etiology of disease outbreaks.</td>
</tr>
<tr>
<td>Participant profile</td>
<td>The programme is primarily designed for people working with control of animal diseases in veterinary services, government and administration, food processing industries for human consumption, agricultural organisations (e.g. cattle, pigs, poultry, fish, fur animals), pharmaceutical and chemical industries, and veterinary research institutions.</td>
</tr>
<tr>
<td>Structure of the programme</td>
<td>The programme comprises 5 modules and a few elective courses. The modules are:</td>
</tr>
<tr>
<td></td>
<td>- Introduction to data management, biostatistics and critical reading</td>
</tr>
<tr>
<td></td>
<td>- Epidemiology and biostatistics</td>
</tr>
<tr>
<td></td>
<td>- Disease control (disease outbreak management, disease control and dynamics, and risk analysis)</td>
</tr>
<tr>
<td></td>
<td>- Animal health economics</td>
</tr>
<tr>
<td></td>
<td>- Master project</td>
</tr>
<tr>
<td>Competence profile</td>
<td>The Master of Veterinary Public Health programme qualifies the participants to undertake control of contagious animal diseases and zoonoses. The programme offers plenty of opportunities to work on topics within the participant’s own professional activities.</td>
</tr>
<tr>
<td>Study methods</td>
<td>Each module and course is offered as a separate activity. The modules and courses include elements of e-learning (distance learning) and intensive on-campus teaching periods. The teaching includes lectures, exercises and small projects and assignments for individual students and in groups. For each course the participant is graded (pass/fail or grading scale). The language of instruction is English.</td>
</tr>
<tr>
<td>Admission requirements</td>
<td>Relevant BSc and/or MSc degree and a minimum of 2 years of relevant professional experience.</td>
</tr>
<tr>
<td>Deadline for application</td>
<td>Continuous enrolment, i.e. the deadline for the next course in the MVPH programme</td>
</tr>
<tr>
<td>Duration</td>
<td>3-6 years (part-time study)</td>
</tr>
<tr>
<td>Extent (ECTS)</td>
<td>60 ECTS (1 academic year). 1 ECTS = 27.5 student work hours</td>
</tr>
<tr>
<td>Programme start for the individual student</td>
<td>The next course</td>
</tr>
<tr>
<td>Tuition fee</td>
<td>Approx. DKK 100,000 for the entire programme</td>
</tr>
<tr>
<td>Lecturers</td>
<td>Highly qualified lecturers from Denmark and from other countries</td>
</tr>
<tr>
<td>Contact</td>
<td>MVPH Study Director Jens Frederik Agger (<a href="mailto:jfa@life.ku.dk">jfa@life.ku.dk</a>) and <a href="mailto:Continuing@life.ku.dk">Continuing@life.ku.dk</a></td>
</tr>
<tr>
<td>Read more</td>
<td><a href="http://www.life.ku.dk/English/education">www.life.ku.dk/English/education</a> and <a href="http://www.life.ku.dk/mvph">www.life.ku.dk/mvph</a></td>
</tr>
</tbody>
</table>

Continuing education courses at the Department of Small Animal Clinical Sciences in collaboration with the Danish Veterinary Association

Within the companion animal field there is close collaboration between the Department of Small Animal Clinical Sciences and the Danish Veterinary Association. Currently, all faculty at the department are course managers or lecturers at these courses each year. The courses are offered within most aspects of companion animal clinical sciences and are either single courses or course series. Examples are courses within cytology, haematology, diagnostic imaging, surgery, dentistry, oncology, cardiology, neurology and exotics. Nearly all courses include ‘wet labs’ or workshop elements and are to a large extent case-based. A unique collaboration was established within oncology, where there is a complete programme leading to certification within small animal oncology, including an exam and certification of the participant clinic to perform chemotherapy. The department is currently working on extending this to a Master’s programme within companion animal clinical sciences as a Flexible Master’s Programme.

In addition, a clinical update course with rotations in the Small Animal Veterinary Teaching Hospital is offered in which participants can request specific areas where they would like an update. Characteristically, the participants stay there for one week and participate in one or more of the hospital services. In addition to the participants gaining an update, they also experience the current clinical education and evaluation of the students, they can provide feedback to the lecturers they meet about their experiences, the students meet a coming colleague thus allowing inspiration of everyone involved.
Course evaluation
All courses are evaluated as described above in the general section.

Companion animal courses offered in collaboration between the Danish Veterinary Association and the Department of Small Animal Clinical Sciences
- Ultrasound-scan
- Clinical pathology
- Practical surgery I
- Practical surgery II
- Basic Surgery urinary tract
- Basic Surgery Respiratory System
- Basic Surgery Anaesthesia and Pain

Continuing education courses at the Department of Large Animal Sciences in collaboration with the Danish Veterinary Association
The Danish Veterinary Association is primarily running the CE courses. The courses are often offered in cooperation with the relevant department at the University and the subjects of the courses vary.

Examples of CE courses within large animals with participation by the Department of Large Animal Sciences
- Reproduction in the horse
- Standing surgery on the head and limb of the horse
- The colic horse
- Emergency treatment
- How to deal with Salmonella infections and paratuberculosis in cattle.

‘Fagdyrlæge’ programme
There is no legal basis for mandatory continuing education courses within the ‘Fagdyrlæge’ programme.

The ‘Fagdyrlæge’ programme (‘Fagdyrlæge’ = Acknowledged veterinary surgeon) is a two-year postgraduate course for practitioners. The participants have at least three years of experience in practice and work part-time in the area in which they want to specialise.

The aim of the ‘Fagdyrlæge’ programme is:
- To ensure the specialist a continuing education on a high level in the specific area
- To enable the specialist to acquire and evaluate knowledge from research and development work out of the area
- To enable the specialist to participate in the planning and development in that area
- To enable the specialist to disseminate new knowledge and skills in the area
- To enable the specialist to practice the profession in that area in accordance with the area’s current professional requirements

Organisation, management and quality assurance is under the purview of the Danish Veterinary Association.

The Department of Small Animal Clinical Sciences participates in the ‘Fagdyrlæge’ programme within companion animal clinical sciences. One of the department's faculty members is course manager for this programme, and many of the faculty teach the courses which are part of the programme.

The Department of Large Animal Sciences participates in the following ‘Fagdyrlæge’ programmes:
- Pig production and diseases in pigs
- Cattle production and diseases in cattle
- Equine diseases

List of Continuing Professional Development (CPD) programmes and courses in 2009
A list of CPD courses 2009 in 2009, including number of participants and summary of course comments/evaluations, are shown in table 7.3.

Comments
- Nearly all faculty members and many of the senior and junior veterinary staff members including PhD students and residents participate in the planning and teaching of continuing education courses and programs.
- The continuing education courses and programs offered continuously receive positive evaluations.

Suggestions
Continue the process of establishing a flexible masters program allowing completion of an updated “fagdyrlæge”-program as part of the masters programme and allowing veterinarians in Denmark who have already obtained “fagdyrlæge” acknowledgement the opportunity to pursue further structured continuing education leading to certification, and ultimately to the Danish specialty veterinarian acknowledgement (a report is available regarding the pilot project describing and implementing this option for a “Master of Companion Animal Clinical Sciences”). This way, further cooperation with veterinary practitioners and the Danish Veterinary Association in providing substantial and structured continuing education is secured.
Table 7.3: Veterinary Master courses and other continuing Professional Development (CPD) courses offered in 2009.

<table>
<thead>
<tr>
<th>Course number</th>
<th>Course title</th>
<th>Period</th>
<th>No. of participants</th>
<th>Comment/ Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>150231</td>
<td>Course on disease outbreak management</td>
<td>April-June</td>
<td>32</td>
<td>On a scale from 1-5, the mean was 3.75</td>
</tr>
<tr>
<td>150221</td>
<td>Veterinary epidemiology, part 1</td>
<td>September-October</td>
<td>1</td>
<td>Oral evaluation, Very useful course</td>
</tr>
<tr>
<td>150222</td>
<td>Veterinary epidemiology, part 2</td>
<td>October-November</td>
<td>1</td>
<td>Oral evaluation, Very useful course</td>
</tr>
<tr>
<td>150116</td>
<td>Ethics and legislation in relation to laboratory animals</td>
<td>Autumn</td>
<td>17</td>
<td>Course not completed. To be evaluated</td>
</tr>
<tr>
<td>150125</td>
<td>Laboratory animal maintenance, breeding and biology</td>
<td>Autumn</td>
<td>6</td>
<td>Course not completed. To be evaluated</td>
</tr>
<tr>
<td>150134</td>
<td>Laboratory animal anaesthesia and experimental surgery</td>
<td>Autumn</td>
<td>9</td>
<td>Course not completed. To be evaluated</td>
</tr>
<tr>
<td>150135</td>
<td>Lab. animal pathology and health</td>
<td>Autumn</td>
<td>9</td>
<td>Course not completed. To be evaluated</td>
</tr>
<tr>
<td>150144</td>
<td>Microsurgery</td>
<td>Autumn</td>
<td>5</td>
<td>Course not completed. To be evaluated</td>
</tr>
<tr>
<td>150150</td>
<td>Master thesis</td>
<td>Autumn</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Courses at Department of Large Animal Clinical Sciences (IPH/DDD courses)

<table>
<thead>
<tr>
<th>Course number</th>
<th>Course title</th>
<th>Period</th>
<th>No. of participants</th>
<th>Comment/ Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>K2009019</td>
<td>Advanced dental course (Avanceret tandkursus)</td>
<td>Spring</td>
<td>16</td>
<td>Evaluation: Most found the course very good. Only a few found the course good.</td>
</tr>
<tr>
<td>K2009021</td>
<td>Surgery on standing horses 2: Operations in the head region (Kirurgi på stående hest 2: Praksisrelevante indgreb i hovedregionen)</td>
<td>Spring</td>
<td>12</td>
<td>Evaluation: Very good</td>
</tr>
</tbody>
</table>

Courses at Department of Small Animal Clinical Sciences (IMHS/DDD-courses)

<table>
<thead>
<tr>
<th>Course number</th>
<th>Course title</th>
<th>Period</th>
<th>No. of participants</th>
<th>Comment/ Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>K2009022</td>
<td>Mammary tumours and skin reconstruction I – Advanced surgery module I</td>
<td>10-11 March 2009</td>
<td>16</td>
<td>Very good</td>
</tr>
<tr>
<td>K2009027</td>
<td>Clinical Pathology – Use the Microscope (Klinisk pathologi - Brug mikroskoped)</td>
<td>29-30 April 2009</td>
<td>30</td>
<td>Very good</td>
</tr>
<tr>
<td>K2009024</td>
<td>Surgical Ear-Nose-Throat Diseases (Kirurgiske øre-nærse-hals sygdomme og øvre luftvejsygdomme. Basal Klinisk Kirurgi 3)</td>
<td>10-11 September 2009</td>
<td>16</td>
<td>Evaluation good</td>
</tr>
<tr>
<td>K2009029</td>
<td>Practical updating course in small animal diseases (Praktisk klinisk opdateringskursus ‘Mindre husdyrs sygdomme’)</td>
<td>Running all year</td>
<td>3</td>
<td>No evaluation</td>
</tr>
</tbody>
</table>
Factual information

System of quality assessment to develop and maintain research programmes

At Government-University level
According to Section 2 of the Ministerial Order concerning the Act on Universities (the University Act) (Bekendtgørelse af lov om universiteter, LKB 985 of 21 October 2009 (Universitetsloven)), the University must conduct research and offer research-based education at the highest international level in the disciplines covered by the University. The University must (i) ensure a balanced relationship between research and education, (ii) on a regular basis screen for the relevancy of its research and educational disciplines, (iii) prioritise and develop them further and (iii) disseminate knowledge of academic methods and results.

Further, pursuant to the University Act, the following committees and persons have specific tasks and responsibilities:

The board
The board is the highest authority of the university. The board shall safeguard the university’s interests as an educational and research institution and determine guidelines for its organisation, long-term activities and development. The board shall answer to the Minister regarding the activities of the university, including the administration of the university’s collective resources.

The Rector
The Rector shall undertake the day-to-day management of the university within the framework laid down by the board. The other members of the university’s executive management, deans, directors, heads of departments, heads of sectors, heads of PhD schools and heads of studies shall undertake their duties in a manner authorised by the Rector.

The Academic council
The University shall set up an academic council either for the entire university or for each of the main academic areas. The academic council shall have the following tasks:
• make statements to the Rector on the internal distribution of funds
• make statements to the Rector on central strategic research questions and educational issues and plans for knowledge exchange
• make recommendations to the Rector on the composition of academic committees to assess applicants for academic positions
• award PhD and doctoral degrees
The academic council may make statements on all academic issues of substantial relevance to the activities of the university and has a duty to discuss academic issues presented to them by the Rector.

The Dean
The dean shall manage the main academic area, ensure the interaction between research, study programmes. The dean shall also guarantee the quality of study programmes, teaching as well as the cross-disciplinary development of the quality of the study programmes, research and work tasks of the main academic area.

PhD schools
PhD programmes are run by PhD schools. The university shall set up the necessary number of PhD schools. Heads of PhD schools shall be recognised researchers and have experience of and insight into PhD programmes. The head of the PhD school appoints PhD supervisors in accordance with the rules stipulated by the individual university. The head of the PhD school approves PhD students pursuant to recommendations from representatives of the academic staff on the PhD committee. The head of the PhD school is responsible, in consultation with the PhD committee, for the planning of the school’s programmes, including postings abroad. The head of PhD school is responsible, in consultation with the PhD committee, for the evaluation of the school’s activities. Pursuant to these evaluations, the head of PhD schools recommends follow-up plans to the dean. Evaluations and follow-up plans must be published.

In order to guarantee students’ influence on the PhD process, a PhD committee will be set up. The remit of the PhD committee includes:
• nominating a chairperson from among the PhD committee’s academic staff to the dean and, if deemed appropriate, a vice-chairman from among the PhD committee’s students
• making recommendations about the composition of assessment committees to the dean
• approving PhD courses
• submitting proposals for internal guidelines for the PhD school, including PhD supervision, to the head of the PhD school
• issuing pronouncements on evaluations of PhD programmes and supervision to the heads of the PhD school
• approving applications for credit transfers and exemptions
• issuing pronouncements within the area on all issues of importance for the PhD programme and PhD supervision submitted by the dean, or a person authorised by the dean.

The PhD committee consists of representatives of the academic staff and of the PhD students, who are elected by and from the academic staff and the PhD students respectively.

Head of Department

Usually, research and teaching are the responsibility of the departments. The head of department shall undertake the day-to-day management of the department, including planning and allocation of tasks. The head of department may allocate specific tasks to specific staff. During the periods in which members of the academic staff are not performing such tasks, they are free to conduct research within the strategic framework laid down by the university for its research activities. The head of department shall be an acknowledged researcher and have teaching experience. The head of department shall ensure the quality and interaction between the research and teaching of the department, and in consultancy with the study board and the head of studies, the head of department shall follow up on evaluations of study programmes and teaching.

Development contract

Biannually, the Ministry of Science, Technology and Innovation and the universities agree on a development contract (Udviklingskontrakt) which, among other goals, sets overall goals for each university on:

• research output in terms of the number of publications (e.g. the goal for peer-reviewed publications in 2010 for each full-time equivalent scientific researcher is 2.2 per year)
• the number of newly employed scientists who come from a country other than Denmark
• the amount of external funding
• the number of PhD students

At University level

In its strategic initiatives (Destination 2012), one of the goals of the University of Copenhagen is to conduct outstanding basic research. The strategic initiatives are then transformed into a strategic development plan (KU’s strategiske handleplan – 2008-2012 (University of Copenhagen strategic action plan 2008-2012). For research, the University’s strategic development goals are:

• to increase the ratio of newly employed scientists who come from outside of Denmark by 10% before the end of 2010
• to have more women in research and leadership
• to allocate 10% of the University’s basic research funding to excellent research areas (e.g. Programmes of Excellence (Stjerneprogrammer)). The money is allocated internally to the faculties based on a competition using international criteria and assessment
• to maintain the high level of research output per full-time equivalent scientist
• to increase the number of PhD students
• to support researchers who apply for large research projects
• to benefit scientifically from the merger between the ‘old’ University of Copenhagen, the Royal Veterinary and Agricultural University and the Danish University of Pharmacy by means of a theme-package process where researchers from all faculties are represented.

The University of Copenhagen then makes an agreement with each faculty to support the strategic initiatives and the strategic development plan (i.e. Fakultetsaftale for Det Biovidenskabelige Fakultet (Faculty agreement for the Faculty of Life Sciences). This essentially copies the University’s strategic development plan but adds specific goals for the faculty, and it also lists those responsible for collecting data.

At Faculty level

Besides the Faculty’s agreement with the University, LIFE’s strategic objectives for the period 2009-2010 state that LIFE will contribute so that the Faculty can maintain and strengthen its position as one of Europe’s leading university environments within food sciences, veterinary sciences and natural resource sciences. The strategy is to be realised in interaction with our employees, students and partners and will support the Faculty’s continued work towards a sustainable future for the society that we are a part of. The strategy of the Faculty is reviewed and amended biannually by the Faculty Board and the Central Management Forum (chiefly the heads of departments).

Biannually, the Faculty’s strategy is then transformed into 2-year development goals for each department. These goals are decided in cooperation between the respective head of department and the Faculty Board. The fulfilment of these goals is then assessed by the Faculty Board after 1 and 2 years. This process has been used since early 1990.

Once a year, the Dean reports to the Rector on the Faculty’s research production (Fælles regler for det videnskabelige personales forskningsindsats (joint rules on the research efforts of academic/scientific staff)). This procedure has been in use at the Faculty since 2007.

At departmental level

Each department agrees biannually with the Faculty Board on a 2-year development plan. The respective head of department is responsible for the fulfilment of this agreement, and the progress and results are
reviewed by the Faculty Board after 1 and 2 years.

Further, on an annual basis, all employees have an appraisal interview together with their immediate superior. For scientists, this appraisal interview includes a review of the scientific research production, teaching, administration and more personal issues, if necessary. The head of department receives a summary from each departmental section, and the results are discussed in the local collaboration committee. The outcome of this discussion is submitted to the Faculty’s collaboration committee for further discussion, the focus, however, mainly being on development of competences for groups of employees. This system has been in effect since early 1990. All employees are made aware of this, e.g. on the Faculty’s and the University’s websites.

In addition, a feature of the individual annual salary negotiations for scientists also includes assessment of the scientific production, research leadership and the amount of external funding. These negotiations have been in effect for more than 10 years.

Once a year, the head of department reports to the Dean on the department’s research production (Fælles regler for det videnskabelige personales forskningsindsats) Joint rules on the research efforts of academic/scientific staff. This procedure has been in use at the Faculty since 2007.

Interaction between research and teaching

The University of Copenhagen is a research-intensive university. In 2009, the University of Copenhagen was ranked as number 51 on the THE-QS ranking list1). Additionally, the University collaborates with some of the top research universities in the world through the International Alliance for Research Universities (IARU). The main focus of the research at the Faculty of Life Sciences is in the area of basic research relevant for animal and human health, food production and the environment. Generally, the different research programmes and projects benefit the students greatly in attracting good academic staff and creating a study environment with much emphasis on research and innovation.

The faculty disseminates research results through publication in peer-reviewed scientific journals. Furthermore, most faculty members are involved in research committees for international meetings, congresses and national and international commissions.

Research is an indispensable and essential part of all activities within the veterinary programmes. Research results are used in all parts of the veterinary courses to provide the students with the most recent and evidence-based information. Each scientific lecturer has a responsibility to include relevant aspects of the latest research knowledge and research methods in his/her teaching. The extent to which this is achieved is assessed during the course evaluations process (see chapter 5) and during the associated discussions at Faculty level (Veterinary Study Board and Faculty Teaching Committee) and at the departmental levels (Departmental Teaching Committees).

Students are directly introduced to research in one of the first courses at the BSc level: ‘Veterinary introductory course’. In this course, the student should obtain a better understanding of the possibilities and limitations of scientific methods and learn how to evaluate the quality of different scientific sources. Furthermore, in most practical and practical-clinical courses, the student learns how to use research methods (i.e. methods that at some time have been developed scientifically and by now are and for many years have been integral to veterinary research, e.g. chemical and biochemical analyses, anatomical dissection, staining of cells and tissues, physiological analyses on organs and whole animals, clinical examination, clinical pathological analyses. Recent examples include the PCR analysis included in the veterinary chemistry and biochemistry course and thromboelastographic analysis of canine and feline blood samples during the small animal practical clinical courses.

The students are further taught how to critically evaluate scientific sources and experience research through their written BSc work (10 ECTS) and finally through their veterinary MSc thesis work (30 ECTS).

All veterinary students actively participate in research through their veterinary MSc thesis project, which includes an experimental research part, either a laboratory experiment, a clinical study or an analytical activity. In addition, many students participate or are involved in research during their clinical or other rotations in the tracking programmes. The MSc thesis must include independent experimental and/or analytical work. The thesis is presented at a public defence with both internal and external examiners. The title of the thesis and the grade obtained is noted in the student’s curriculum.

Bibliometric data

The extent to which bibliometric data are applied

Bibliometric data are of essential importance to the University, the Faculty and the departments as well as to each scientific employee and the veterinary area as such. Annually, the Faculty collects data on scientific publications published by each department. Bibliometric methods common to the University are followed in the classification of these publications (e.g. division between peer-reviewed articles, book chapters, editorials, number

1 See http://www.timeshighereducation.co.uk/hybrid.asp?typeCode=438
of PhD theses etc.). The bibliographic data are used to assess whether each scientific employee, the department, the Faculty and the University are complying with the respective agreements as described above. The number and impact factor of the scientific publications in the preceding 5 years are also used as a measure in the Faculty Board's decision on the size of the budget of each department in the 2-year development plan process for each department.

In 2009, the Government decided to allocate some of the basic funding to the universities based on performance where bibliometric data are essential. In 2012, the number of scientific publications and the number of PhD theses will be 25% and 10%, respectively, teaching 45% and the amount of external funding 25%. The extent to which this will affect the veterinary area is unknown at present, and it is also unknown if this mechanism is to be extended within the University.

Lists of publications
In Appendix 9, lists of numbers of publications from 2009, 2008 and 2007 representing year N, N-1 and N-2, respectively, are presented.

Comments
The opportunities for Danish students to participate in active research work are very good, and all departments are available for the students to choose between when selecting their subject area. So far, the Faculty has not experienced limitations in the supervising capability. Despite the huge efforts time-wise and economically, it is concluded that student's research work at MSc level is an integral and important part of the curriculum.

Suggestions
No further suggestions.
9. ASSESSMENT OF INTERNATIONALISATION OF EDUCATION AND RESEARCH

The institution should describe the system it possesses to promote and assess the development of international postgraduate 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.

Internationalisation at LIFE

The Faculty of Life Sciences (LIFE) has a strong international profile characterised by a large number of well-reputed international partner institutions, an active involvement in strategic networks and student exchange programmes such as Mundus, Erasmus and Nordplus. LIFE continuously develops its international activities, and the vision is to “be a European leader in veterinary, food and agricultural sciences within specifically defined key areas with an attractive and internationally-oriented research and teaching environment”.

Over the last 10 years, the Faculty of Life Sciences has worked systematically with internationalisation of education and research. The goal is to ensure that we remain an internationally competitive university which is attractive to potential students, produces qualified graduates and attracts research funding.

One of the main priorities in recent years has been to ensure that internationalisation is also a natural priority for veterinary students by providing opportunities for our veterinary students and welcoming international students into our programmes. Exchange of students in this area has proven to be complex, and special attention has therefore been given to this in the last 4 years. The priority is to strengthen the collaboration with a few strong partners within veterinary science and focus on more mobility and cooperation with these partners.

To achieve this, several initiatives have been initiated. To identify the best partners for cooperation, representatives from the veterinary departments have visited several partner universities in Canada, the USA and Australia in 2006 and 2009. The main purpose of these trips was to determine where there were possibilities for exchange of students and other joint projects. In January 2010, a committee was set up with the main purpose of identifying possibilities for and barriers to internationalisation of the veterinary study programmes at LIFE and proposing actions to facilitate veterinary student mobility.

The main aim at LIFE is to increase incoming as well as outgoing student mobility and to ensure quality in the collaboration. The committee will therefore decide on a few focus partners and ensure that mobility windows for both incoming as well as outgoing students are defined and that coursesclinical rotations are bilaterally preapproved and considered part of the education. The information on this will be made available for students at LIFE as well as the partner universities.

The committee finishes its work in June 2010. An English summary of the committee’s report will be available at the time of the accreditation visit.

In April 2010, LIFE (EU lead) submitted an application to the European Commission for the EU-US Atlantis Programme – Excellence in Mobility – in collaboration with the School of Veterinary Medicine, University of California, Davis, California (US lead), the Faculty of Veterinary Medicine, University of Glasgow, Scotland, UK and the School for Global Animal Health, College of Veterinary Medicine, Washington State University, Pullman, Washington. The aim of the project is to prepare MSc students in Food Safety, Veterinary Medicine and Veterinary Public Health for the challenges of health threats emerging from global trade, the movement of food, animals and people as well as from environmental and industrial changes by:

- Expanding the choices of internationally acclaimed MSc courses available for twelve mobile students per year from the four participating institutions
- Expanding the exchange and collaboration among faculty at the participating institutions to enhance and inspire new curriculum developments at their respective institutions

Language Policy

LIFE has a conscious, active and well-functioning language policy. LIFE will increase the number of BSc courses in English and, by 2012, most MSc programmes must be taught in English.

The veterinary MSc programme will also be in English, except for courses or elements of courses in which communication between (Danish) clients and students is of importance, e.g. in the large and small animal clinics. Furthermore, aspects of veterinary jurisprudence that concern specific Danish legislation will also be taught in Danish. Special arrangements will be planned for English-speaking students to ensure that they can complete their courses. The planning regarding these special arrangements is in progress, e.g. deciding on the maximum number of English-speaking students in these...
courses and the organisation of special English student teams within specific courses.

**Incoming exchange students**

Due to the fact that most veterinary courses were taught in Danish until recently, it has been difficult to receive exchange students from abroad. As only a few courses have been taught in English, only a small number of veterinary students from partner universities have been studying for a semester at LIFE. As more courses will be taught in English starting September 2010, the expectation is that LIFE will be able to attract more exchange students for regular classes. Quite a few students from LIFE’s overseas partners have, however, chosen to come for summer clinics, where they do part of their clinical rotation in one or both of the teaching hospitals and sometimes also combine this with practical training in a private practice or private hospital.

Due to an increase in student intake, there has been little room for exchange students in the clinical rotations during the regular semester. However, the future plan is to secure a number of spaces during the regular semester for exchange students from the partner universities.

**Outgoing students**

As mentioned earlier, it is difficult for veterinary students to go on a regular exchange, mostly due to the very specific curriculum. Only a small number of veterinary students have therefore studied at a partner university as part of their degree. However, many of the students travel and do clinical rotations or summer courses outside the curriculum. Priority is therefore now given to setting up mobility windows with preapproved course and/or clinical work at selected universities, so the study abroad at these universities is considered part of the LIFE degree.

**Cooperation with the International Veterinary Students’ Association (IVSA)**

IVSA Denmark is a very active group at LIFE. Collaborating with IVSA has high priority, and their activities on campus as well as internationally are actively supported. IVSA is generally considered an important contributor in regard to enhancing internationalisation. They are therefore represented on the above-mentioned committee which was set up at the beginning of January. The Faculty supports their activities financially, which enables them to participate in international activities worldwide. IVSA Denmark will be hosting the Annual World Congress in June 2010.

**NOVA network**

LIFE is a member of the Nordic Forestry, Veterinary and Agricultural University Network (NOVA), which has nine members. Within veterinary science, the collaboration is with the following partners:

- The University of Helsinki, Faculty of Veterinary Medicine
- The Norwegian School of Veterinary Science
- The Swedish University of Agricultural Sciences

This network is important not only for student mobility, but also for exchange of experience and ideas in a Nordic/international context.

**Internationalisation of lecturers and researchers**

As a consequence of the MSc study programme being taught in English from 2012, veterinary lecturers will be certified in English over a 4-year period in order to teach the MSc programme. The certification process has already started.

The English certification is carried out by the Centre for Internationalisation and Parallel Language Use (CIP), Faculty of Humanities, University of Copenhagen (http://cip.ku.dk/english/). Lecturers who do not qualify for the English certification will be offered English language courses, e.g. at CIP.

The PhD programme at LIFE is internationally oriented, e.g. the thesis work, including scientific publications, is in English, the PhD courses are taught in English, the programme comprises a stay at another, mainly foreign, research institutions. See Chapter 2: Postgraduate student education – PhD programme for more details.

**Internationalisation of research**

All research at LIFE is international. In support of this claim, lists of the countries of employment for authors and co-authors on 2007-2010 publications from the veterinary departments are shown in Appendix 10.

The University of Copenhagen encourages internationalisation by specifically supporting EU-funded projects in which the University receives more than EUR 150,000 in funding. These research projects receive an extra bonus of EUR 70,000 from the University to be used within the research frame, e.g. PhD programmes, equipment, international scientific meetings or exchange etc. See also Chapter 8.
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.

Published information

LIFE publishes all relevant information on the Faculty’s website www.life.ku.dk. The website contains information targeted at the students, e.g. information about the curricula as well as rules and other information about teaching, exams etc. The website also contains information targeted at potential students and other stakeholders, e.g. descriptions of the Faculty’s programmes, including information about admission requirements.

Quantitative information includes detailed year group analyses with information about admission, dropout rates, study completion times etc. These analyses also show the distribution of the students admitted in terms of gender, age, nationality etc. Statistics for grade distribution and the average grades obtained in all courses as well as Bachelor projects and theses are also published. The Faculty report provides information about the teaching, projects, publications etc. of each department.

Qualitative information will in future include memos from each department summarising the results of the student evaluations of the individual courses and projects. In Denmark, it is a legal requirement that the evaluation results must be published, and LIFE has published the first results from the 2009-2010 academic year on its website in April 2010.

The Danish University and Property Agency publishes the official national employment statistics of the activity of new graduates 4-19 months after graduation. LIFE’s website also links to these statistics. Unfortunately, the statistics do not show employment destinations.

Most of the information on the website is in Danish, but some of the information is also available in English at www.life.ku.dk/English.

Communications with former students

LIFE has not had a tradition of directly assessing graduating seniors or alumni. However, Denmark being a small country, there is a very close collaboration between the Faculty and the veterinary organisations in Denmark, which results in a lot of informal feedback to the Faculty.

In 2008, the University of Copenhagen established an alumni association for existing and former students of the university. This association allows graduates to stay in contact with the university and create new networks as well as to participate in career-oriented activities and social events.

The extent to which the institution meet its own expectations

As mentioned above, LIFE has not so far had a formalised dialogue with the graduates. In autumn 2009, LIFE thus established a joint procedure for evaluating all the Faculty’s programmes, cf. Chapter 1. The evaluation means, among other things, that graduate surveys are conducted every four years for the graduates of the past four years. In 2011, the first graduate survey will be conducted among the graduates from the Veterinary Medicine programme.

The survey will show the graduates’ employment destinations, to which extent they make use of their competences in their job and how the programme has prepared them for the labour market. LIFE is looking forward to gaining information and experience from this survey.
Suggestions from the evaluation of the 1972 veterinary curriculum by the Advisory Committee on Veterinary Training in 1989 and KVL’s follow-up on the suggestions

Organisation

1. Serious consideration should be given to reducing the number of departments to a number comparable to that of leading veterinary schools similar in size to the Royal Veterinary and Agricultural University (RVAU).

2. We can see advantages in RVAU commissioning a management audit, perhaps accompanied by a technical audit, before deciding on the number and types of departments and changes in the management structure to meet the new requirements.

Comments: The number of departments within veterinary medicine has been reduced from 17 to 5. In some fields, this has led to very large departments, and especially the structure of the Department of Clinical Studies is currently under debate.

3. Steps should be taken to ensure the input of advice from the profession in general and from animal owners, particularly on matters concerning the curriculum.

Comments: KVL has a Board of Representatives comprising 15 people acting in their personal capacity and covering all educational fields at KVL. Currently one member is from animal science and veterinary medicine and four from the agricultural sciences. The Academic Coordination Committee for Animal Science and Veterinary Medicine is charged with making proposals related to the future veterinary education and includes one member of the Danish Veterinary Association, one representative of the pig-producing organizations, one representative of the cattle-producing organizations and other members.

4. Opening times of clinical services should be extended to more closely reflect the reality and ethics of professional practice.

Comments: The clinical service has been extended to 24 hours, 7 days a week all year. Students participate on a voluntary basis in this extended service.

Funding and staffing

5. Priority should be given to increasing the number of support staff and professional staff in clinical departments.

Comments: From 1990 to 2000, the full-time equivalents of academic staff increased from 31.5 to 47.0, a total of 15.5. Of the 47.0 full-time equivalents, 10 are for extended clinical service and 2 for other clinical service, totalling 12 for these activities. The Department of Clinical Studies also pays salaries for 3 clinicians from fees charged for the emergency service. Further staffing is still needed.

6. It is strongly recommended that the veterinary clinical departments be considered in the same light as clinical departments in human medicine in terms of staff: student ratios, and that the staff: student ratio of those departments be improved.

Comments: The ratio of teaching staff to the number of undergraduate students and the corresponding ratio of teaching staff to the number of full-time equivalents are 1:7.8 (acceptable) and 1:5.2 (satisfactory). The burden of teaching in the Department of Clinical Studies is higher than in other veterinary departments.

7. It is also recommended that paraclinical departments with diagnostic responsibilities be treated in an analogous fashion.

Comments: The Department of Veterinary Microbiology and the Department of Pharmacology and Pathobiology have ratios of teaching: support staff of 1:1.1 and 1:1.8.

8. We also strongly suggest that earnings from clinical cases be retained within the departments generating that income (minus an element for central overheads)

Comments: The Hospital for Small Animals retains 80% of the fees received.

Facilities and equipment

9. Emphasis should be placed on improving the facilities on the present site to accommodate an intake of 100 students per annum. A management audit of the use made of the existing facilities would be a useful first step.

11. In any extension of facilities, priority should be given to those used in practical work and the provision of adequate accommodation for experimental animals.

Comments: The annual student intake has increased to 116. Thus, the dropout in the first years of study should be taken into account. Facilities for microscopy have been extended accordingly, and
a postmortem room for 116 students is being constructed. New and modernized facilities for practicals in physiology, biochemistry and veterinary microbiology will improve the situation but still do not meet the demand arising from the increased annual intake.

The Department of Clinical Studies has been expanded and renovated somewhat, but the facilities are not adequate for the number of students.

Facilities for experimental animals have been expanded and designed to house experiments with genetically modified organisms and infective agents of low pathogenicity. These facilities are located at the Frederiksberg campus and at the research farm in Taastrup.

12. Obvious deficiencies in equipment for teaching, such as the microscopes for anatomy and the ultrasound equipment in the clinics, should be corrected.

13. As a matter of urgency, audio-visual facilities should be improved, not only to make the best use of the limited amount of clinical material available, but also to enable students to take advantage of videotapes and other audio-visual aids now available within the European Community.

Comments: New adequate teaching microscopes for histology and histopathology have been acquired. The situation with respect to clinical ultrasound equipment has improved.

KVL has improved considerably within information technology (IT). The lecture halls are equipped with IT equipment, and an IT Service Centre has been established recently. The development within this area is continuing. Support staff have been hired to produce videotaped teaching materials. Seminar rooms with IT equipment for the students have been built. Facilities for videoconferencing are also present at KVL.

10. We strongly support the building of a new library that should help overcome some of the design problems in the existing building.

Comments: A modern library has been built equipped with up-to-date IT equipment and workplaces. There is access to electronic journals as well as important Internet and CD-ROM databases.

Curriculum

14. A review of the curriculum at an early date is highly desirable. Attention needs to be given to ways of ensuring that changes in the curriculum are implemented.

16. Greater collaboration in the teaching of paraclinical subjects should be considered.

17. Consideration might well be given to including more project work in the electives to prepare students for a lifetime of self-learning, with a corresponding reduction in formal teaching.

Comments: The curriculum was revised in 1994. Distinct boundaries between the subjects were removed to integrate them. As a consequence, some subjects are not taught individually but are incorporated into larger blocks. The curriculum is still compressed. Very few candidates have graduated under the 1994 curriculum (2 years of candidates), and their experience with the curriculum and with its relevance for their subsequent professional career has not yet been evaluated. Nevertheless, the 1994 curriculum is being revised as a result of an assessment in Denmark and the students’ experiences during the first 3 years of the study. The Veterinary Study Committee has also initiated an assessment of the most recent years of the curriculum (V5–V11). This material as well as the proposals for a revised curriculum will be available to the expert panel.

15. There should be an increase in the proportion of practical teaching compared with theoretical teaching.

Comments: In the current curriculum, the ratio of theoretical training to practical and clinical training is 1 : 1.5 (satisfactory). The ratio of clinical training to theoretical and practical training is 1 : 6.5 (unsatisfactory).

18. The possibility of developing a comprehensive clinical extramural studies programme in collaboration with the Danish Veterinary Association should be investigated.

Comments: The proposed field station has not been established, and access to animal herds has not improved significantly. The possibility of practicals in veterinary practice has not been implemented. There is still limited access to live animals under practical conditions. There is still a need for more patients at the Hospital for Large Animals.

Despite limited access to animal herds, research and teaching in production-related health, preventive medicine, epidemiology and herd health have improved.

Library

19. The opening hours of the Library should be extended.
and attempts made to encourage the students to use the Library, perhaps with the addition of self-instruction programmes and courses on how to make use of the Library, particularly if more project work is introduced into the curriculum.

Comments: The Library is now open 42 hours per week, an increase from 32 hours per week in 1987. Further, there is on-line access 24 hours a day to CD-ROM-based databases and international databases.
4 Summary

4.1 Introduction

The Danish Centre for Quality Assurance and Evaluation of Higher Education has conducted an evaluation of veterinary studies at the Royal Veterinary and Agricultural University of Denmark (KVL). The evaluation was initiated at the request of the Danish Advisory Board for the Natural Sciences. The evaluation is one of a process of systematic evaluations of higher education in Denmark in recent years.

Under the terms of reference the aim of the evaluation is as follows:

"To examine the quality of the programme by analysing major aspects of veterinary studies at the university concerned and the conditions under which the study programme is conducted."

Consequently, the evaluation covers:

- Conditions applying to organisational factors and the structure of studies,
- Administrative/economic conditions,
- Composition of the teaching group,
- Programme components and the study period,
- Subject content and subject development,
- Tests and examinations,
- Internationalisation aspects of the study programme,
- The labour market.
The terms of reference also permit other aspects of the study programme to be included in the evaluation to the extent that they warrant special attention.

In counsel with the Advisory Board for the Natural Sciences, the Evaluation Centre appointed a steering committee. The Steering Committee comprises:

- Professor Lars-Erik Appelgren, Agricultural University of Sweden, chairman
- Professor Kåre Possum, Veterinary Institute, Oslo, Norway
- Charlotte Madsen, veterinary surgeon, Institute of Food Safety and Toxicology, Veterinary and Food Directorate
- Dorte Lebech, veterinary surgeon, Vrænding Veterinary Practice, Denmark
- Mogens Gammel Pedersen, veterinary surgeon, Environmental and Food Centre, Slagelse, Denmark

The Steering Committee, within the framework of the terms of reference, drew up guidelines for the documentation used in the evaluation and has analysed the material. The conclusions and recommendations expressed in the evaluation are thus those of the Steering Committee.

The Evaluation Centre is responsible for methodology and the practical implementation of the evaluation. This includes preparation of the report, collection and registration of documentation, and contacts between the Steering Committee, the Advisory Board for the Natural Sciences, the veterinary study programme, PLS consulting company, etc. This work was done by:

- Mette Lindgaard, project manager
- Mikkel Haarder, project assistant
- Kaspar Bach, project assistant.
4.2 Methodology

The organisation and methodology of the evaluation were the responsibility of the Evaluation Centre. The Centre is an independent institution under the Ministry of Education with a mandate to initiate evaluation of higher education programmes, to develop appropriate methods and procedures, and to inspire and advise institutions of higher education on quality issues.

The main activity of the Centre is the regular and systematic evaluation of study programmes on a rotating basis in which most programmes of study in Denmark will be evaluated over a period of 3-7 years.

The standard evaluation comprises three phases, spanning a period of 12-14 months:

Phase 1: Planning
Phase 2: Documentation, i.e. self-assessment, user surveys, and site visits
Phase 3: Reporting.

The Steering Committee was appointed during the planning phase, and the Centre held briefing meetings with the institutions involved.

The documentation phase comprised self-assessment of the programmes, a user survey including veterinary students, and visits to the study programmes involved.

The central element in the evaluation was the self-assessment process in which the universities involved prepared self-assessment reports. These were designed to identify and discuss the central aspects of the evaluation, and were also to contain assessments of the strengths and weaknesses of programmes in relation to their objectives. Furthermore, reports were required to set out proposals for initiatives that might secure the quality of the programmes. The long-term objective of the self-assessment process is to encourage continued internal quality development of study programmes.

The site visit involved the Steering Committee visiting each of the institutions under
review. The self-assessment reports and the survey were all necessary prerequisites of the site visit.

The results of the *reporting phase* were presented by the Steering Committee in its final report, which contains a summary of the Committee's observations. These observations were first discussed at a conference attended by representatives of the institutions under review. The report was then submitted to the Ministry of Education, the Danish Advisory Board for the Natural Sciences and the institutions for implementation.

### 4.3 Conclusions and recommendations

The veterinary science study programme is a well-run course of study with motivated, satisfied students. The course offers inspiring surroundings, and students display a largely positive attitude to their study environment. The recommendations contained in the evaluation should therefore be seen as a contribution by the Steering Committee towards supporting the quality development of the veterinary study programme.

Veterinary students have traditionally qualified as veterinary surgeons and for posts in the food-quality sector. Developments within society, however, have imposed new demands upon graduates – and consequently upon the course of study. The Danish Educational Regulations (LBK no. 863 of October 10, 1994) reflect the demands of society but the study programme must in practice take steps to combine as many of these demands as possible and define a course of study which does not stress its students unnecessarily. The veterinary study programme must endeavour to place itself in a clearer social context.

#### 4.3.1 Branching and core curriculum

The veterinary study programme qualifies its students for a wide variety of employment. This is a great strength in that it presents graduates with a range of career choices. However, by its very breadth, the course imposes considerable pressure on students, and students are subject to a heavy work load and many examinations. The broad spectrum
of subjects makes it difficult for students to complete the study programme in the allotted 5¼-year period and to achieve the necessary skills in all the various fields.

In order to give students some opportunity for specialisation and to provide some balance between professional breadth and depth, the Steering Committee recommends that the study programme defines a core curriculum, thereby focusing on the qualifications that are essential for graduation. At the same time the Steering Committee recommends the programme to consider dividing the study programme into two or more branches so that it can comprise a basic course taken by all students and a branched second tier for specialisation.

The Steering Committee has drawn up proposals for a branched programme. The proposal aims to secure for students skills “from plough to plate” but at the same time to give them a comprehensive introduction to clinical and food-related aspects. The other recommendations of the Steering Committee are a natural consequence of the proposals for branching. If, however, the veterinary study programme retains its present structure, the other recommendations should still be considered on their merits.

4.3.2 Veterinary forum
The Royal Veterinary and Agricultural University is a micro-faculty institution. One effect of the absence of a specialised veterinary faculty is that there is little or no co-ordination between the various institutes that offer teaching at the veterinary studies. With a view to closer co-ordination and integration of subjects and examinations, the Steering Committee recommends the establishment of a veterinary forum composed of relevant members of staff. Its purpose would be to debate the veterinary study programme in its entirety as well as the requirements that veterinary graduates must meet. The forum should define at an overall level the skills profile of a veterinary graduate, prioritise the various subjects and their objectives, work for a reduction of the actual study period to the agreed standardised period of 5¼ years, define in concrete terms the programme’s internationalisation strategy, and secure the continued recruitment of veterinary Ph.D. graduates in order that the study programme can progress smoothly from one generation
to the next.

4.3.3 Planning the study programme
In the adoption of the 1994 curriculum, one of the intentions was to achieve a better integration and co-ordination of the programme examinations and greater integration of practical and theoretical aspects of the programme. The programme was to have fewer confrontational classes and a greater element of project- and case-based study in order to give students the opportunity for a deeper appreciation of their subjects.

However, integration and co-ordination of subjects and examinations have enjoyed only partial success. The Steering Committee therefore recommends a review of programme planning to ensure that subjects act in support of each other. In particular, the Steering Committee recommends that teaching in methodology and project work be moved from the beginning of the programme to the microbiological project. And that the compulsory three-week courses be incorporated in a longer semester to give students a better opportunity to obtain a deeper understanding of their subject. It is generally important that the university improve the co-ordination and integration of subjects and links subjects to their application to the real world of employment.

4.3.4 Teaching and examinations
Most of the institutes involved find that there is a reasonable balance within their own institute between forms of teaching and examinations. None of the institutes, however, expresses a view on the balance of teaching and examinations for the study programme as a whole.

The Steering Committee recommends that a future veterinary forum should plan forms of examination and teaching for the study programme as a whole in as co-ordinated a fashion as possible. It should also take steps to ensure that the chosen forms of teaching promote active learning and are linked to the objectives set for the study programme in the curriculum. Clinic-based teaching in particular must be better co-ordinated with other classes in order to reinforce students' clinical skills — and do so in a way that makes best
possible use of the clinic. In addition, the study programme should include a compulsory period of work experience. The Steering Committee further recommends that the university gives its teaching staff an incentive to develop their teaching and professional qualifications.

The Steering Committee recommends that the assessment aspects of the veterinary study programme be evaluated in conjunction with preparation of the skills profile of graduates.

4.3.5 Veterinary studies in a wider context

It is the general impression that the world outside the university adopts an open and positive attitude to veterinary studies. The programme can therefore usefully expand its relations with those bodies and organisations which traditionally require the services of its graduates. It would be beneficial for all concerned – especially the students – if the positive attitude of the outside world could be exploited to an even greater degree than at present. To this end, the Steering Committee recommends that a veterinary forum invites the participation of relevant parties in debating the future skills profile of veterinary graduates.

Finally, the Steering Committee recommends that students are given a genuine opportunity to study abroad for one semester and to be credited for that period of foreign study. The present position is that students have difficulty in obtaining recognition for their period of study abroad. A determined effort should therefore be made to define a clear strategy of internationalisation.
Veterinary Education in Europe

The New Veterinary Curriculum at the Royal Veterinary and Agricultural University, Denmark

Asger Lundorf Jensen

INTRODUCTION
One of the first veterinary schools in Europe, the Veterinary School at Christianshavn in Copenhagen was first founded by Peter Christian Abildgaard in 1773. On March 8, 1856, the Danish Parliament passed a resolution founding from it the Royal Veterinary and Agricultural University (KVL), and in 1858 the university, now located at Frederiksberg, was inaugurated. Initially, only veterinary and agricultural sciences were taught, but in 1863 horticulture and forestry were added. Dairy technician studies were subsequently introduced in 1921, and during the 1960s degree programs in food science and landscape architecture were established.

Today, KVL is a mono-faculty university, which means that there is no unique veterinary faculty. The intention of this is to maintain easy, adaptable, and resourceful links between the governance of the university and the various scientific disciplines. The highest authority is the Board, which must safeguard the university’s interests as an educational and research institution and determine guidelines for its organization, long-term activities, and development. The majority of the board members, including the chair, are external to the university. The other members represent the academic staff of the university (including PhD students with university contracts), the technical and administrative staff, and the students. The day-to-day management is the responsibility of the Rectorship, which consists of the rector, the pro-rector of research, the pro-rector of education, and the university director. Research and educational activities are the responsibility of the 12 departments, four of which are veterinary departments, each led by a head of department.

The main campus at Frederiksberg, close to the centre of Copenhagen, covers 41 acres (16.6 hectares). KVL also has an arboretum at Hoersholm and four research farms at Taastrup, 20 km (12 mi) from the main campus, covering a total of 618 acres (250 hectares). These facilities play an important role in courses at KVL and make it possible to combine theory with practical research activities. There is a free shuttle-bus service from Frederiksberg to Taastrup several times a day.

The veterinary study program is a very popular one in Denmark, receiving between 550 and 600 applications per year. As of October 2004, KVL had a total of 863 veterinary students, of whom 731 are female and 132 male. Until 2003, 120 veterinary students were admitted each year, while approximately 100 new veterinary candidates graduated. This number increased in 2003, 2004, and 2005 to 140, and in 2006 180 veterinary students will be admitted.

The earlier veterinary curriculum, established in 1994, was taught over five and a half years. One year of a full-time program is equivalent to 60 European Credit Transfer System (ECTS) points. The complete curriculum thus has an equivalent of 330 ECTS points, 285 representing compulsory courses and 45 representing electives. Compulsory courses include zoology, veterinary ethics and philosophy of science, microbiology, biotechnology (including biochemistry), anatomy, physiology, biostatistics, genetics, nutrition, ethnology, epidemiology, pharmacology, pharmacy, toxicology, bacteriology, mycology, virology, immunology, invertebrate zoology, parasitology, general and special pathology, small- and large-animal internal and surgical diseases, reproduction and obstetrics, population medicine and herd health management, veterinary jurisprudence, food and environmental hygiene, fish diseases, poultry diseases, food inspection and hygiene, and master thesis.

From September 2005, a new veterinary curriculum also of 330 ECTS points replaces the 1994 curriculum. The following sections present reasons for the curriculum change, the process of changing the curriculum, the outline of the new curriculum, and plans for future developments.

REASONS FOR CHANGING THE CURRICULUM

Developments in Research and Society
KVL’s strategy is to continually improve, develop, and adapt its bachelor’s and master’s degree programs. The KVL faculty believed that a curriculum change was clearly needed, both because of developments in research leading to rapidly increasing biomedical scientific knowledge and because the work of the veterinarian has become more specialized and complex because of developments in society.

Job Opportunities
Unemployment of veterinarians in Denmark fluctuates around 3% and is forecasted to decrease.² Based on various inquiries, KVL assumes that traditional veterinary job opportunities (e.g., in clinical practice, food safety, and food hygiene) will remain unchanged, while job opportunities within biomedical research and industry will increase. KVL therefore decided on a strategy of changing the veterinary curriculum in the direction of more focus on public health and human medicine, without neglecting the traditional veterinary labor market (i.e., clinical practice, state veterinary medicine, food safety, and food hygiene).
Ramiﬁcations of the Bologna Declaration

The Bologna Declaration has been presented in detail in a past issue of this journal. A major objective of the declaration is the adoption of a bachelor’s and master’s degree structure, and in 2003 the Danish Parliament passed a new law regulating universities that also requires a bachelor/master structure for the veterinary curriculum, with a veterinary bachelor’s degree program of 180 ECTS credits and a veterinary master’s degree program of 150 ECTS credits to be developed. Subsequently, the Ministry of Science, Technology and Innovation also stated that both bachelor’s and master’s degree programs should include elective courses and a written thesis. Another major objective of the declaration is to establish transparent systems of higher education in Europe, based on two main cycles and realized as a division of higher education into different steps. To have a real impact on curriculum development, recognition of foreign degrees, enhanced mobility, and international evaluation and accreditation, a more precise concept of qualifications is needed, and this led to the formulation of a Danish Qualifications Framework for higher education. At KVL, this framework was adopted by describing a competence profile for each bachelor’s and master’s degree program and for each course. The competence profile includes descriptions of the minimum competences to be obtained within the following categories: basic science, applied science, and ethics and values. The three categories essentially reflect the Aristotelian concepts of episteme, techne, and phronesis, respectively.

THE PROCESS OF CHANGING THE CURRICULUM

In 2002, in line with the strategy for the veterinary curriculum, KVL allocated ﬁnancial resources to adjust the curriculum to include differentiation in the latter part of the curriculum, as well as to increase the number of students admitted per year from 120 to 180. Differentiation is not identical to tracking, since all students graduating from the veterinary master’s degree program receive the omnivalent basic training required for recognition as a veterinary surgeon.

A steering committee composed of the heads of the four veterinary departments, the chair of the veterinary study board, and a student member of the veterinary study board was appointed to implement the process, while the director of studies and the veterinary study board were responsible for creating the new curriculum.

It was obvious that the existing campus was too small for the increased number of students, so the decision was made to replace and rebuild the large-animal hospital in Taastrup while at the same time rebuilding and renovating the facilities at Frederiksberg. A total of 76 new teaching positions (38 scientiﬁc and 38 technical) were stipulated, and the steering committee also made recommendations for allocation of the new positions and professorships to each department in accordance with the new curriculum.

In 2003, KVL decided to change the semester structure for all bachelor’s and master’s degree programs. The semester was divided into two blocks of nine weeks each, with an interim week in between. Each block was assigned a value of 15 ECTS credits; thus one semester now has a value of 30 ECTS (Table 1). It was also decided that courses, where possible, should have an ECTS value of 7.5, 15, 30, or 60 credits. Examinations were to take place within the nine weeks, and this also necessitated adjustment and rethinking of the examination procedure for each course (e.g., changing from a four-hour written examination to a portfolio examination, an oral examination, or other examination procedures). Re-examinations were planned for the subsequent interim week, nine weeks later.

The curriculum change also required transitioning students from the old curriculum to the new. Students in their last four semesters were allowed to complete their education according to the old curriculum, while all others were transferred to the new one. This, of course, called for a meticulously complex transference process, since some of the courses were now given in another order and often also involved different examination and grading procedures. However, the most delicate point was that the students transferred to the new curriculum now had to apply, and compete, for one of the five differentiations. As an interim solution, 25% of the places available in each differentiation were allocated based on the student’s preferences and their previous grades, whereas the remaining 75% were allocated based on a weighted lottery. The students admitted before 2005, however, were guaranteed the opportunity to could continue their study without applying for entrance to the veterinary master’s degree program.

In 2004, the new EU regulation concerning food hygiene was promulgated. The regulation explicitly states the professional qualiﬁcations required to be an ofﬁcial veterinary. Not all of these qualiﬁcations were included in the new curriculum (e.g., principles of training of personnel working in the production chain). Work was therefore undertaken to identify the shortcomings in the new curriculum; once identiﬁed, these were grouped together in a separate course, but they will likely be integrated into existing courses when the new curriculum is reviewed at a later time.

OUTLINES OF THE 2005 CURRICULUM

The five-and-a-half-year veterinary curriculum is divided into a veterinary bachelor’s degree program (3 years, 180 ECTS points) and a veterinary master’s degree program (2.5 years, 150 ECTS points).

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Table 1: The new semester structure at the Royal Veterinary and Agricultural University, Denmark

<table>
<thead>
<tr>
<th>9 weeks</th>
<th>9 weeks</th>
<th>9 weeks</th>
<th>9 weeks</th>
<th>9 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>One year</td>
<td>Block 1</td>
<td>Block 2</td>
<td>Block 3</td>
<td>Block 4</td>
</tr>
<tr>
<td>15 ECTS</td>
<td>15 ECTS</td>
<td>15 ECTS</td>
<td>15 ECTS</td>
<td></td>
</tr>
</tbody>
</table>

*One year has an ECTS-credit value of 60, thus each semester has an ECTS-credit value of 30. Each semester consists of 20 weeks, divided into two blocks of nine weeks each. Following each nine-week block is an interim week without planned teaching, during which, for example, re-examinations and excursions can take place.
The Veterinary Bachelor’s Degree Program

According to ministerial regulations, the bachelor’s degree program should give the student either the qualifications needed to apply to several master’s degree programs or explicit work competence. The KVL decided to construct the veterinary bachelor’s degree program so that the students obtain the qualifications needed to apply for several master’s degree programs, including especially the veterinary master’s degree program.

The ministerial regulations also state that compulsory elements, including a written bachelor’s thesis of 10–20 ECTS credits, should be of at least 120 ECTS credits, while elective elements should cover at least 10 ECTS credits. The bachelor’s degree program was therefore designed as follows (see Table 2):

- **Compulsory elements** (120 ECTS): zoology, chemistry, biophysics, cell biology, veterinary ethics and philosophy of science, anatomy, physiology, genetics, biostatistics, virology, immunology, general pathology, bacteriology, mycology, invertebrate zoology, parasitology

- **Elective courses** (50 ECTS): microbial food safety, environmental hygiene, toxicology, nutrition, epidemiology, ethology, pharmacology and pharmacy, basic clinical course

- **Written bachelor’s thesis** (10 ECTS)

It may be surprising to see the topics covered by the elective courses. However, a student wishing to apply for the veterinary master’s degree program must take all these electives. Student who do not want to apply for the veterinary master’s degree program can elect other courses and thereby direct their bachelor education toward another non-veterinary master’s degree program at our university (e.g., Biology/Biotechnology).

The Veterinary Master’s Degree Program

The overall goal is that a student having completed the veterinary master’s program should be qualified to be recognized as a veterinary surgeon and official veterinarian according to EU legislation. In addition, the program was designed so that students must apply for and attend one of the five following differentiations:

- companion animal diseases
- equine clinics
- farm animal health and production
- food safety
- biomedicine

Ministerial regulations state that compulsory elements should carry at least 90 ECTS points, including a written master’s thesis of 30 to 60 ECTS points, and that elective elements should be of at least 10 ECTS credits.

The veterinary master’s degree program, consisting of 150 ECTS credits, was designed as follows (see Table 3):

- **Compulsory elements** (97 ECTS): special pathology, diseases in poultry and fish, small animal internal medicine and surgery, large animal internal medicine and surgery, veterinary jurisprudence, meat inspection, hygiene, and a 9-ECTS compulsory module for the selected differentiation

- **Elective courses** (23 ECTS) for the selected differentiation in companion animal diseases, farm animal health and production, food safety, biomedicine, or equine clinics

- **Master’s thesis** (30 ECTS)

Thus, having completed the veterinary master’s degree program, students will have received not only the required omnivalent basic training but also a higher starting competence level in one of the specified differentiations. Each differentiation consists of two modules (9 and 23 ECTS credits, respectively), and thus each differentiation has a total credit value of 32. The first, nine-credit module is compulsory, while students can choose to apply to the veterinary study board to use the 23 ECTS points from module 2 on other courses, either at KVL or at other universities in Denmark or abroad.
KVL has as a strategic goal that all master’s degree programs shall be taught in English by 2010, and plans for teaching the veterinary master’s degree program in English are in progress.

In June 2005, a bill to amend the legislation governing universities was passed which stated that, as an individual option and as an alternative to undertaking part of their course in Denmark, the university may offer students the opportunity to undertake part of the program at one or more non-Danish universities, as arranged through exchange agreements between the universities concerned. Plans to incorporate this legislation into the veterinary bachelor’s and master’s degree programs are also in progress.

Also in June 2005, four Copenhagen-based universities (the Danish University of Pharmaceutical Sciences, the Technical University of Denmark, the Royal Veterinary and Agricultural University, and the University of Copenhagen) have created the Danish Pharma Consortium. The objective of this consortium is to enable Danish universities and companies to play a greater role within life science by creating an effective joint cooperation platform. The universities will cooperate not only on research and innovation but also on education. The specific implications of this for the veterinary degree programs, however, have not yet been detailed.

CONCLUSIONS
The Royal Veterinary and Agricultural University (KVL) has reorganized the five-and-a-half-year veterinary curriculum into a three-year bachelor’s degree program and a two-and-a-half-year master’s degree program with five specific differentiations (equine clinics, food safety, farm animal health and production, companion animal diseases, and biomedicine), beginning September 2005. A new semester structure facilitating a module organization of the curriculum was also introduced in September 2005. From 2006, the number of admitted students is to be increased to 180 students per year. New facilities, both clinical and non-clinical, are being built or renovated. Plans for teaching the veterinary master’s degree program in English and for constructing exchange agreements between KVL and non-Danish universities are also in progress.

REFERENCES

Table 3: The 2005 veterinary master’s degree curriculum at the Royal Veterinary and Agricultural University, Denmark (ECTS credit values are given in parentheses)

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Curriculum Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>5</td>
<td>Master’s thesis (10)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compulsory courses (7): Meat Inspection and Hygienic Control (3); Veterinary Jurisprudence (4)</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>Differentiation—module 2 (23): Equine Clinics, Companion Animal Diseases, Food Safety, Biomedicine, Farm Animal Health and Production</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Clinics and Pathology (81): Special Pathology (12), Poultry Diseases (3), Fish Diseases (0.5), Seminar in Hygiene (0.5), Obstetrics* (3), Reproduction* (9), Clinics—Large Animals*;‡ (10), Large-Animal Clinical Practice* (13), Clinics—Small Animals*;‡ (13), General Small-Animal Clinical Practice* (15)</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>Differentiation—module 1 (9): Equine Clinics, Companion Animal Diseases, Food Safety, Biomedicine</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Farm Animal Health and Production</td>
</tr>
</tbody>
</table>

*Students apply and compete for one of the five differentiations. Module 1 of the differentiation is compulsory, while the students can apply to the veterinary study board to use the subsequent 23 ECTS points on courses at KVL or other universities. 
‡Courses involving clinical training. 
*Includes lectures in large-animal internal medicine and surgery, clinical propaedeutics, and general surgical techniques. 
§Includes lectures in small-animal internal medicine and surgery, clinical propaedeutics, general surgical techniques, and clinical pathology.
7 Bill to amend the legislation governing universities (the University Act) <http://www.vtu.dk/fsk/div/unisoejlen/engudgave.af.int.4.1.05.pdf>. Accessed 07/21/05.

AUTHOR INFORMATION

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### APPENDIX 4

#### EAEVE evaluation 2001

<table>
<thead>
<tr>
<th>Suggestion to improve the curriculum</th>
<th>Actions taken</th>
<th>Responsible</th>
<th>Time limit</th>
<th>Fulfilled 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>General aspects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There should be better coordination and integration, both vertically and horizontally, of the departmental teaching in order to cover the required material more efficiently and comprehensively.</td>
<td>The 2009-curriculum has integrated basic sciences much more into practical and clinical courses. E.g. parts of anatomy together with diagnostic imaging; parts of microbiology together with clinical pathology; parts of physiology together with pharmacology.</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td>The time spent on the teaching of the basic sciences should be reduced by about 10%, to allow more time to be spent on the applied subjects. Some of this should come from identifiable subjects (see also the suggestions in Section 4.3), and from the phasing out of the VOP project with the introduction of the new curriculum.</td>
<td>VOP was eliminated in the 2005-curriculum and has been replaced by the bachelor-project required by law. In the 2009-curriculum, basic sciences has been reduced to approx. 99 ECTS compared to 138.5 in the 1994-curriculum. However, parts of basic sciences subject have been incorporated into clinical sciences courses. Core clinical sciences in the 2009-curriculum comprise 127.5 ECTS compared to 96 ECTS in the 1994-curriculum.</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td>Departments and staff, particularly those working in the applied fields, should be able to schedule practical teaching to take place during the entire day. This measure should not be delayed until the new curriculum is started, but should be implemented as soon as possible.</td>
<td>The teaching reform in 2005 introduced the block structure where full-day teaching could be introduced. This has especially been done in the clinical areas.</td>
<td>Faculty direction/Study board</td>
<td>2005</td>
<td>Estimate 75% fulfillment</td>
</tr>
<tr>
<td>The curriculum should be planned to leave a lecture free year towards the end of the course in order to enable a major part of the practical work in the applied areas (e.g. clinical training, farm animal health management, diagnostic pathology, practical slaughtering/processing work) to be scheduled as intensive rotations.</td>
<td>A lecture-free final year has not been introduced. However, in the 2005 and 2009 curricula, practicals in the clinical (hospital) areas have been planned so that whole days are used and these are also scheduled as rotations.</td>
<td>Vet. Study Board, Departmental teaching boards</td>
<td>2005</td>
<td>100%</td>
</tr>
<tr>
<td>Structured extramural work should be incorporated into the veterinary curriculum.</td>
<td>The 2005 and 2006 curricula both makes it possible for students to go for structured extramural work (vocational training).</td>
<td>Vet. Study Board, Departmental teaching boards</td>
<td>2005</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suggestion to improve the curriculum</th>
<th>Action taken</th>
<th>Responsible</th>
<th>Time limit</th>
<th>Fulfilled 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic subjects and Basic sciences</td>
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<tr>
<td>The basic science teaching should be more closely oriented towards its application in the subsequent clinical, animal production and veterinary public health disciplines, ideally through a much greater level of integration and coordination of the teaching programmes of the various departments involved in the veterinary course.</td>
<td>The 2009-curriculum has integrated basic sciences much more into practical and clinical courses. E.g. parts of anatomy together with diagnostic imaging; parts of microbiology together with clinical pathology; parts of physiology together with pharmacology.</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td>The teaching on anatomy should pay less attention to basic anatomy and place more emphasis on topographical anatomy as preparation for surgery.</td>
<td>This should be reflected in the course description.</td>
<td>IBHV</td>
<td>March 2009</td>
<td>90% completed</td>
</tr>
<tr>
<td>The practical work in bacteriology should be reduced.</td>
<td>This should be reflected in the course description.</td>
<td>IVP</td>
<td>March 2009</td>
<td>90% completed</td>
</tr>
<tr>
<td>The invertebrate zoology course should cease to exist as an independent subject, with its useful content be moved into parasitology, as an introduction to the protozoology component of the course.</td>
<td>This should be reflected in the course description.</td>
<td>IVP</td>
<td>March 2009</td>
<td>90% completed</td>
</tr>
<tr>
<td>Suggestion to improve the curriculum</td>
<td>Action taken</td>
<td>Responsible</td>
<td>Time limit</td>
<td>Fulfilled 2009</td>
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<tr>
<td>Animal production</td>
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<tr>
<td>The animal production teaching in the KVL veterinary course needs to be given a much better structure and clearer orientation, viz.: The animal production disciplines should be taught as a basic foundation, covering all aspects of general husbandry and management, followed by applied 'professionalising', teaching, preferably adopting a problem-oriented approach.</td>
<td>This is achieved with the 2009-curriculum, especially by the two new courses (Besætnings- og folkesundhed at the bachelor's level, and Practical herd health assessment and meat hygiene). Also, the Veterinary introduction course at the bachelor's level supports this.</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td>Teaching in agronomy, rural economics and animal husbandry, in particular how these factors influence production systems, have to be included in the early part of the course.</td>
<td>This is achieved with the 2009-curriculum, especially by the two new courses (Besætnings- og folkesundhed at the bachelor's level, and Practical herd health assessment and meat hygiene). Also, the Veterinary introduction course at the bachelor's level supports this.</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td>Training or exposure to the handling and basic day-to-day management of farm animals should be provided at an early stage in the course through a combination of on-site teaching and extramural work.</td>
<td>This is achieved with the 2009-curriculum, especially by the two new courses (Besætnings- og folkesundhed at the bachelor's level, and Practical herd health assessment and meat hygiene). Also, the Veterinary introduction course at the bachelor's level supports this.</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td>The applied teaching in animal production should be closely integrated with farm clinical work</td>
<td>This is achieved with the 2009-curriculum, especially by the two new courses (Besætnings- og folkesundhed at the bachelor's level, and Practical herd health assessment and meat hygiene). Also, the Veterinary introduction course at the bachelor's level supports this.</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td>The coverage of poultry and fish management should be increased.</td>
<td>This is achieved with the 2009-curriculum, especially by the two new courses (Besætnings- og folkesundhed at the bachelor's level, and Practical herd health assessment and meat hygiene). Also, the Veterinary introduction course at the bachelor's level supports this.</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td>A working group of the Veterinary Study Committee should be established, with the remit of ensuring the teaching programme in the animal production field as a whole is integrated and comprehensive</td>
<td>This is achieved with the 2009-curriculum, especially by the two new courses (Besætnings- og folkesundhed at the bachelor's level, and Practical herd health assessment and meat hygiene). Also, the Veterinary introduction course at the bachelor's level supports this.</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suggestion to improve the curriculum</th>
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<th>Responsible</th>
<th>Time limit</th>
<th>Fulfilled 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal production</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>The relationship between production factors and the quality of foods of animal origin needs to be clearly demonstrated in the veterinary course by closer coordination or combination of the teaching in the two areas.</td>
<td>This is achieved with the 2009-curriculum, especially by the two new courses (Besætnings- og folkesundhed at the bachelor's level, and Practical herd health assessment and meat hygiene). Also, the Veterinary introduction course at the bachelor's level supports this.</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td>Much greater use should be made of the experimental farm (the new facilities looks fine) for education in farm animal handling all basic management, and also of the commercial farms with which the KVL has contact (for the applied part of the teaching). Students must have sufficient exposure and knowledge in up to date farm animal production technologies (milk, beef and pig production) to be able to analyse factors influencing animal health and product quality.</td>
<td>A new large animal hospital has been build which include equine hospital, facilities for pigs and cattle, sheep, goats. Commercial farms are also visited</td>
<td>Faculty direction</td>
<td>2008</td>
<td>100%</td>
</tr>
</tbody>
</table>
### Suggestion to improve the curriculum

<table>
<thead>
<tr>
<th>Clinical sciences</th>
<th>Action taken</th>
<th>Responsible</th>
<th>Time limit</th>
<th>Fulfilled 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The amount of clinical training, in particular in the small animal field, should be substantially increased.</strong></td>
<td>In the 2009-curriculum, total hours of practical core training in small animal hospital is stipulated to be 324 h approx. while in 1994-curriculum, this was 162 h</td>
<td>Vet. Study Board Departmental teaching board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td><strong>The main part of the clinical training should be provided through a system of rotations where the students are involved in the clinical activity for the entire day, and are an integrated part of the health-care team, with supervised case responsibility.</strong></td>
<td>This was introduced in the 2005-curriculum and is also present in the 2009-curriculum</td>
<td>Vet. Study Board Departmental teaching board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td><strong>Attendance at Practicals has to be obligatory and made an integral part of the hours spent in formal clinical training.</strong></td>
<td>This was corrected in 2001 so that 80% attendance was mandatory to practicals</td>
<td>Pro-dean of education</td>
<td>2001</td>
<td>100%</td>
</tr>
<tr>
<td><strong>A full emergency and hospitalisation service should be started, with students taking an active role in this activity as part of their coursework.</strong></td>
<td>This is included in the 2009-curriculum with the course in Acute medicine, critical care, obstetrics, and anaesthesiology</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td><strong>The mobile clinic should be augmented, and a herd-health activity incorporated alongside the mobile clinical work. All students should participate in these activities as part of their coursework during the rotations in the applied areas (i.e. part clinical, part animal production activity).</strong></td>
<td>This should be reflected in the appropriate course descriptions</td>
<td>IFH</td>
<td>March 2009</td>
<td>95% completed</td>
</tr>
<tr>
<td><strong>The curriculum should include formal training in reproductive disorders of small animals, whether this is done by the Section for Reproduction with referred cases from the Small animal hospital, or by the transfer the responsibility for small animal reproduction to the SAH.</strong></td>
<td>This should be reflected in the appropriate course descriptions</td>
<td>IMHS</td>
<td>March 2009</td>
<td>95% completed</td>
</tr>
</tbody>
</table>

### Suggestion to improve the curriculum

<table>
<thead>
<tr>
<th>Clinical sciences</th>
<th>Action taken</th>
<th>Responsible</th>
<th>Time limit</th>
<th>Fulfilled 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The teaching programme in radiology and in anaesthesiology needs to be reinforced for all species, and supported by appropriate staff and facilities.</strong></td>
<td>In the 2009-curriculum, radiology is now a defined course. Anaesthesiology is included in course Acute medicine, critical care, obstetrics and anaesthesiology</td>
<td>Vet. Study Board Departmental teaching board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td><strong>The teaching on small companion animals (‘pocket pets’) and exotic species should be increased. As a specialised area, the KVL should assess whether developing an particular expertise in this field would be cost-effective in terms of the local market and competition.</strong></td>
<td>This should be reflected in the appropriate course descriptions</td>
<td>IMHS</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td><strong>For efficiency, the clinical facilities should be used for teaching most of the year. However more efficient use of the clinical facilities will require more staff.</strong></td>
<td>This was achieved in the 2005-curriculum and is also present in the 2009-curriculum</td>
<td>Vet. Study Board Departmental teaching board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td><strong>Extramural vacation practice, where student work alongside practitioners, should be introduced in the latter part of the course both the large and small animal area. The KVL and Department for Clinical Studies should work along with the Danish Veterinary Association in the planning, selection of appropriate practices, and supervision of such a programme.</strong></td>
<td>The 2005 and 2006 curricula both makes it possible for students to go for structured extramural work (vocational training). DDD has not yet been included in planning and selection of practices</td>
<td>Vet. Study board</td>
<td>2005</td>
<td>75%</td>
</tr>
</tbody>
</table>
## Suggestion to improve the curriculum

<table>
<thead>
<tr>
<th>Food hygiene</th>
<th>Action taken</th>
<th>Responsible</th>
<th>Time limit</th>
<th>Fulfilled 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>There should be a much greater coordina-</td>
<td>This is achieved with the 2009-curriculum, especially by the two new courses (Besætnings-</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
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<tr>
<td>tion and integration of the teaching in the</td>
<td>og folkesundhed at the bachelor’s level, and Practical herd health assessment and meat</td>
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<tr>
<td>field of food hygiene and veterinary public</td>
<td>hygiene)</td>
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<td></td>
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<tr>
<td>health, so that the interrelationship of the</td>
<td>This is achieved with the 2009-curriculum, especially by the two new courses (Besætnings-</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td>different elements is clear, rather than the teaching being presented as a series of separate topics</td>
<td>og folkesundhed at the bachelor’s level, and Practical herd health assessment and meat hygiene)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>The teaching in food hygiene should be</td>
<td>This is achieved with the 2009-curriculum, especially by the two new courses (Besætnings-</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td>oriented towards the ‘stable to table’</td>
<td>og folkesundhed at the bachelor’s level, and Practical herd health assessment and meat hygiene)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>concept, and incorporate the impact of</td>
<td>This is achieved with the 2009-curriculum, especially by the two new courses (Besætnings-</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td>production factors such as nutrition,</td>
<td>og folkesundhed at the bachelor’s level, and Practical herd health assessment and meat hygiene)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>environment and health care aspects on</td>
<td>The teaching in food hygiene should be oriented towards the ‘stable to table’ concept, and incorporate the impact of production factors such as nutrition, environment and health care aspects on the safety and quality of the finished product.</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
<tr>
<td>the safety and quality of the finished product.</td>
<td>The KVL veterinary course should cover the slaughter and inspection of poultry, which would best be incorporated as part of the present course on poultry diseases.</td>
<td>Vet. Study Board</td>
<td>December 2008</td>
<td>Completed</td>
</tr>
</tbody>
</table>

## Teaching: Quality and evaluation

| In order to get proper practical clinical education Practicals should be organised into uninterrupted blocks covering the whole day | This was achieved in the 2005-curriculum and is also present in the 2009-curriculum | Vet. Study Board Departmental teaching board | December 2008 | Completed |
| Computer assisted learning should be reinforced | This was achieved in the 2005-curriculum and is also present in the 2009-curriculum | Vet. Study Board Departmental teaching board | December 2008 | Completed |
| KVL veterinary professors should consider giving their good veterinary students somewhat higher ratings at examinations, for example by standardising the statistical distribution of marks across the different courses provided by the KVL, in order that veterinary graduates can compete with other disciplines for PhD grants on an equal basis. | This is not legal in Denmark to do so | | | |
| KVL should consider placing greater use of continuous assessment, especially of practical work. | This was achieved in the 2005-curriculum and is also present in the 2009-curriculum | Vet. Study Board Departmental teaching board | December 2008 | Completed |
| KVL should ensure that in using an averaging process for examinations, it is still maintaining a minimum level of competency in all key areas. | This is not legal according to Danish laws | | | |
BSc programme in Veterinary Medicine 2009

This curriculum applies to students admitted on 1 September 2009

The programme is organised in accordance with Danish Ministerial Order no. 338 of 6 May 2004 on bachelor and master’s programmes (candidatus) at universities. The programme is offered under the Veterinary Study Board. Graduates are awarded the Danish title of ‘BSc i Veterinaermedicin’ and the English title of ‘Bachelor of Science (BSc) in Veterinary Medicine’.

Chapter 1. Programme objective and competence profile

1.1 Programme objective

The main purpose of the BSc programme in Veterinary Medicine is to:

- educate BSc students who, in addition to general academic knowledge and general academic skills, also possess knowledge, skills and competences within veterinary medicine, communication, collaboration, health promotion and animal welfare
- contribute to meeting the targets for academic disciplines and Day 1 competences described by the European Association of Establishments for Veterinary Education (EAEVE)

1.2 General programme profile

The programme consists of a number of compulsory and elective courses as well as a BSc project. The language of instruction is Danish to ensure, among other things, that the students acquire academic Danish. If the student wants to study abroad, the Veterinary Study Board recommends year 2, blocks 2, 3 and 4 for this. The student will have to take the courses in these blocks at some other time, unless credit transfers are given for the courses in question.

In the compulsory courses, the BSc student must acquire knowledge within the academic topics constituting the programme (cell biology, veterinary medicine science theory, genetics, anatomy, physiology, general pathology, virology, immunology, pathophysiology, invertebrate zoology, parasitology, bacteriology and mycology, epidemiology, nutrition, microbial food safety, pharmacology, pharmacy and toxicology, special pathology and poultry diseases, forensic medicine as well as environmental hygiene) and scientific support topics (zoology, biophysics, chemistry, biostatistics).

The elective courses can be chosen from among the BSc courses offered at the Faculty of Health Sciences, the Faculty of Pharmaceutical Sciences and the Faculty of Science at the University of Copenhagen. BSc graduates who want to be admitted to the MSc programme in Veterinary Medicine must, however, choose the electives Herd Health and Public Health 1 and Veterinary Paraclinic 1 as well as basic clinical theory in large and small animals, as the knowledge, skills and competences acquired in these courses, including in relation to the function of a livestock veterinary surgeon and in relation to diseases in pigs and fish, are at a level relevant for a veterinary field of work and at the level required for being admitted to the MSc programme in Veterinary Medicine, which enables the graduate to submit an application to the Danish Veterinary and Food Administration for authorisation as a veterinary surgeon in accordance with applicable legislation.

If a student chooses electives other than those required for admission to the MSc programme in Veterinary Medicine, the student must, based on the advice of a student counsellor, prepare a competence description of the knowledge, skills and competences acquired in the electives. The competence profile must be approved by the Veterinary Study Board.

The subject of the BSc project must be within the framework defined by the compulsory and elective courses.

1.3 Programme employment prospects

The BSc programme in Veterinary Medicine was established in 2005 when the previous 5½-year programme was divided into two. It is thus not at present possible to specify particular employment prospects, and, for that reason, the particular aim of the BSc programme is for the graduate to go on to an MSc programme, primarily the MSc programme in Veterinary Medicine.

1.4 Programme competence profile

During the bachelor’s programme, the student will acquire as a minimum the following knowledge, skills and competences within the compulsory subjects and subject areas of the programme. These will be supplemented by knowledge, skills and competences acquired through elective courses and other study activities. BSc graduates who want to be admitted to the MSc programme in Veterinary Medicine must choose the electives Herd Health and Public Health 1 and Veterinary Paraclinic 1 as well as basic clinical theory in large and small animals.
After completion of the programme, a person holding a BSc in Veterinary Medicine should be able to:

1.4.1. Knowledge
• Summarise basic laws, theories, methodologies, principles, structures and/or mechanisms within the compulsory courses of the programme
• Demonstrate general knowledge of the different views on animals associated with the various scientific traditions
• Describe the roles, tasks and legislation that fall within the profession of veterinary medicine
• Describe the function of a livestock veterinary surgeon
• Describe various views on disease, health and welfare in a veterinary medicine context, including select ethical theories
• Explain the role of significant microorganisms in veterinary and food hygiene in connection with disease in animals and humans, including mechanisms associated with infection and intoxication as well as population prevalence and distribution
• Explain pathological changes caused by diseases in domestic mammals as well as explain commonly occurring diseases in poultry and fish
• Explain the importance of dissections and hygiene in connection with dissections and justify the choice of materials for further laboratory testing
• Explain the connection between ethology and lesion type

1.4.2. Skills
• Apply basic principles, concepts and methodologies within the compulsory courses of the programme
• Conduct bacteriological and hygienic food inspections and analyse and assess the inspection results
• Carry out dissection, basic chemical analyses, basic microbiological and parasitological analyses, microscopy and handling of large and small domestic animals in compliance with relevant safety regulations
• Formulate basic principles for assessing the health of livestock
• Carry out dissection and organ preparation of common domestic animals in Denmark
• Assess pathological changes in organs and tissues at both macroscopic and microscopic level for commonly occurring diseases in domestic animals in Denmark
• Assess the quality and health-related significance of occurrences of microorganisms and undesirable substances in foods and feeds
• Search for relevant specialist information sources, be critical of the literature, use correct citation methods and correctly compose a bibliography
• Write a clear problem formulation, propose and verify hypotheses, design own tests and conduct a problem analysis

1.4.3 Competences
• Identify and discuss issues related to veterinary science
• Reflect on scientific theory and ethical issues
• Monitor and consider aspects of significance for disease, health and productivity in animals
• Be part of multidisciplinary and interdisciplinary collaboration, including discussing solutions and achieving consensus
• Work independently and assume responsibility for own scientific and professional practices
• Acquire new knowledge and reflect on own learning

After completion of the programme, a person holding a BSc in Veterinary Medicine with the electives required for being admitted to the MSc programme in Veterinary Medicine should also be able to:

1.4.4 Knowledge
• Explain basic principles for diagnostics and management of medical and surgical patients
• Describe the veterinary surgeon’s ethical responsibility as regards individual patient treatment and client relation
• Describe the context in which the veterinary surgeon works
• Describe relevant legislation and the most important environmental and food aspects in relation to animal production and public health
• Explain principles for health guidance in productive livestock
• Describe elementary aspects of setting up and managing a veterinary clinic

1.4.5. Skills

1.4.6 Competences
• Handle diagnostic uncertainty
• Communicate with both laymen and experts on clinical issues
• Understand own limitations and show an understanding of when and from where professional advice, assistance and support can be obtained, including where patients can be referred to

Chapter 2. Programme content

The BSc programme in Veterinary Medicine is based on the following:
• Ministerial Order concerning the Act on Universities
2.1 Content

The programme equals 180 ECTS points and consists of the following: Compulsory courses (120 ECTS points), electives (30 ECTS points) and a BSc project (10 ECTS points)

Compulsory courses

The compulsory courses of the programme together make up the general academic competences and the identity of the BSc programme:

Mainly basic scientific courses and basic veterinary courses:
- 300067 Introduction to Veterinary Science – 7.5 ECTS
- 300073 Chemistry and Biochemistry for Veterinary Students – 7.5 ECTS
- 300057 Cell Biology, General Histology and Basic Genetics – 15 ECTS
- 300058 Veterinary Anatomy and Physiology 1 – 15 ECTS
- 300059 Veterinary Anatomy and Physiology 2 – 15 ECTS
- 300063 Infection Microbiology – 15 ECTS
- 300061 Immunology, General Pathology and Pathophysiology – 15 ECTS
- 300062 Basic Pharmacology, Toxicology and Pharmacy – 7.5 ECTS
- 300068 Basic Statistics and Epidemiology – 7.5 ECTS

Courses mainly within animal production and veterinary public health:
- 300060 Nutrition and Breeding – 7.5 ECTS
- 300064 Microbial Food Safety – 7.5 ECTS

Courses mainly within clinical topics:
- 300065 Special Pathology and Poultry Diseases – 15 ECTS
- 300071 Veterinary Jurisprudence and Ethology – 5 ECTS

Electives:
If a student wishes to apply for admission to the MSc Programme in Veterinary Medicine, the elective courses must be made up of:

Courses mainly within basic scientific courses and basic veterinary courses
- 300066 Veterinary Paraclinic 1 – 7.5 ECTS

Courses mainly within animal production, clinical topics and veterinary public health
- 300070 Herd Health and Public Health 1 – 7.5 ECTS

Courses mainly within clinical topics:
- 300069 Large Animal Basic Clinical Theory – 7.5 ECTS
- 300072 Basic Medicine and Surgery – Small Animals – 7.5 ECTS

Students who want to be admitted to another MSC programme can choose another course combination. The student must, based on the advice of a student counselor, prepare a competence description of the knowledge, skills and competences acquired in the electives. The competence profile must be approved by the Veterinary Study Board.

BSc project:
- BSc project – 10 ECTS

2.1.1 Academic progression of the programme

The programme starts with basic scientific courses (chemistry and biochemistry) which form the basis of the other courses. At the same time, the Introduction to Veterinary Science course serves as an introduction to veterinary fields of work based on food and large animal practice. Based on these practices, the course also includes veterinary medicine science theory. This is followed by a course in cell biology and basic genetics which, together with chemistry and biochemistry, forms the basis for the progression to zoology, anatomy, biophysics and physiology. After thus having studied the normal development, structure and function of healthy animals, organs, tissues and cells, students are introduced to pathology in the Immunology, General Pathology and Pathophysiology course. This is subsequently extended by the Infection Microbiology course which focuses on bacteria, viruses, fungi, parasites etc. Combined with the introduction to pathology and infection microbiology, the normal structure and function of healthy cells, tissues, organs and animals provide the basis of the study of drugs and the absorption, distribution
and effect of toxins (the course in pharmacology, toxicology and pharmacy), of the course in microbial food safety and of the courses in basic statistics and epidemiology as well as in nutrition and breeding.

The Special Pathology and Poultry Diseases course is placed in year 3 of the programme. Based on the knowledge, skills and competences acquired in relation to the normal structure and function of healthy cells, tissues, organs and animals, introductory pathology, infection microbiology, pharmacology, toxicology, nutrition and breeding, this course focuses on the causes of pathological changes, the response patterns of individual organ systems to damage and the morphological expressions of the response modes, macroscopically as well as microscopically, in relation to pathophysiological mechanisms.

The clinical electives include Herd Health and Public Health 1, Veterinary Paraclinic 1 as well as Large Animal Basic Clinical Theory and Basic Medicine and Surgery – Small Animals. Together with the other courses of the BSc programme, these courses will provide the students with the clinical and herd-based knowledge required for their further studies on the MSc programme in Veterinary Medicine. The practical courses are based on the knowledge, skills and competences acquired within the normal structure and function of healthy cells, tissues, organs and animals, introductory pathology, infection microbiology, pharmacology, toxicology, nutrition and breeding. The basic theoretical clinical courses are also based on the Special Pathology and Poultry Diseases course.

The Veterinary Jurisprudence and Ethology course serves as an introduction to the clinical courses on the MSc programme with focus on animal behaviour and the legislation governing the practice of veterinary surgeons with a view to understanding the legal context for their work.

The BSc programme is concluded with a BSc project primarily prepared on the basis of literature studies. In the BSc project, students should both apply and further develop their general academic qualifications, such as justifying how to deal with an issue within a defined academic framework with focus on problem formulation and problem analysis; search for, prioritise and refer to literature; identify and process existing or new knowledge within one of the academic areas of the programme; choose appropriate theories and methodologies for dealing with the problem formulation; communicate how the problem formulation is dealt with in a clear and coherent manner; and take a critical approach to literature, theories/models and any data.

### 2.1.2. Structure of the programme

<table>
<thead>
<tr>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
<th>Block 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Offered the first time in 2009/2010</td>
<td>Introduction to Veterinary Science</td>
<td>Cell Biology, General Histology and Genetics</td>
<td>Cell Biology, General Histology and Genetics</td>
</tr>
<tr>
<td></td>
<td>Chemistry and Biochemistry for Veterinary Students</td>
<td>Veterinary Anatomy and Physiology 1</td>
<td></td>
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<tr>
<td>Year 2</td>
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<td></td>
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<tr>
<td>Offered the first time in 2010/2011</td>
<td>Immunology, General Pathology and Pathophysiology</td>
<td>Pharmacology, Pharmacy and Toxicology</td>
<td>Biostatistics and Epidemiology</td>
</tr>
<tr>
<td></td>
<td>Infection Microbiology</td>
<td>Infection Microbiology</td>
<td>Microbial Food Safety</td>
</tr>
<tr>
<td>Year 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offered the first time in 2011/2012</td>
<td>Special Pathology and Poultry Diseases</td>
<td>Special Pathology and Poultry Diseases</td>
<td>Herd Health and Public Health 1</td>
</tr>
<tr>
<td></td>
<td>Basic Medicine and Surgery – Small Animals</td>
<td>Large Animal Basic Clinical Theory</td>
<td>Veterinary Paraclinic 1</td>
</tr>
</tbody>
</table>

### 2.3. First-year exam

Before the end of the second academic year, students admitted on 1 September 2009 must pass the following courses:

- 300067 Introduction to Veterinary Science – 7.5 ECTS
- 300073 Chemistry and Biochemistry for Veterinary Students – 7.5 ECTS
- 300057 Cell Biology, General Histology and Basic Genetics – 15 ECTS
- 300058 Veterinary Anatomy and Physiology 1 – 15 ECTS

### 2.4. Registration for practical exercises on the BSc programme

A special form is used for registration for exercises on the BSc programme. The veterinary exercise planner, who can be contacted at vet-plan@LIFE.ku.dk, is responsible for the distribution of students in the exercise classes. Students must contact the veterinary exercise planner if they want to deregister from the exercise. Students must deregister themselves from classes or exams. Any application for late registration for the exercises must be submitted to the veterinary exercise planner.

As a general rule, exercise classes can only be followed once.
3. Admission to the MSc programme

3.1 Admission to the MSc programme in Veterinary Medicine

Applicants holding a BSc in Veterinary Medicine are qualified for direct admission to the MSc programme in Veterinary Medicine provided that they have passed the following electives:

- 300066 Veterinary Paraclinic 1 – 7.5 ECTS points
- 300070 Herd Health and Public Health 1 – 7.5 ECTS points
- 300069 Large Animal Basic Clinical Theory – 7.5 ECTS points
- 300072 Basic Medicine and Surgery – Small Animals – 7.5 ECTS points

3.2 Admission to other MSc programmes

Depending on their electives, applicants holding a BSc in Veterinary Medicine may also be qualified for admission to the following MSc programmes:

- Master of Science in Agriculture with specialisation in Domestic Animal Science
- Master of Science in Agriculture with specialisation in Plants and Environment
- Master of Science in Parasitology

The curriculum for the individual MSc programme specifies which courses must be included in the BSc programme to qualify for access to the relevant MSc programme.

MSc Programme in Veterinary Medicine - AVAILABLE FROM 1 SEPTEMBER 2012

The programme is organised in accordance with Executive Order no. 338 of 6 May 2004 on Bachelor’s and MSc degree programmes at universities. The programme is under the Veterinary Study Board. Graduation confers the degree Doctor of Veterinary Medicine (DVM). In Danish: Cand.med.vet. (candidatus/candidata medicinae veterinariae).

The MSc programme is set at a total of 150 ECTS credits corresponding to 2½ years of study.

Chapter 1. Programme objectives and competence profile

1.1 The programme’s objectives

The programme’s main objectives are:

- to provide students with the necessary qualifications to diagnose and treat sick animals, including animals with transmissible diseases, to prevent diseases, to undertake food inspection and professional functions within food-safety, environmental hygiene, and animal welfare protection, and to undertake other professional functions where veterinary competences are relevant
- to provide students with the necessary qualifications to independently maintain and develop their scientific and professional competences
- to provide students with the necessary qualifications to identify, describe and solve or handle complex veterinary problems
- to provide students with more comprehensive knowledge, skills and competences within a given veterinary study differentiation
- to provide students with the necessary qualifications for fulfilment of the day-one competences described by European Association of the Establishments for Veterinary Education (EAEVE)
- to provide the knowledge, skills, values, attitudes, aptitudes and behaviors necessary to address responsibly the health and well-being of animals in the context of ever-changing societal expectations
- to provide students with the necessary qualifications to pursue PhD studies

Upon completion of the MSc programme, the graduate may apply to the Danish Veterinary and Food Administration (DVFA) for licensing as a veterinary surgeon in accordance with applicable laws.
1.2 The programme’s general profile

The programme is offered by the Faculty of Life Sciences (LIFE) at University of Copenhagen with the Technical University of Denmark (DTU) being responsible for parts of some courses. The programme is taught in English with the exception of courses where contact with customers, clients, and/or lay people are required. If a student with no command of Danish, Swedish or Norwegian is enrolled, special arrangements will be made for completing the courses taught in Danish. The MSc programme is composed of compulsory courses (93.5 credits), electives (differentiation; 26.5 credits) and a MSc thesis (30 credits). Students admitted before 1 September 2005 are required to prepare a MSc thesis corresponding to 27 credits. In case students admitted before 1 September 2005 do not have sufficient credits to graduate, a written assignment corresponding to the missing credits is required.

1.3 Employment prospects

The MSc programme in Veterinary Medicine provides the qualifications required for a veterinary surgeon at entry level. The programme focuses on clinical subjects, veterinary public health, herd health, animal welfare, and food hygiene but students may chose to obtain additional professional skills e.g. within biomedicine. Typical employment areas are:

• Clinical practice
• Teaching and research
• Biopharmaceutical industry
• Food safety and veterinary public health
• Public administration
• Animal welfare protection

1.4 Competence profile

Within the MSc programme at Faculty of Life Sciences it is possible to follow one of four different lines of differentiation, i.e. Small Animal Diseases, Equine Diseases, Biomedicine, and Herd Health and Food Safety. Differentiation is a specialisation which results in specific competences as described below. It is compulsory to follow the differentiation programme described. Subject to approval by the Veterinary Study Board, it is, however, possible to design your own differentiation with its associated competences e.g. by following courses, mainly veterinary courses, at other universities (please refer to 2.3.1 below).

1.4.1 General competences

Having completed the programme, the student should be able to:

Knowledge:
• identify, explain and discuss problems relevant to the veterinary field
• explain the delivery of professional services to the public
• explain diagnostic, therapeutic, prophylactic measures relevant to animal diseases
• describe, explain and assess ante- and postmortem control findings
• explain measures within food safety and hygiene, and veterinary public health
• describe personal and business finance and management, to describe the breadth of veterinary medicine and career opportunities

Skills
• diagnose and treat sick animals, including animals with communicable diseases and animals with obstetric disorders, to prevent diseases, to undertake food inspection and professional functions within food safety, environmental hygiene, animal welfare protection, and diagnostic laboratories, and to undertake other professional functions where veterinary competences are relevant.
• solve problems by formulating a problem description and relevant hypotheses and investigation of the hypotheses
• retrieve, apply, use, and reference relevant data and information
• apply information and communication technologies where appropriate

Competences
• communicate about veterinary issues with colleagues, authorities, animal owners and other stakeholders and to reflect on problems of communication
• reflect on ethical dilemmas in a veterinary context
• work both independently and in teams
• be self-directed in learning
• discuss, cooperate and plan work

1.4.2 Competences for the differentiation in “Small Animal Diseases”

Knowledge:
• Explain diagnostic procedures and assess diagnostic test results
• Explain the rationale behind diagnostic procedures, handling of complications, therapeutic and prophylactic intervention, and management in specialised small animal practice.

Skills
• Communicate with clients, colleagues and veterinary technicians
• Perform diagnostic procedures, establish diagnoses, perform therapeutic and prophylactic interventions, with relevant assistance, in specialized small animal clinical practice
• Use an electronic problem-based report
• Be responsible for a small number of patients
• Write an epicrisis to a referring veterinarian

Competences
• Work as a team member
• Reflect on and acknowledge personal limitations and ask for help
• Reflect on the importance of continuing education, life-long learning and evidence-based medicine
• Reflect on ethical problems concerning animal welfare

1.4.3 Competences for the differentiation in
Equine Diseases
Knowledge:
• Describe principles and methods for diagnostic, therapeutic, prognostic and prophylactic measures applicable to specialised equine practice both in individual horses and in populations of horses
• Describe management principles relevant to specialised equine practice
• Explain principles and methods in equine reproduction

Skills
• Communicate with clients, colleagues and veterinary technicians
• Perform diagnostic procedures, establish diagnoses, perform therapeutic and prophylactic interventions, with relevant assistance, in specialized equine clinical practice
• Use an electronic problem-based report
• Be responsible for a small number of patients
• Write an epicrisis to a referring veterinarian

Competences
• Initiate diagnostic, therapeutic, prognostic, and prophylactic measures applicable to specialised equine practice
• Discuss relevant aspects of equine management
• Work as a team member
• Reflect on and acknowledge personal limitations and ask for help
• Reflect on the importance of continuing education, life-long learning and evidence-based medicine
• Reflect on ethical problems concerning animal welfare
• Take responsibility for independent retrieval of information and critical review of the literature

1.4.4 Competences for the differentiation in Herd Health and Food Safety and hygiene

Knowledge
• Describe the background for and the function as herd-health veterinarian and official veterinarian as described in relevant legal documents.
• Apply knowledge on food safety, hygiene and zoonoses within veterinary public health

Skills
• Plan, collect and analyse data on disease, health, fertility, production, welfare and food safety
• Find and explain relevant scientific literature within the theme of the differentiation
• Apply relevant quantitative analyses
• Apply advanced laboratory methods for herd diagnosis and control of food safety

Competences
• Communicate complex biological, practical and technical subjects to colleagues and lay persons

1.4.5 Competences for the differentiation in
Biomedicine

Knowledge
• Describe bio-imaging, pro- and eukaryotic genomes, and methods used to analyse genomes
• Explain diagnostic methods and principles within microbiology and clinical pathology
• Explain basic principles within biomedical research and principles for the use of animals, and in-vitro methods for research and product development
• Describe general statistic terms, laws, principles, inference, and methods within experimental research planning and risk analysis

Skills
• Conduct genome analysis and bio-imaging under supervision
• Apply diagnostic methods and principles within microbiology and clinical pathology
• Apply basic principles within biomedical research including in-vitro methods and the use of animals
• Plan and execute experimental research and apply general statistic terms, laws, principles, inference, and methods within experimental research planning and risk analysis

Competences
• Contemplate perspectives for application of molecular genetic methods and bioimaging analysis
• Judge the results from diagnostic methods within microbiology and clinical pathology
• Discuss total quality management as it applies to diagnostic laboratories
• Discuss the use of animals and in-vitro methods within research and product development
• Fulfil EU requirements for people responsible for the use of research animals
• Reflect on ethical problems concerning animal welfare

Chapter 2. Degree programme content

The content and organization of the veterinary MSc programme in Veterinary Medicine are based on:
• Consolidated Act on Universities (University Act) (LBK nr 1368 af 07/12/2007) (link)
• Executive Order on Bachelor’s and MSc programmes
at universities (BEK nr 338 af 06/05/2004) (link)  
- European Association of the Establishments for Veterinary Education (EAEVE) standard operating procedures 2007 (link)  
- American Veterinary Medical Association (AVMA) accreditation guidelines 2007 (link)

The programme is designed to contribute to the students being able to master the scientific subjects and sciences and day-one competences described by EAEVE and to provide curriculum subjects required by the AVMA.

2.1 Content

The programme is set at a total of 150 ECTS credits and must include the following elements:
- Core courses 93.5 credits
- Electives (i.e. differentiation course) 26.5 credits
- Thesis 30 credits

Core courses (93.5 credits; compulsory):
- Veterinary paraclinics-2 7.5 credits
- Emergency, obstetrics, critical care and clinical anaesthesiology/Akutmedicin, obstetric, intensive terapi og klinisk anæstesiologi * 7.5 credits
- Veterinary diagnostic imaging 7.5 credits
- Large animal medicine, surgery and reproduction 15 credits
- Small animal medicine, surgery and reproduction 15 credits
- Practical herd health consultancy and meat inspection/Praktisk besætningsrådgivning og kødkontrol * 7.5 credits
- General clinical practice, large animals/Almen klinisk praksis store husdyr* 15 credits
- General clinical practice, small animals/Almen klinisk praksis mindre husdyr * 15 credits
- Veterinary jurisprudence and assessment of animal welfare/ Retsmedicin og dyrevelfærdsvurdering * 3.5 credits
  * courses taught in Danish

Electives (26.5 credits):
- Differentiation course;
- Biomedicine
- Herd Health and Food Safety*
- Equine diseases*
- Small animal diseases*
* courses taught in Danish

Thesis: (30 credits, compulsory)
The thesis must correspond to 30 credits. The main supervisor for the thesis must be employed at Faculty of Life Sciences (LIFE) or DTU. The thesis should preferably be within the field of the selected differentiation. Specific information relating to the thesis is described in Curriculum – common component.

2.2 Scientific and professional progression during the program

The programme starts out with clinical theoretical courses in large and small animals to enhance the students’ knowledge of clinical medicine, surgery and reproduction. The theoretical courses expand the knowledge acquired in the courses in clinical theory and pathology in the BSc programme. Also, introductory courses to clinical examination and surgical skills are completed. These courses provide the theoretical and basic clinical practical background to the subsequent practical courses in clinical medicine, surgery and reproduction, clinical pathology, clinical microbiology, clinical serology, herd health and meat inspection, veterinary imaging, and acute medicine, clinical anaesthesiology and obstetrics. These courses constitute the main body of core courses which, when completed provide the foundation for the elective courses (differentiations). Finally, an MSc thesis is completed to train and advance the academic skills and competences.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>2012/2013</th>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
<th>Block 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Medicine, Surgery and Reproduction – Small animals</td>
<td>Veterinary paraclinics-2</td>
<td>Veterinary Imaging</td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>2013/2014</td>
<td>Block 1</td>
<td>Block 2</td>
<td>Block 3</td>
<td>Block 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>General clinical practice, large animals</td>
<td>General clinical practice, Small animals</td>
<td>Differentiation course</td>
<td>Veterinary jurisprudence and assessment of animal welfare</td>
</tr>
<tr>
<td>Year 3</td>
<td>2014/2015</td>
<td>Thesis</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Courses in blocks 3 and 4 of Year 1 and in blocks 1 and 2 of Year 2 (in bold in the table above) are subject to a rotation. Differentiation course and Veterinary jurisprudence and assessment of animal welfare alternate with Thesis for half of the students following the differentiation course in Small animal diseases and in Equine diseases.
2.3 Selection of students for the various differentiations

The rules for selection of students for the differentiations will be corrected in the Spring of 2010.

2.3.1 Main rule

Selection of students for the various differentiations takes place according to a special procedure. Once assigned to a differentiation, this assignment cannot be changed.

Exceptions to the main rule

Leave of absence

Students who are granted leave of absence still have their differentiation assignment when they return. In case of leave of absence, the Veterinary Study Board cannot, however, guarantee that it is possible to complete the MSc programme in the scheduled time (2½ years plus the leave of absence period).

Substitute the assigned differentiation with another course and/or trainee service

A student can apply to the Veterinary Study Board to substitute his/her differentiation assignment. In this case, the student must apply to the Veterinary Study Board in advance for permission to do this and explain the reasons for the substitution and also send in a plan for completion of the MSc programme. In case the 26.5 credits are to be substituted by courses at other universities/faculties, the course descriptions must also be sent to the Veterinary Study Board. The main body of the courses must be within topics relevant to the veterinary field. In case of trainee service, please refer to the Curriculum – common part.

Trade assignment with another student

In case that two students agree to trade differentiation assignment, both students must apply in advance to the Veterinary Study Board. The application must include the reasons for trading the differentiation assignments for both students.

2.3 Selection of students to the differentiations in case of the number of applicants exceeding the permitted intake

As a main rule, the average grade obtained by the student in his/her BSc degree is used as a selection criterion. However, it is possible to increase the average grade if:

1. The BSc programme has been completed in 3 years
2. The student has the sufficient number of credits prior to starting on the MSc programme in Veterinary Medicine.

In these cases, the average grade can be increased by the formula: Grade \* FAKT. FAKT is calculated as 1 + the sum of the following:

A. 0.03 for study trips to other veterinary universities/faculties after admission to the BSc or MSc programme
B. 0.03 for three consecutive weeks in clinical practice
C. 0.03 for one year of student political work *
D. 0.06 for three consecutive weeks in clinical practice where more than 75% has been in production animal practice
E. 0.06 for three consecutive weeks at a diagnostic laboratory, food hygiene unit, or biomedical facility
F. 0.01 for practical training courses in the non-scheduled periods (interim weeks)
G. 0.03 for participation in official veterinary eradication and control programmes (min. 100 hours)

* The following activities count as student political work:
   • a post in VMR or in the secretariat of the student association VMF
   • membership of the Veterinary Study Board or of departmental teaching boards
   • a post in DSR’s governing bodies (central board or executive committee)

FAKT cannot exceed 1.15. The activities listed above can be taken more than once, i.e. a student can complete the same activity twice and get twice the credit. Credits cannot be accumulated in periods of leave of absence, nor can they be accumulated during periods of ordinary teaching. Remember to indicate on the application if the bonus arrangement is to be used and send in relevant documentation if the above activities are to be considered. In case of missing or incorrect documentation, the bonus will not be calculated.

2.5. Registration for practicals:

Registration for practicals is made on a special form. Planning of practicals is carried out by the veterinary practicals planner (den veterinære øvelsesplanlægger) e-mail: vet-plan.life.ku.dk

In case of late registration, the student must contact the veterinary practicals planner who will then apply to the Veterinary Study Board.

In case of cancellation of participation in practicals, the student must communicate this to the veterinary practicals planner.

The students is responsible for cancelling his/her participation in exams

Further information: Please refer to the website (www.life.ku.dk) under Studerende – Undervisning – Veterinær undervisning og øvelser.
Chapter 3. Admission requirements and admission

3.1 Admission requirements

The BSc programme in Veterinary Medicine with the electives listed below provides direct admission to the MSc programme:

- Veterinaer paraklinik-1 – 7.5 credits
- Besætnings- og folkesundhed-1 – 7.5 credits
- Basal klinisk teori hos mindre husdyr – 7.5 credits
- Basal klinisk teori hos store husdyr – 7.5 credits

As decided by the Veterinary Study Committee, admission to the MSc programme may be on a basis other than the above if the applicants have qualifications equivalent to the above.

3.2 Admission

Admission takes place twice a year. On 1 September and 1 February. The curriculum is based on students starting on 1 September.
Animal Health Research and Health Promotion B3 F10

Please read the description of the course areas of competence before you start the evaluation.

Areas of competence: The aim is to make the students able to provide research-based solutions to complex health problems concerning animal populations, based on existing or new data. The course will also aim at integrating the training of research-minded veterinary students with the Ph.D.-training conducted at Research School for Animal Production and Health (RAPH). This integration will facilitate future recruitment of Ph.D. students and increase the research competences of the Ph.D. students. After the course, the candidates must be very attractive to the livestock industry, to specialized private business (i.e., specialized veterinary practice), or governmental institutions for R&D-functions in an interdisciplinary setting. At the end of the course the students will have: Knowledge to: * Reflect on the theory and ethics of science in relation to a concrete context within population-oriented veterinary R&D-tasks. * Reflect on the principles of disease pathogenesis in populations, disease control, health, health promotion, including the concepts of risk (analysis, management and communication), causality and animal health economics. Skills to: * Write papers in a format that is acceptable for scientific journals * Manage scientific information * Manage R&D-projects * Apply the principles of risk (analysis, management and communication) * Apply the principles for study design (experimental and observational) * Manage data from R&D-projects * Apply multilevel statistical models and similar tools suited to handle health related data. * Apply principles of (herd) health and production management, including interpretation of results from diagnostic laboratories, animal health economics tools and decision support systems, with application of simulation models.

Competences: * Contribute significantly to a R&D-project including the study design, planning, conduct and analysis of an animal population, in a way that is ethically and scientifically sound, and contribute significantly to

<table>
<thead>
<tr>
<th>1 Questionnaire A: Course evaluation</th>
</tr>
</thead>
</table>

1.1 What was your personal effort in the course (including lecture) compared with the ECTS-credits obtained? 7,5 ECTS/block = half working week 15 ECTS/block = full working

- Too little
- 
- Suitable
- 
- Too much

https://evaluering.life.ku.dk/SetupViewQuestionnaire.aspx?EvaluationInstanceId=47... 31-05-20
| week |  
| --- | --- |
| 1.2 Compared to my own qualifications I found the academic level | √ Too little  
√  
√ Suitable  
√ Too much |
| 1.3 I was given a good introduction to the course | √ I very much disagree  
√ I neither agree nor disagree  
√ I very much agree |
| 1.4 The individual components in the course supported the official competency goals (described above) | √ I very much disagree  
√ I neither agree nor disagree  
√ I very much agree |
| 1.5 The course provided room for active participation on my part | √ I very much disagree  
√ I neither agree nor disagree  
√ I very much agree |
| 1.6 I found the course rewarding at a level proportionate to the efforts I put in | √ I very much disagree  
√ I neither agree nor disagree  
√ I very much agree |
| 1.7 All in all the course was good | √ I very much disagree  
√ I neither agree nor disagree  
√ I very much agree |

2 Project work

|  
|  
| 2.1 The project guidelines were clear and easy to understand | √ I very much disagree  
√ I neither agree nor disagree  
√ I very much agree |
<p>| 2.2 The project work | √ I very much disagree |</p>
<table>
<thead>
<tr>
<th>Provided room for independent problem solving</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ I neither agree nor disagree</td>
</tr>
<tr>
<td>☐ I very much agree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.3 Compared to other course activities time spent on project work was</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Too little</td>
</tr>
<tr>
<td>☐ Suitable</td>
</tr>
<tr>
<td>☐ Too much</td>
</tr>
</tbody>
</table>

| 2.4 Comments (NB: please fill in questionnaire B to comment on individuals' teachers) |

<table>
<thead>
<tr>
<th>3 Use of IT in the teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ I very much disagree</td>
</tr>
<tr>
<td>☐ I neither agree nor disagree</td>
</tr>
<tr>
<td>☐ I very much agree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3.1 The quality and use of IT-teaching material was good (use of powerpoint dias, programmes, data sets etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ I very much disagree</td>
</tr>
<tr>
<td>☐ I neither agree nor disagree</td>
</tr>
<tr>
<td>☐ I very much agree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3.2 Campusnet has been applied in a satisfactory way</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ I very much disagree</td>
</tr>
<tr>
<td>☐ I neither agree nor disagree</td>
</tr>
<tr>
<td>☐ I very much agree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3.3 There were no technical problems with the use of IT throughout the course</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ I very much disagree</td>
</tr>
<tr>
<td>☐ I neither agree nor disagree</td>
</tr>
<tr>
<td>☐ I very much agree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3.4 IT (e.g. online tests, online video or online discussions) should be applied more throughout the course</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ I very much disagree</td>
</tr>
<tr>
<td>☐ I neither agree nor disagree</td>
</tr>
<tr>
<td>☐ I very much agree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3.5 Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>
### 4 Courses taught in English

<table>
<thead>
<tr>
<th>Course</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 The English used in the teaching was of an adequate level and quality</td>
<td>- I very much disagree</td>
</tr>
<tr>
<td></td>
<td>- I neither agree nor disagree</td>
</tr>
<tr>
<td></td>
<td>- I very much agree</td>
</tr>
<tr>
<td>4.2 My English skills were adequate to achieve the full benefit of the course</td>
<td>- I very much disagree</td>
</tr>
<tr>
<td></td>
<td>- I neither agree nor disagree</td>
</tr>
<tr>
<td></td>
<td>- I very much agree</td>
</tr>
<tr>
<td>4.3 The course provided opportunities for Danish and foreign students to work together</td>
<td>- I very much disagree</td>
</tr>
<tr>
<td></td>
<td>- I neither agree nor disagree</td>
</tr>
<tr>
<td></td>
<td>- I very much agree</td>
</tr>
<tr>
<td>4.4 Comments (NB: please fill in questionnaire B to comment on individuals teachers)</td>
<td></td>
</tr>
</tbody>
</table>

### 5 Additional comments

<table>
<thead>
<tr>
<th>Comment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 I have the following comments to the textbook material</td>
<td></td>
</tr>
<tr>
<td>5.2 Which elements worked well in the course? And why, do you think?</td>
<td></td>
</tr>
<tr>
<td>5.3 I propose the following</td>
<td></td>
</tr>
</tbody>
</table>

https://evaluering.life.ku.dk/SetupViewQuestionnaire.aspx?EvaluationInstanceId=47... 31-05-201
improvements: (NB: please fill in questionnaire B to comment on individuals teachers)
Full Approval

has been awarded by the
Committee for Laboratory Standards to
Central Laboratory, Denmark
as a Training Laboratory for the European College for Veterinary Clinical Pathology.
Date: February, 2006
Curriculum for Master of Veterinary Public Health

The study programme is organised in accordance with Executive order no. 682 of 16 August 2002 concerning certain master's degree programmes at universities. The programme is under the Master Study Board at the Faculty of Life Sciences (LIFE) at the University of Copenhagen (KU). Graduation confers the degree MSc. in Veterinary Public Health, in Danish, Master i Husdyrsundhed og økonomi. The title can be shortened to MVPH.

Chapter 1. The programme’s objective and competence profile

1.1 Programme objective

The objective of the programme is to give master students with practical professional experience a science based continuing education in the control and prevention of animal diseases, including zoonoses.

In addition to a broad knowledge on the control and prevention of disease, the graduate will attain competence within several fields: evaluation of disease occurrence and their causes, decision processes, development, planning, implementation and evaluation of programmes for disease control, disease surveillance and risk assessment at all levels – on-farm, regional, national as well as international.

1.2 Programme general profile

The programme includes fundamental disciplines as prerequisite for more specialised subjects. The candidate is required to gain knowledge within compulsory disciplines including basic biostatistics and data management, epidemiology, animal health economics and all aspects of disease control. The programme also includes supplementary elective courses.

Courses are organised as a combination of distance learning (e-learning) and on Campus learning. Activities include lectures and theoretical and practical exercises with independent as well as group studies, in order to train and qualify students in the application of theoretical knowledge. Each course is completed with the submission of a report and/or examination for evaluation.

1.3 Programme employment prospects

The programme is aimed at the continuing education of graduates having professional work experience in the prevention and control of contagious diseases within animal and food production. Interested candidates may be found amongst those employed in e.g. the veterinary services, universities and research institutions, and trade organisations in animal agriculture.

1.4 Programme competence profile

On completion of the programme, the graduate is required, at a minimum, to demonstrate knowledge, skill and competence within the programme’s compulsory subjects and subject areas, as listed below. Additional qualifications may be acquired by participation in elective courses.

1.4.1 Knowledge

The graduate must be able to

- Define, identify and describe disease problems in animal farms on a regional, national and international level and identify questions where more knowledge is needed
- Demonstrate overview in relation to methods of disease control at the highest international level
- Evaluate the efficacy of applied and alternative methods of disease control

1.4.2 Skills

The candidate must be able to

- Collect pertinent data on diseases and their possible causes
- Analyse data to identify the causes of disease occurrence
- Identify possible intervention points to prevent spread of disease
- Discuss relevant problems and questions both scientifically and generally
- Communicate and pass on results to relevant parties

1.4.3 Competence

The candidate must be able to

- Combine practical disease control with existing laws and regulations
- Collaborate within and between specialistsprofessionals involved in disease control, e.g. veterinarians, laboratory and other technicians, biologists, statisticians, law enforcers as well as emergency forces and resources
- Develop, plan, manage, implement and evaluate disease control in complex and often unpredictable situations, which may necessitate novel solutions and
approaches

• Work independently, take responsibility and make decisions

Chapter 2. The programme structure and content

2.1 Courses

The programme is set at 60 ECTS points which is the equivalent of one year’s full time study. It is structured so that it can be completed as a part-time study within 3 years. The programme comprises compulsory courses, a master thesis and a number of elective points (Table 1). The courses are organised in 5 modules (Table 2).

Table 1. Programme composition:

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The modules need not be completed in numerical order. However, modules 1 to 4, as well as the elective points, must be completed and passed before module 5 (the masters thesis) can be completed. Courses are planned as an interaction between lectures, exercises and self-study. Each course ends with the evaluation submitted assignments or an examination. Several courses are partly conducted as distance learning (e-learning).

2.2 Elective points

Elective courses may be chosen from within or outside the Faculty of Life Sciences and the choice must be approved by the Master Study Board.

2.3 Language

The language of tuition is English. Tuition and examination can, however, take place in Danish if the master student and the teacher have agreed thereon.

Chapter 3. Requirements for admission and enrolment

3.1 Admission to the programme

A BSc or MSc degree in veterinary or human medicine, agricultural or natural or engineering sciences, plus at least two years of relevant full time working experience, is required.

Following specific assessment, KU-LIFE can admit applicants who do not comply with all requirements, if they satisfy comparable educational accomplishments. However, the condition two years relevant working experience, cannot be deviated from.

Good English language skills, enabling the applicant to follow teaching in English, are required.

3.2 Enrolment in the programme

The programme courses can be followed in the order in which they are given. Enrolment can take place any time of year in accordance with deadlines for forthcoming planned courses and modules. These deadlines are to be found at http://www.life.ku.dk/English/education/continuing_education/mvph.aspx or in Danish at http://www.life.ku.dk/efteruddannelse or directly at http://www.life.ku.dk/mvph.

3.3 Enrolment in singles courses and modules

It is also possible to enrol in single courses and/or modules according to the deadlines referred to above, i.e. without enrolling in the full program. The admission requirements can in such cases be deviated.
To whom it may concern

Evaluation of the continuing education “Master in Laboratory Animal Science” at KU LIFE, Denmark

Background:

Evaluation:
The Master's programme was very informative and instructive. I have appreciated the opportunity for in-depth treatment of the topics, and the limited number of students provided us with a great opportunity for discussing various issues and problems within each subject during most of the courses. Most of the courses were well structured with a good mix of both theory and practice. All the topics were very relevant for the Lab. Animal Veterinarian, although I found the two topics “Genetics” and “Design and evaluation of animal experiments” quite complicated, probably because statistical design and complex genetics are beyond the scope of my daily work. Some more practical training within these subjects would have been desirable. More discussion concerning the topic Management of an animal facility would also have been desirable. Otherwise, I have been very satisfied with the training. The Master's project was a great opportunity to focus on and immerse oneself in a specific topic. Research is not part of the daily job as a Lab. Animal Vet. Therefore, it is usually also difficult to make time for such studies. Overall, I think the training has been worth the effort, and today I feel much more competent to perform my work than before the training.

Yours sincerely

Kristin Engelhart Illigen
DVM, MLAS
Research publications 2007, 2008 and 2009

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Internationalisation of research

**Exemplified by:** Lists of countries of employment for foreign authors and co-authors of publications in 2007-2010 from the four veterinary departments at LIFE.

Lists are drawn from the PURE-database by Research Librarian Adrian Price, ap@life.ku.dk, 31.05.2010 09:13:37, ku01

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