

European Association of Establishments for Veterinary Education
European System of Evaluation of Veterinary Training

**REPORT ON THE VISIT TO THE FACULTY OF
VETERINARY MEDICINE OF GIESSEN, GERMANY**

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by the EXPERT GROUP

Massimo Castagnaro, Padua, Italy

Visitor on Training in Basic Sciences

Asger Lundorff Jensen, Copenhagen, Denmark

Visitor on Training in Clinical Sciences (Academic)

Bertil Douw, Macroom, Ireland

Visitor on Training in Clinical Sciences (Practitioner)

Petr Horin, Brno, Czech Republic

Visitor on Training in Animal Production, Chair

Cristina Vilela, Lisboa, Portugal

Visitor on Training in Food Safety

Marianne Soerstrand Oeye, Brno, Czech Republic

Student Member

Hans Henrik Dietz, Copenhagen, Denmark

EAEVE Programme Coordinator

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INTRODUCTION

The JuliusLiebigUniversity, Faculty of Veterinary Medicine in Giessen is one of five German veterinary faculties.

The faculty was established in 1777 and has been evaluated and approved by EAEVE in 1993 and again in 2003.

Within Germany, the Faculty of Veterinary Medicine in Giessen ranks highest with respect to attracting funds from the German Research Foundation. The faculty has the highest rate of veterinary students graduating within the minimum number of years laid down in the German legislation concerning veterinary education (TAppV).

The Self Evaluation Report was prepared exactly according to the SOP laid down in the guidelines.

The team experienced a very well organized site visit, greatest hospitality and an open door policy, where all requests from the team were professionally fulfilled.

Suggestions have been made to help the JuliusLiebigUniversity, Faculty of Veterinary Medicine in Giessen to improve even further.

1 OBJECTIVES & STRATEGY

Questions to be covered:

1) Clear statement of objectives? Yes.

2) Do the objectives cover the total education programme adequately? Yes.

3) Is undergraduate education the primary reason for the existence and funding of the establishment? Yes.

1.1 Findings

The objectives are clearly stated as they are laid down in the TAppV (formerly TAppO), and the faculty has not found reasons to identify a sovereign set of objectives for the JLUFVM.

It is evident that the faculty aims at the highest quality in teaching and research and these two issues are recognised as inseparable. The faculty has defined 6 clear principles (SER p.6-7) to ensure the highest level of education, conformity with TAppV, student involvement, examination rules, teaching evaluation, 5 year development plans and conformity with student attrition and attraction of external funding for research.

The faculty to a high degree provides services (e.g. multiple diagnostic services, autovaccine production, quarantine procedures for reptiles, necropsy of non-notifiable diseases) to the community and to the veterinary profession.

Further to this, the faculty provides postgraduate (Fachtierarzt, PhD-program (common for veterinary and human medicine), dissertation work (dr.med.vet.) and habilitation) training and also a broad diplomate programme (for the EBVS).

1.2 Comment

The requirements regarding Objectives as they are laid down in Annex I of the SOP are met.

1.3 Suggestions

- None.

2 ORGANISATION

Questions to be covered:

- 1) *Brief structure and organization summary* See below.
- 2) *Does Faculty have adequate influence on University policy?* Yes.
- 3) *Is it suitably "autonomous" i.e. does it have adequate flexibility?* Yes.
- 4) *Effective structure for decision making?* Yes.
- 5) *Are Departments coordinated amongst themselves in terms of use of resources? transversality ? coordination ? integration ?* Yes.

2.1 Findings

The organisation of the management and education is based on the local law in the federal state of Hessen and the general German system of TAppV. Within this framework the faculty has successfully increased its sovereign status as much as possible leading to a restructuring of the faculty.

The University is composed of 11 faculties and it is governed by a Senate consisting of 9 professors, 3 students, 3 non-professorial scientific staff members and 3 technical staff members and headed by a Presidium consisting of an elected president, 2 vice presidents (proposed by the president and elected by the senate), and a chancellor appointed by the Hessian government (see Fig. 2.1, p14 SER).

The Presidium and the University Advisory Committee (equal to the board in a private company) decides upon the basic rules of the university, develops opinions and advices on matters of common interest for the various faculties at the university.

At the faculty level the Faculty Council is the central organ composed of 10 professors, 5 students, 3 non-professorial scientific staff members and 1 administrative/technical staff member. All council members are elected and the Faculty Council is chaired by the Dean. The Dean's office also includes the Vice Dean and the Dean for Study Affairs (see Fig. 2.2, p19 SER).

The FVM is basically organised in 10 subunits i.e. 8 institutes, 1 unit and an umbrella department of Clinical Veterinary Clinical Sciences covering 5 different clinics and 2 units and this latter department is headed by a department head/coordinator which is a position taken on by one of the heads of the 5 clinics and 2 units (Table 2.1., p21 SER).

The Faculty states that it has for years worked systematically towards a relative autonomous, independent system of self-government, which in great parts it has achieved. The Faculty mainly decides on fundamental faculty issues in the Faculty central decision organs, which renders the Faculty a relatively high degree of autonomy. The individual professorships also retain a high degree of autonomy and independency.

The decision making takes place on several levels depending on the issue. It is the responsibility of the Dean that decisions made within the Faculty comply with Presidium decisions. The Faculty Council decides on fundamental faculty issues, while the board acts as an arena for discussions related to the institutes and clinics. There are several subcommittees (reflecting the same groups and with the same weight as in the Faculty Council) undertaking such matters as study affairs, the budget to improve study conditions, structural development, financial matters and price granting. Clinics may also address matters directly to the departments or the Presidium. This division of decision making seems to give the Faculty several possibilities as to how to approach different matters within the hierarchical structure, and it also appears to allow matters of different importance to be solved without having to go through a vast bureaucratic process.

Internal as well as external stakeholders are involved generally via the University Advisory Committee which also includes representatives of the Hessian government and more specifically in all the ruling committees (staff and students).

As an example of department coordination the SER refers to the use of the software “easy-Vet”, basically an EPF (Electronic Patient Filing system) with a billing system added. This suggests an efficient coordination between the institutes in relation to clinical matters. The functional relationships between the departments regarding other issues are not specifically mentioned in the SER, but it follows from the organisation and the subcommittees established that coordination and integration takes place. The team noted a uniform agreement between the different departments that teaching and learning issues are coordinated on a regular basis via direct negotiations between the involved departments. E.g. the Institute of Veterinary Physiology and Biochemistry explained that it is an integral part of teaching that clinicians give lectures in the biochemistry curriculum and vice versa. This way coordination is secured and redundancy is avoided.

Some of the teaching is undertaken by other departments at the university (as teaching for other faculties is undertaken by the FVM) but still under full and coordinated, central faculty control of the veterinary curriculum as a whole.

The new BiomedicalCenter is run as a collaborative center between the FVM and the Faculty of Human Medicine.

However, the SER mentions that an experimental farm is lacking at the university and also that an unwanted fission took place in 1985 where the Institute of Animal Breeding and Genetics was transferred to the Faculty of Agr. Sciences.

2.2 Comments

The veterinary training at JLUFVM takes place in a highly professional research environment with in depth knowledge about organisation and execution of a veterinary curriculum.

The Faculty appears satisfied with the current system of organization, both at the University and the Faculty levels. The democratic principles embedded in the university structure contribute to an open and reliable decision making process within the academic structure. The Faculty prides itself to have a relatively high degree of autonomy which is reflected in the matters which are delegated to the Faculty to decide upon by itself.

Appointment of new professors goes through a lengthy process of approval in the University central decision making organs basically based upon representative democracy. This politically charged and time-consuming procedure is also connected with some difficulties like unoccupied positions and discussion about fund distributions.

The team noticed a generally very good team spirit among department heads and professors.

When the team visited the Oberer Hardthof educational and research farm, which belongs to the Institute of Animal Breeding and Genetics, it was evident that this farm is a major asset to the veterinary training and research. Well run facilities and a huge number of relevant species make this farm an ideal training place for future veterinarians. However, the farm is not utilised to its full extent; there is only professor attached to the farm.

Although both the Institute and the Veterinary Faculty in 2002 concluded that the Institute should remerge with the Vet. Faculty, this was not adopted by the Faculty of Agricultural Sciences and the Presidium.

The requirements regarding Organisation as they are laid down in Annex I of the SOP are met.

2.3 Suggestions

- The team suggests that the university elucidates pros and cons in the interfaculty discussion about the reemerging of the Institute of Animal Breeding and Genetics with the Faculty of Veterinary Medicine. This includes upgrading of the research facilities. This could be done by initiating a fast working committee which should also take finances, research and teaching into consideration.

3 FINANCES

Questions to be covered:

- 1) *Short summary of financial and budgetary structure and who controls it?* See below.
- 2) *Any additional income generated and through which means?* Yes see below.
- 3) *Is level of funding adequate?* Yes, the faculty runs a minor surplus.
- 4) *Is there a good balance between expenses and running costs?* Yes.
- 5) *Is there a good balance between research and teaching funds?* Yes. Research and teaching is heavily integrated.
- 6) *How much autonomy to allocate and use the budget?* Full autonomy with due respect to the teaching as well as the research obligations.

3.1 Findings

Income/revenue and expenditure for the last 3 years is reviewed in tables 3.1. and 3.2. It is clear that a clear distinction between funding of research and teaching is not possible due to the overall integration of teaching in the research environments.

It follows from tables 3.1. and 3.2. (SER p27) that the faculty is running a surplus each year. This is accepted and encouraged both at the university and faculty level.

Eighty (80) percent of the funding for the university is based directly on the teaching load with respect to a classification of the various programmes. The veterinary program together with the human medicine program is the second most expensive only superseded by natural sciences (physics, chemistry, biology). This downgrading of the veterinary program has been done to "maintain a politically intended balance between the different faculties".

The remaining 20 % of the funding is competitive and based upon scientific success and merits (acquired grants, number of dissertations etc.).

Funding for each faculty is determined by the Presidium. Salaries are generally managed by the central university administration.

The dean allocates funds within the faculty respecting a system that closely follows the university system, where the main factors are

- number of scientific staff

- teaching load
- research output
- income from external sources (grants: factor 3; clinical income: factor 1)

Additional funding is available for improving of teaching, construction and reconstruction of buildings (e.g. the new clinical facilities for the Small Animal Clinic and the Clinic for Birds etc have been financed by these funds). Typically this funding is given based upon applications to either the Faculty, or the University or the Ministry for Science and Art.

Extra income generated by e.g. the clinics, the institutes of pathology, parasitology, and hygiene is taxed by the university (< 10 %) and by the faculty (2- 10 %). Small departments with low income is taxed lower than big departments with big income. For private income generated by authorized professors 50 % is retained by the university and 30 % of the rest is retained by the faculty and the remaining 70 % is at the professor's disposal.

The university retains a 10 % overhead from research grants.

Students don't pay tuition but there is a minor student fee of 240 € per semester.

3.2 Comments

The veterinary training at JLUFVM takes place in a highly professional environment with in depth knowledge about running a full veterinary program including organising the financial structure. Facilities are well maintained, some are new, others under construction and some are at the planning phase. There is a more than adequate caseload, a full 24/7 and up to date facilities. There is never enough funding for a veterinary faculty but relative to other faculties the veterinary faculty has a fair amount of the basic finances and there is a clear structure for allocating money thereby sustaining the objectives fully.

The team is worried about the decision to downgrade the veterinary program to "maintain a politically intended balance between the different faculties". The university should recognize that veterinary education is more expensive than training in other science based disciplines.

The requirements regarding Finances as they are laid down in Annex I of the SOP are met.

3.3 Suggestions

- The university should recognize that veterinary education is more expensive than training in other science based disciplines. This implies that the faculty should consider to reinstall the veterinary program at the highest factor level (3.5) at the university and definitely not lower it further.
- The transferral of administrative tasks from the university level to the faculty level should be followed by a relative transferral of technical staff or adjustment of other duties.

4 CURRICULUM

4.1 GENERAL ASPECTS

Questions to be covered:

- 1) *Seems as described in SER ?; indicate any variances?* Standard German curriculum – within the flexibility allowed, it is clinically oriented.
- 2) *Overall curriculum determined by law or otherwise?* National law.
- 3) *Does the curriculum fulfil the EU directive 36/2005 in terms of length (5 years) and content (EU listed subjects)* Yes.
- 4) *What graduate degree is obtained? and by which means? What are the pre-requisites for exercising the profession? (Dr. degree with or without dissertation?, Veterinary Diploma?)* “Tierarzt”, diploma without compulsory thesis, issued by the Faculty.
- 4) *Important to verify that clinical training figure in SER corresponds to supervised intensive hands-on clinical training in small groups. Note: extramural vacation work or large group demonstrations should not be included as clinical work.* Two kinds of clinical training: basic training in the 3rd and 4th year, in large groups; clinical year (rotation): stays in different clinics and departments with hands-on.
- 5) *Curriculum balance and coverage OK?* Yes, new curriculum with organ-based blocks. Coverage based on national curriculum model.
- 6) *Comment on practical versus theory ratio* OK, including ratios.
- 7) *Ratio of clinical work versus lectures and practical work must be checked with SOP* OK.
- 8) *Ratio of theory versus practical and clinical work must be checked with SOP* OK.
- 9) *Comment on course integration, electives & extramural work arrangements (outsourcing)* Could still be better in basics and clinics (faculty’s own suggestions), good effect of organ-oriented teaching in blocks, in some instances fragmented according to departments. Many electives, numbers of students ranging from 3 to 25.
- 10) *Any alignment with the Bologna process (Bachelor, Master, PhD)?*No.

4.1.1 Findings

Veterinary training in Germany is regulated by a national law, the so called “Verordnung zur Approbation von Tierärztinnen und Tierärzten” (Ordinance concerning the Certification of Veterinary Surgeons; TAppV as of 27.07.2006). The national curriculum as defined in § 1 TAppV consists of 3,850 hours of obligatory and elective courses at a university, 70 h practical training in agriculture at an acknowledged farm (in most cases the University farm), 1,100 h obligatory extramural work (which in part can be done at the University), and two state examinations (Preliminary Veterinary Examination and Veterinary Examination). The total duration of the study including the time for the final examination is 5½ years.

The graduate is awarded a veterinary degree “Tierarzt” issued by the faculty. Graduates may follow-up a “Dr. Vet. Med.” research oriented programme (with a thesis), and/or they may become specialists (“Fachtierarzt”).

According to the Ordinance concerning the Certification of Veterinary Surgeons (§ 3 TAppV), the universities are allowed to modify the number of hours for individual subjects in the range of $\pm 20\%$ provided that the total number of hours is constant. The total number of hours taught in Giessen is slightly higher than set-up by the TAppV (5238 vs. 5,020 hours) due to more hours for clinical teaching. Which exceeds the EAEVE minimum requirements.

The national curriculum mainly defines the total number of hours for each subject, not their distribution between lectures, seminars and practical or clinical work. The balance between theoretical teaching and practical teaching is defined by Rules for Study and Examination. Within the faculty, the curriculum is prepared by the Committee for Study Affairs. The allocation of hours between the

various subjects is primarily done by the Dean for Study Affairs, in general after intensive discussion with the Committee for Study Affairs.

In the first year, general basic subjects are taught and examined. The second year is mostly dedicated to basic veterinary subjects, while the third year covers pre-clinical and para-clinical topics. Altogether, the preclinical studies comprise 9 examinations. Since the 5th semester, after the completion of preliminary veterinary examination, clinical studies start-up. Organ-based block teaching in the 5th to 8th semester with participation of teachers from various disciplines has been implemented since 2007. During the 9th and 10th semester, a clinical rotation takes place (“clinical year”), with the following partial examinations: Internal Medicine including Laboratory Diagnostics and Dietetics, Reproductive Medicine including Obstetrics and Udder Diseases, Surgery and Anesthesiology, Ophthalmic Diseases, Dentistry. During the final 11th semester, final examinations are taken, namely General Pathology and Special Pathological Anatomy, and Histology including autopsies, Food Science, Meat and Poultry Hygiene, Poultry Disease, and partial exams (2nd part) Internal Medicine including Laboratory Diagnostics and Dietetics, Reproductive Medicine including Obstetrics and Udder Diseases, Surgery and Anesthesiology, Ophthalmic Diseases, Dentistry.

In addition, students must undertake a minimum of 1,170 h extramural work in the first, third or fourth and in the fifth year. Obligatory extramural work covers animal husbandry, clinical practice, practice in food inspection and hygiene and in the public veterinary service. This type of extramural studies is supervised by university teachers and partly (food hygiene) by state official veterinarians. Here however, no assessment of knowledge gained by students is made.

A minimum of 308 hrs of electives must be taken by each student. Many elective subjects are offered to students in each year.

Self-directed learning does not make part of the national curriculum formally. Therefore, this type of teaching/learning is performed only in the clinical year, when students are preparing their clinical case reports.

All EU-listed subjects are taught to each student, although not always under the same names.

The values of general indicators of training R6 and R7 are 0.60 and 0.96, respectively.

4.1.2 Comments

The general structure of the curriculum is determined by a national law with some flexibility allowed to the faculty. Consequently, a mixture of modern and traditional features may be identified in the Giessen curriculum. The Giessen faculty has used the flexibility allowed by law to build a clinically oriented curriculum.

The organ-based block teaching in the 3rd and 4th year allows interactions of teachers from different departments covering related or similar subjects. In this type of teaching, students can acquire their first hands-on experience. They can learn approaching and handling animals in basic subjects and more specifically, in “propedeutics” for different species. This form of teaching is made in larger groups of 25 to 50 students and the extent of direct hands-on experience and the range of interventions taught is only basic (blood and other biological sample collection, basic examination). Moreover, due to high direct teaching load, a gap in practical clinical teaching between propedeutics and the clinical year arose in the curriculum.

The clinical year allows students to stay longer in clinics and departments. These stays used to be based on well prepared schedules. Students that can be seen in clinics and clinical laboratories working with animals are usually the final year students. They work in small groups, they can be exposed to a variety of clinical cases and they are allowed to get more hands-on practice under supervision. It thus seems that the majority of practical clinical training is concentrated to the final year. Students do have basic skills but the range is not complete, and may vary according to the student. There is a variation in the quality of practical clinical teaching among different clinical units and disciplines.

The proportion of electives is set-up by the law. Basically all electives offered are taught, although sometimes with 2 to 3 students per course. Students envisaging research and/or academic career can prepare a thesis. The variety of electives and the dedication of teachers to offer specific subjects is a strong aspect of the curriculum in Giessen.

Various forms of extramural teaching ("praktikum") are organized by the faculty. They are supervised and guaranteed by the faculty, so these activities can be considered as part of clinical teaching.

The organ-based block teaching seems to be favourable for integrated teaching, although only little experience is available so far. Its efficiency and quality is checked on a regular yearly basis. However, as in many other schools, better vertical and horizontal integration, especially between non-clinical and clinical subjects and within animal production subjects, is possible. On the other hand, this form of teaching eliminated the continuity of practical clinical teaching throughout the entire curriculum.

Formally, the theory vs. practice ratios are good or even very good. However, they do not always reflect accurately students' involvement (e.g. numbers of visits to farms, and numbers of clinical cases). Nevertheless, these figures clearly show that students in Giessen have the opportunity to see clinical cases in all relevant animal species and can get an idea about basic model situations in veterinary practice.

Some subjects are not taught by the faculty, they are "imported". However, often (like in animal breeding and genetics and in animal nutrition), the professors responsible for the subject are also members of the faculty and have impact on its teaching strategy. In all cases, teaching of these subjects is veterinary-oriented, specific for veterinary students with adequate coverage of crucial veterinary topics and the Veterinary Faculty has direct impact on the content and quality of teaching.

The requirements regarding Curriculum, General as they are laid down in Annex I of the SOP are met.

4.1.3 Suggestions

- The faculty should evaluate the effect of changes in the curriculum based on a critical analysis of the entire teaching cycle and on feedback from teachers and students, and based on this make adequate modifications of the curriculum.
- The faculty should think of better exploring the potential of the new clinically oriented curriculum and the caseload flow for further increase not only in students' hands-on experience.
- The organization of practical clinical teaching between propedeutics and clinical rotations, and high direct teaching load in this part of the curriculum should be re-thought.

- A better assessment of individual skills could be considered in this context to make sure that all students have a basic range of day-one skills. Undergraduate students should get more opportunities to take advantage of the caseload flow and of experiencing teachers on the floor.
- Although quite well designed in the blocks, even better vertical and horizontal integration is desirable. Such interactions would help the faculty to better expose students to integrated concepts in veterinary medicine (e.g. from stable to table concept, HACCP, herd health management etc.). These concepts must be presented to students as a whole and not *per partes*, in fragments. A better transition from basic and pre-veterinary, para-clinical (e.g. toxicology and pharmacology) and clinical subjects could be achieved as well. Topics where repetitions and overlaps serve for better understanding and unnecessary repetitions could be identified.

4.2 BASIC SUBJECTS & BASIC SCIENCES

Questions to be covered:

1) Do basic subjects (chemistry, animal and plant biology, physics, bio-mathematics) form part of the core curriculum within the faculty, or are they taught elsewhere? Taught at the university but within another faculty. If elsewhere taught, has veterinary faculty control over content, quality and grading? Yes. Do grades in those subjects affect progression in pre-clinical studies? No.

2) How are carcasses handled for anatomy and pathology with relation to chilling/freezing, other forms of preservation, hoists, trolleys, changing facilities (transport) and disposal (waste management)? All modern facilities are in place and procedures are working with due consideration to safety and biosafety.

Is teaching of bio-safety and bio-security adequate? Yes.

3) Do incoming students have adequate basic knowledge? See below.

4) Are items taught in basic sciences brought into relation to later courses? Yes.

5) Adequacy of hours and course materials as well as balance between practical and theoretical work? Adequate and well balanced.

6) Is there adequate hands-on participation by students in anatomy and pathology? Yes.

7) Any or sufficient practicals in physiology, pharmacology, toxicology, microbiology? Yes, sufficient and in sufficiently equipped student laboratories of various stages of modernisation.

8) Are the groups too large? No

4.2.1 Findings

Teachers of basic subjects generally meet incoming students with a heterogeneous basic knowledge. For this reason they set the course at a level so that all students regardless of their basic knowledge may satisfactorily attend and understand the lectures.

Basic subjects are mandatory courses for all students and they are taught by teachers belonging to other schools. The school has only a partial direct control over the content and the quality of these subjects. However, a good coordination has been established between teachers of basic subjects and the veterinary faculty. Basic subjects and part of basic sciences are included in the "Preliminary veterinary examination": failure to pass these tests prevents the students to go into the clinical studies part of the curriculum.

Basic sciences courses have an adequate content, are research-based and are generally related to later clinical courses and other relevant disciplines. Students in these courses have a good hands-on participation, in smaller groups of adequate size. There is a good balance between practical and theoretical work also to be seen from the ratios.

Handouts and slides used for lectures are available to students in the web site of the school.

For anatomy course very little fresh and mostly formalin fixed single organs and carcasses are used. For anatomical pathology practicals, mainly fresh or chilled carcasses and material coming e.g. from the department's diagnostic service are used.

Teaching of biosafety and biosecurity is adequate, and the laboratories were adequately equipped with standard safety material (e.g. fire extinguishers, eye washers, first aid kits, written and extensive instructions).

4.2.2 Comments

In the basic science courses several topics seem to be covered in more than one course.

The requirements regarding Curriculum, Basic Sciences as they are laid down in Annex I of the SOP are met.

4.2.3 Suggestions

- Teachers of basic sciences should continuously monitor the content of their courses for the risk of overlapping and redundancy. Although to a certain extent the repetition and the integration of relevant topics are desirable, for the sake of clarity, students should be helped to approach important topics in a consistent and uniform way.

4.3 ANIMAL PRODUCTION

Questions to be covered:

- 1) *Is there a teaching farm where students can do practical work in animal production?* Yes.
- 2) *Any early (pre-clinical) exposure to handling of farm animals and horses?* Yes, mostly in the farm.
- 3) *Sufficient hours of teaching in animal production and a good balance between practicals and theory?* Yes.
- 4) *Is agronomy and animal nutrition taught and where (silage production, pasture management and use of particular feeds/plants etc.)?* Yes, elements in appropriate subjects.
- 5) *Is animal production teaching well integrated with related subjects i.e. herd-health management and ailments caused by poor or unbalanced nutrition?* Partly, but it could be better.
- 6) *Does the teaching of forensic and state veterinary medicine cover the principles of certification with regard to animal transportation?* Yes.
- 7) *Are all aspects of animal welfare respected and taught?* Yes.
- 8) *Are bio-safety and bio-security issues respected and taught?* Yes, but there is variation according to departments and buildings. High levels in labs and research facilities, lower level in teaching labs and only basic in clinics anticipated to move to new buildings.

4.3.1 Findings

The list of Animal Production subjects taught contains subjects whose names correspond to an EU-listed discipline (1) as well as subjects covering the topics under different names (2).

(1) Animal production EU-listed subjects:

Animal Production	Lectures	Laboratory and desk-based work	Total
a) Animal production	7	0	7
b) Animal nutrition	43	56	99
c) Agronomy	14	0	14
d) Rural economics	14	0	14
e) Animal husbandry	21	0	21
f) Veterinary hygiene	28	0	28
g) Animal ethology and protection	84	0	84
Total number of hours	211	56	267

(2) Identification of other EU-listed subjects

a) The EU-listed subject Genetics (including molecular genetics) is covered by the subject Animal Breeding and Genetics from the national curriculum: 56 h lecture and 28 h practical work. It is taught by the Institute of Animal Breeding and Genetics, which belongs to the Faculty for Agricultural Sciences, Nutritional Sciences and Environmental Management.

b) The EU-listed subject Animal production is part of the following subject from the national curriculum Animal husbandry: 28 h lecture (21 h for animal husbandry, 7 h for animal production).

c) The EU-listed subject Animal nutrition is part of the following subjects from the national curriculum: Animal nutrition with 28 h lecture and 28 h laboratory work, Nutritional Science with 14 h lecture and 28 h laboratory work, Internal Medicine including Laboratory Diagnostics and Dietetics with 141 h lectures and 7 h seminar (for clinical medicine and surgery).

d) The EU-listed subject Agronomy is part of the following subject from the national curriculum: Agricultural Theory with 14 h for agronomy,

e) The EU-listed subject Rural economics is part of the following subject from the national curriculum: Agricultural Theory with 14 for rural economics.

f) The EU-listed subject Veterinary hygiene is represented by the subject Animal hygiene from the national curriculum with 28 h lecture.

g) The EU-listed subject Animal ethology and protection is part of the following subjects from the national curriculum Animal welfare with 56 h lecture, Ethology with 28 h lecture.

h) In addition, exercise in Agriculture, Animal Breeding and Animal Husbandry (with 70 h extramural, but virtually all students pass these exercises on the university owned experimental and teaching farm) provide students with practical experience in handling farm animal species.

i) 11 electives are offered in the area of Animal production. Various numbers of students take these electives, but all of them are taught.

The Faculty uses The Education and Research Station of the Institute for Animal Breeding and Genetics of Domestic Animals, the “Oberer Hardthof”, belonging to the Faculty for Agricultural Sciences, Nutritional Sciences and Environmental Management, for practical training in animal breeding, animal nutrition, agriculture, animal husbandry and animal welfare. Public transportation or other means of transportation are necessary to reach which it.

On average the following domestic food-producing animal species were available between 2008 – 2010:

- Dairy cattle (80)
- Beef cattle (30)
- Sheep (700 ewes, 200 tegs, 700 lambs, 15 rams)
- Pigs (70 breeding sows, 20 gilts, 4 boars, 424 fattening pigs)
- Poultry (170)
- Rabbits (130)

4.3.2 Comments

The animal production subjects are taught by different departments, some of them do not belong to the faculty. However, all of the subjects taught are clearly veterinary-oriented, specifically prepared for veterinary students.

There is a significant proportion of direct teaching. In all crucial subjects, practical laboratory desk work is taught and practical examinations make part of the final examination. Students can learn how to approach and handle relevant animal species at the school farm. This extramural work is clearly supervised by the university, which improves the proportion between theoretical and practical teaching. However, it seems that the use of the farm is limited to this two-week period and to some rare visits in the later years. The professor of Animal Breeding and Genetics is member of the faculty, although the Institute of Animal Breeding and Genetics belongs to another faculty of Justus-Liebig University Giessen.

All Animal Production EU-listed subjects are covered, although under different names and in a variable context. However, the SER was helpful in this regard and allowed their identification. The subjects mostly cover all important aspects of the veterinary curriculum, especially Animal Breeding, Genetics and Animal Nutrition. Animal Hygiene is mostly oriented to infections, as it is taught by the Institute of Animal Hygiene and Infectious Diseases. It seems to the team that other aspects of animal hygiene are underrepresented in the teaching programme.

The teaching farm is run and used with respect to teaching and research. Students can get basic knowledge on animal breeding and husbandry. Many other farms are visited for the purpose of clinical teaching, especially reproduction and with the ambulatory clinic. Therefore, the use of the school farm for this purpose is rather limited.

Although there is some collaboration in teaching and research among different institutes involved in teaching animal production subjects and with clinics, their coordination and integration can still be improved.

4.3.2 Suggestions

- The faculty should think of mechanisms how to improve interactions between departments and clinics not only in the organ-oriented teaching. Current concepts in veterinary medicine, like herd health management, animal welfare, HACCP and others could thus be presented to students in a less fragmented, more integrated way.
- The teaching and research farm is an extremely useful tool for teaching veterinary medicine, especially when high numbers of students must be taught. Renovation and re-structuring of the farm as intended by the faculty is therefore desirable and promising to be efficient. The use of the farm should be continuous from individual student's perspective. The potential of the teaching farm can certainly be better explored, especially if it is renovated properly.
- The team supports the faculty's opinion that mechanisms how to re-integrate the Institute of Animal Breeding and Genetics back to the faculty should be sought. Identical or similar animal production departments make integral part of many veterinary schools, resulting from the need to provide veterinary students with a clearly veterinary-shaped programme.

4.4 CLINICAL SCIENCES

Questions to be covered:

- 1) Does the establishment operate an emergency veterinary service in which students participate and is the latter compulsory or voluntary? Yes, compulsory.*
- 2) Does the establishment operate a mobile clinic and how do students participate in the activities? Yes, compulsory.*
- 3) Are students covered by liability insurance during extramural work? Yes.*
- 4) Are allocated hours adequate and in balance with the curriculum? Yes.*
- 5) Are disciplines integrated and well coordinated? Is there a satisfactory balance between species? Yes.*
- 6) Is each student getting adequate hands-on clinical teaching? Yes.*
- 7) Comment on adequacy of facilities, environment, organization, caseload, necropsy case load, staff and support staff; Adequate and exceeding the ratios.*
- 8) Buiatrics: adequate opportunities for each student to handle parturitions, dystocias, displaced abomasums, traumatic reticulitis, milk fever, acetonemia? Yes.*
- 9) Would all students be able to perform an ovaro-(hyster)ectomy on a cat or a dog alone? Yes.*
- 10) Is equine medicine & surgery teaching adequate including case load? Yes Is there an emergency service for horses available? (on call?, 24hrs.?) Yes, is colic surgery routinely performed? Yes, will every student be able to castrate a horse as a first-day skill? Based on a combination of acquired skills and basic knowledge Yes.*

4.4.1 Findings

The Faculty operates an emergency service 24/7 for small animals, horses, and ruminants, and a limited emergency service specific for birds, reptiles, amphibian and fish. Student participation is mandatory. The Faculty states in the SER (p 61) that the participation of students in night and weekend duties should be better regulated due to differences in the caseload during the year.

The Ambulatory (Mobile) Clinic is run by the Ambulatory Service of the Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals. It operates on a 24/7 basis. Participation of students in their clinical rounds and assigned to the Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals is obligatory. Each student participates on at least 1 tour.

All veterinary students have access to free vaccination against rabies. The fee charged with enrolment accounts for an accident insurance. Thus, all students are covered by liability insurance.

Total hours for Clinical sciences are 1,909 hrs (SER I, Table 4.3, p 38) with Clinical work encompassing 720 hrs (SER I, table 4.2, p 36). The ratio of Clinical work to Laboratory, desk-based and non-clinical work is 1:0.96 which is exceeding the EAEVE standard. Meanwhile, the number of clinical hours seems adequate. However, clinical work in Diagnostic imaging is very limited to only 3 hours. The number of hours to Clinical sciences is in balance with the curriculum as a whole as judged from Table 4.3 (SER, p 37). All EU-listed subjects are covered.

The clinical part of the studies starting after the completion of preliminary veterinary examination (i.e. after the 4th semester) was reorganised in 2007. The main changes consisted in an organ-based teaching in the 5th to 8th semester. Block teaching requires the participation of teachers from various disciplines and a good organisation and coordination among the teachers. The fifth year is now reserved for a rotation of all students among all clinics and selected diagnostic institutes as well as for the larger part of the obligatory extramural work. Thus, disciplines are by structure integrated and well coordinated with a satisfactory balance between species, however it may take some time before complete horizontal and vertical integration and cooperation is secured. A nice example of horizontal and vertical integration has been developed in swine medicine.

From the SER, p 52, each student is getting adequate hands-on clinical training. The quality of hands-on clinical training (i.e. what the students are allowed to do) varies and could be increased in certain areas such as obstetrics and small animal surgery.

The clinical facilities are in the process of rebuilding and renovation. The present physical facilities are located in older buildings which dictate subdivision and diversion of clinical teaching. However, the plans for the future clinical facilities seem to address this. Despite the fact that clinical sciences are divided there is a close cooperation between the different units. The maintenance standard is very high, even in the older buildings.

Clinical sciences are divided between a numbers of departments/institutes but the division is logical and common to many veterinary teaching facilities.

In general, caseload and necropsy caseloads are adequate as judged from the ratios presented in Table 7.6 (SER, p 87)

Student-Staff ratios are reasonable, though the Faculty perceives a shortage of technical staff and also of scientific staff in the clinical area.(SER, p 105) due to increasing numbers of students.

Every student has a chance to handle parturitions, dystocias, displaced abomasums, etc, and the faculty makes considerable efforts to make up for the dearth of farm animal in-patients by instructional visits to both cattle and pig farms, and by purchase of animals (e.g. calves for obstetric exercises and fetotomy).

Efforts are made so that each student has the opportunity to perform at least an ovariohysterectomy in dogs and cats, e.g. arrangements can be made with one animal charity organisation that charges for castrations of dogs, cats and other pet animals will only cover the cost of material.

Equine medicine and surgery teaching is adequate and has a sufficient caseload.

An emergency service for horses is available.

Colic surgery is routinely performed.

Not all students are able to castrate a horse as a first day skill.

Biosecurity has generally a very high standard, though in the new buildings it is recommended that manure and waste from the isolation unit is not mixed with manure and waste from other clinical premises.

The electronic patient filing system is extremely useful and integrates findings and results from multiple disciplines (e.g. clinical pathology, diagnostic imaging, microbiology). The system works smoothly, can be accessed via a VPN tunnel, and contains all relevant information of each case and assures fast and accurate information between the disciplines/departments.

4.4.2 Comments

The amount of hands-on clinical training certainly seems sufficient but could be increased in certain areas. In general terms, the caseload is adequate.

In buiatrics, there are probably not many veterinary schools in the world like Giessen where every student has a chance to be exposed in practice to all those clinical scenarios which are taught in the classroom.

The degree to which the curriculum allows for e.g. part time studies is difficult to assess.

The requirements regarding Curriculum, Clinical Sciences as they are laid down in Annex I of the SOP are met.

4.4.3 Suggestions

- The strategic initiative towards increasing horizontal and vertical integration of subjects and disciplines is to be acknowledged and sustained.
- In the new buildings, concerns of handling manure and waste from the isolation units should be addressed.
- It is suggested to improve the ability to handle cows and horses by an extra-mural course for interested students, e.g. in rectal examinations in slaughterhouses.
- It is suggested to increase clinical hands-on training in certain areas such as obstetrics and small animal surgery.
- Elective subjects could be more directed to practical (hands-on) work, as one of ways how the long gap between propaedeuticals and clinical teaching could be overcome.

4.5 FOOD HYGIENE & TECHNOLOGY AND VETERINARY PUBLIC HEALTH

Questions to be covered:

- 1) Briefly comment on structure of practical training i.e. practicals, slaughterhouse, processing plants etc.* Practical training within ratio range, slaughter house facilities OK, milk science OK.
- 2) How is food hygiene course linked to animal production, pathology, pharmacology & toxicology incl. residues and withdrawal times and parasitology?* No strong links were identified.
- 3) Is training mostly internal on-site or external?* Internal (compulsory) and external – OK.
- 4) How is inspection experience in milk, cheese, fish, meat, poultry offered?* Milk, cheese, meat and fish OK. Scarce experience on poultry.
- 5) Do all students have training in the slaughterhouse? And in which species? (pigs, cattle, poultry).* Yes – ruminants and swine.
- 6) Are animal welfare laws and practices respected and taught? (transport, pre-slaughter management, slaughtering; Yes, within other subjects – herd health and management, clinics.*
- 7) Is there any ritual slaughtering performed in any species without stunning?* No.
- 8) Calculate and state overall percentage of Food Hygiene & Public Health teaching hours (including all practicals) in respect to overall curriculum hours (should be no less than 12%)* All ratios are met.

4.5.1 Findings

Subjects and teaching hours in 'core' food hygiene subjects and extramural compulsory work in 'core' food hygiene subjects are clearly identified and comply with EU requirements. Furthermore, 4 elective subjects are offered to students in this area.

Ante-mortem inspection on farm animals is taught at the Education and Research Farm "Oberer Hardthof" and during farm visits, when students enrol in herd health and clinical studies (swine, poultry, etc.).

Teaching covering slaughter and meat inspection (28 hours, 7th semester) is carried out mainly in the slaughterhouse in Giessen, which is visited by 6 groups of 15-20 students per teacher. These visits represent about 70% of the teaching hours (19.6 hours) and the remaining 30% (8.4 hours) are spent in practical laboratory training (bacteriology analysis and other laboratory tests for assessment of meat quality) at the Institute of Veterinary Food Science – Meat Science.

The slaughterhouse is close to the University campus, and deals with cattle, pigs and eventually sheep; horses are only slaughtered on Saturdays and students do not have training on this species. It is a small slaughterhouse, with a separate room for students' hands-on experience on carcasses and organs inspection. Students do not follow transportation to the slaughterhouse, ante-mortem examination and slaughtering during this period. Such subjects are covered in the extramural compulsory training they must follow in an EU-approved abattoir.

Students do not have practical experience on poultry (broilers, laying hens), except for the visits to *poultry* farms carried out in the clinical rotations. Fish inspection is taught during classes at the Institute of Veterinary Food Science – Meat Science, using fish acquired from a fish farm for practical demonstrations. Egg inspection is also taught during classes using eggs from the market.

Teaching of milk and milk products hygiene takes place at the Institute of Veterinary Food Science – Milk Science. Four groups of 50-60 students are accompanied by 6-8 supervisors per group. Students examine products for quality parameters, e.g., bacteriology, toxicology (drug residues), freshness parameters, cheese-making aptitude and labeling.

Teaching of food of animal origin, covering production, processing and storage of meat products (minced meat, raw, cooked and boiled sausages), and canned food, takes place at the Technology Unit,

located at the Institute of Veterinary Food Science. Students, divided in 4 groups of 50-60 students (with 2-3 supervisors per group for production and 6-8 supervisors per group for inspection), follow the procedures for production of meat products and perform the inspection of self-produced products and products from retail. The Institute cooperates with foodstuff companies of meat, dairy cheese and mineral water, organizing visits to these factories.

Three compulsory periods of training must be taken by students in Food Hygiene/Public Health:

1. An extramural practical training in inspection of animals for slaughter and meat, of a minimum of 100 hours taken in a slaughterhouse with an EU admission, and a fulltime veterinarian. These slaughterhouses must deal with cattle and pigs; students may also choose a poultry slaughterhouse;
2. A practical extramural training in the Public Veterinary Service, of a minimum of 75 hours, accompanying an Official Veterinarian to markets, catering units, etc.;
3. A practical extra- or intramural training in hygiene control and control of foodstuffs, of a minimum of 75 hours.

Teaching of other subjects concurrent to an integrated perspective on Food Hygiene and Safety was clearly patent for some subjects (e.g. parasitology, poultry clinics), but not for others (e.g. toxicology, animal welfare).

4.5.2 Comments

Theoretical lectures take place in faculty premises, while most of the practical training is university supervised extra-mural (both practical and compulsory training periods).

The courses are located in the appropriate year/semester for providing knowledge based on previous courses and integrated with other running in parallel, such as clinical subjects. Almost all subjects are effectively covered, although somewhat scattered along the study-plan.

Supervised training in meat inspection (cattle and pigs) is adequately carried out during both regular teaching and extra-mural compulsory training. Supervised teaching in meat (cattle and pigs) and milk science, food inspection and technology, exposing students to food processing and the preparation of dairy and meat products is adequate. Students' exposure to poultry inspection is rather limited, as it is confined to farm visits. Some students may, however, select a poultry abattoir for their 3 weeks compulsory training in Meat Inspection. In this case, the training is not under the Faculty's responsibility and students are not evaluated in these subjects. The teaching is adequately covered by showing videos about all the procedures and including the food hygiene aspects in the teaching. This situation is due to the lack of poultry slaughterhouses in Hesse.

The local slaughter house in Giessen will be closed within the next couple of years but the faculty has already considered this situation and is working on a substitute slaughter house which will be established in 2013.

Students training on Public Health go through 75 hours of compulsory extramural training with an official veterinarian. Once again, as this training is not of the Faculty's responsibility, students' knowledge is not assessed directly.

The relevant aspects of the continuum of the food chain are not enough emphasized in terms of food quality and safety. Also the epidemiological approach to veterinary public health lacks a tighter integration of the relevant subjects. Although students are provided with a solid basic knowledge in

subjects such as pathology, microbiology, and parasitology, the risk-based monitoring of the processes (HACCP concept) does not clearly emerge from the study plan.

Subjects related to animal welfare legislation are not clearly identified and the respect for these laws through transport, pre-slaughter management and slaughtering is not clearly described.

The criteria set for evaluation and the ratios fixed are all either within range or better. The overall percentage of Food Hygiene & Public Health teaching hours (including all practicals) in respect to overall curriculum hours is inferior to 12%: R9, and although this ratio is within range, the value obtained is 6.33%. If obligatory extramural training is considered, the value obtained is 9.32%.

The requirements regarding Food Hygiene and Public Health as they are laid down in Annex I of the SOP are met.

4.5.3 Suggestions

- The Food Hygiene and Public Health teaching is presently adequate, but the closure of the slaughterhouse may pose a serious concern to the Faculty, as there is no other similar facility in a convenient distance for teaching purposes. A private enterprise has shown some interest in contributing to a new abattoir, but it would be very important that the Faculty and the University joined efforts to assure that such a facility could be available in or near Giessen.
- There could be an important improvement for the Food Hygiene/VPH field if an increased collaboration could be set between this area and other subjects, such as animal production and toxicology. Also, teaching of animal welfare issues would be probably more widely apprehended by students if presented not in Gynecology but in a different context.
- The relevant aspects of the continuum of the food chain should be better emphasized in terms of food quality and safety. The epidemiological approach to veterinary public health could be improved in terms of a tighter integration of the relevant subjects. The integrated perspective on Food Hygiene/VPH, with a shifting of responsibility from the food inspector at the slaughter house to the veterinarian working at the production level should be reflected at the curricular level, with a fully integrated approach to food safety throughout the food chain and a better understanding of the current legislation.
- A deeper involvement of students in the research carried out in this area could contribute to further motivate them.

4.6 ELECTIVES, OPTIONAL DISCIPLINES & OTHER SUBJECTS

Questions to be covered:

- 1) *List available electives* See below.
- 2) *Any tracking? When? What subjects and disciplines?* No.
- 3) *Is omni-competence assured despite tracking?* Yes.

4.6.1 Findings

In the current curriculum there are an impressive number of electives summing up to 126 electives distributed over the range of EU-listed subjects (SER; Table 4.4, p42-47).

The large variety of elective courses allows in general a teaching in small groups for students interested in intensifying certain subjects. Students have to participate in at least 308 h from these elective courses.

The curriculum contains no tracking.

4.6.2. Comments

The number and diversification of electives are impressive and suitable for any student to pursue own scientific interests. The willingness of teachers to teach even very small numbers of interested students should be appreciated.

The requirements regarding Electives as they are laid down in Annex I of the SOP are met.

4.6.3. Suggestions

- The faculty may consider introducing hands-on orientated electives to provide experience for students earlier in their curricular path, so that it is not concentrated in the 5th year clinical rotations.

5 TEACHING QUALITY & EVALUATION

5.1 TEACHING METHODOLOGY

Questions to be covered:

- 1) *Brief summary of teaching methodology used?* See below.
- 2) *Are specific learning objectives set for subject and courses?* Yes.
- 3) *Do students work from teachers' scripts or textbooks or other information technology form?* Multiple entries are in use (web based material, PP from lessons, textbooks in English and German, hand outs etc).
- 4) *Is problem-oriented teaching used? Yes; is teaching research-based?* Yes.
- 5) *How are courses and teaching evaluated? Yes. Has evaluation outcome any effect?* Yes, see below.
- 6) *What is the balance between theoretical and practical teaching?* Well within the ratio.
- 7) *How much real-life clinical exposure opportunity is offered i.e. hands-on work, 24-hour duty, acute cases, case responsibility, case follow-up, interaction with clients, practice management etc.?* Sufficient and more than adequate access to clinical material.
- 8) *To what degree is the principle of "first-day skills" followed and evaluated? How are clinical performance and clinical skills monitored (student log book?)* Log books are not used.

5.1.1 Findings

The students attend lectures, seminars and practicals. They also participate in practical work in the clinics, the school farm and extramurally.

The national curriculum is decided upon by the German authorities and is the same for all German veterinary universities. The Ordinance concerning the Certification of Veterinary Surgeons (TAppV, Annex 1, SER) states the knowledge and skills that is expected to be demonstrated by the students to successfully pass the course. Learning objectives are set for each subjects and courses.

Professors are the only members of the educational staff that are allowed independent teaching. They are expected to plan their courses so the national curriculum will be covered in an efficient way. Non-professorial teachers do not have this freedom and may only participate in "controlled teaching", meaning their responsibility of planning teaching is restricted to practicals and work in the clinics.

The foundation of the study material are textbooks, hands-out and material used by the teachers during lessons, and lecture notes either composed by other students or institutes which are then made available to the students. The e-learning platform "Vet-Learn, as well as instructive videos distributed by the school's media center, are also educational options.

With the installation of the computerized program "easy-Vet", the Faculty has the opportunity to present clinical cases to the students in every department/institute/unit that has the equipment to do so. This gives the teachers the opportunity to use problem-oriented teaching by demonstrating real-life clinical cases. The professors are required to fully cover the national curriculum, although they have full freedom to plan the execution of this curriculum.

Professors are evaluated after three years of obtaining a professorship before the professorship becomes permanent, and non-professional teaching staff are subjected to compulsory attendances on different areas.

The main course feed back evaluation method mentioned in the SER is the student's questionnaire which is distributed in the end of the course. A hardcopy questionnaire is handed out to increase the feedback rate and the topics covered are the course itself, the lecturer and the progress of the student.

The results are collected and evaluated. The evaluation results are made available to the Dean of Study Affairs and the Heads of Departments and Clinics, and also presented in a standardized form to the lecturers involved in an evaluated subject.

A theoretical approach to the studies is in general being used up until the practical year in the fifth year of studies. According to the SER the ratio between theoretical and practical teaching is very good as is the case load in different areas. However, according to the students' evaluation results they are not fully satisfied with the amount and quality of real hands-on training, and do not feel that the practical training offered manifests in the acquired actual skills these sessions should secure. The Faculty arguments that students may only expect to have the "first-day skills" at the end of their education, and not expect to be already qualified veterinarians ready for practice.

The students receive two semesters of practical training in the fifth year, and practicals are a part of the normal teaching methodology. According to the evaluation reports, the students are not fully satisfied with the clinical training and do not feel needed in the training sessions. The Faculty laments lack of staff, and expresses a desire for financial support to increase the support staff and thereby free teachers' time for lessons.

Practical exams are a possible option for exams, and the students are themselves responsible to provide evidence of completed prerequisites for the exam, both practical and theoretical, before registering for the exam itself. To what extent practical exams are being used is not mentioned in the SER, nor is a written record of practical skills acquired by the student.

Students participate in development of the curriculum via participation in the curriculum committee.

5.1.2 Comments

As the current curriculum can only be changed by the German authorities, this is outside of Faculty control. In general, standard teaching approaches are used in the Faculty. Additions to the curriculum and well-designed teaching methods are however under the control of the professors, and may be altered if necessary in order to optimize the courses in order to counteract the students' dissatisfaction with the current curriculum. The evaluations and suggestions obtained from the questionnaire evaluations may be systematically applied in order to achieve this improvement. Alumni are not involved in the development of curriculum.

The Faculty and students seem to disagree on the appropriate expectations regarding practical skills obtained prior to graduation. How the "first-day skills" apply to this has not been established. The current structure of the practical training is a source of concern for at least one part of students.

There is a lack of detailed documentation related to the practical skills achieved by each student. Moreover, the goal/s of clinical practicals aimed to achieve the day-one skills seems to have sometimes a heterogeneous interpretation among teaching staff.

Questionnaire evaluation results are an opportunity for communication between students and teachers. Systematic application (use) of the evaluation results is an available method of improving the education. It is not clear how and when the results of evaluation are made openly available as well as the actions undertaken as a consequence of them. According to some students, some teachers either underestimate this feed back or even do not stick strictly to its anonymity.

Outside veterinarians involved in the extramural practical activity of students are not informed about the results of the students evaluation and they are not asked to evaluate the students activity.

The requirements regarding Teaching Quality as they are laid down in Annex I of the SOP are met.

5.1.3 Suggestions

- The results of evaluation of students would ideally be public as well as the actions taken as a consequence of results analysis should be better clarified to students.
- The evaluation of the students should be anonymous during all different steps, principles of internal quality assessment should always be respected.
- A more progressive approach to practical hands-on activity should be considered, with a simultaneous/parallel teaching of practical applications and theoretical principles.
- Developing a log book or other type of written records for each section in the rotations including a list of skills that each student has to learn is encouraged.
- It should be considered to involve alumni more in the development and update of the curriculum.
- It should be considered to involve veterinarians accepting students for "praktikum" in the evaluation (feed back to the faculty) of the practical activities performed by the students.

5.2 EXAMINATIONS

Queries to be covered:

1) How often are students examined and when? Twice a year, in defined periods.

2) Are there external examiners? Very rare..

3) How many times can a student retake an exam? Twice – standard.

4) How are examinations structured? Depending on the subject and type of exam. All types used.

Practical exams are regular part of examinations.

5) Is the examination system effective? Is it required that students sit and pass examinations in basic and foundation subjects before being allowed to continue on to the later disciplines. Yes, borderline between preclinical and clinical subjects.

5.2.1 Findings

Examinations are generally held between semesters in March and April and in the summer in August and September. Examinations are oral or written exams as multiple choice question tests and/or essay questions, including practical and clinical examinations. Examinations may also be taken by external examiners. Final examinations are taken during the last semester.

Within the normal curriculum, students have the possibility to repeat an examination twice. After a second failure, the student must leave the school. For students who needed a longer period of time to reach the examination, only one retake is allowed. Successful preclinical examinations are a pre-requisite for entering clinical courses.

Examinations are monitored by a commission consisting of two parts, one for the preclinical veterinary examination and one for the veterinary examination. A student may request a different examiner if he/she has failed the first examination. A member of the commission must be present during a retake.

5.2.2 Comments

The system of examinations is a standard seen in many universities and veterinary schools. Taken into account high numbers of students exceeding 200 per year, oral examinations seem to be time-consuming and several persons must be involved in the examination process. The faculty is looking for alternative modes of examination.

It seems that in general, the success rate is quite high. It does not seem to be due to low standards but rather to the overall good quality of veterinary students. Teachers from other faculties who have the opportunity to compare students of different faculties across the university consider the veterinary students to be of high standard.

It is not often clear whether practical examinations can really assess individual specific (day-one) skills. Some practical examinations consist of protocols and reports from practicals.

The requirements regarding Examinations are in accordance with TAppV and as they are laid down in Annex I of the SOP are met.

5.2.3 Suggestions

- The faculty should seek for ways how to assess individual skills, especially in clinical subjects, which should result in a realistic list of day-one skills and methods of their assessment.

6 PHYSICAL FACILITIES & EQUIPMENT

6.1 GENERAL ASPECTS

Questions to be covered:

1) Brief description of campus, facilities with observations on condition, suitability etc. See below.

2) Adequacy of lecture rooms, laboratory and dissection/necropsy halls? Very good.

3) Vehicle availability to transfer students from site to site or to external establishments? Yes:

Ambulatory Service 2 VW-vans, Pig Herd-Health Service 1 VW van, Cattle Herd-Health Service 1 limousine, Breeding (cattle) Consultation Service 1 Ambulance van, Poultry Herd-Health Service 1 Mercedes station wagon and 1 faculty car.

4) Health and safety issues i.e. biohazard warnings, fire extinguishers, eye washes, sluices, chemicals, medicines and dangerous drugs storage? Generally yes.

5) Adequate facilities for training in food hygiene, carcass handling, access to slaughterhouse, the provision of laboratories for microbiology, toxicology, organoleptic and residue work? Yes.

6) Comment on suitability of site in terms of size, area, local animal caseload, access, transport etc. and availability of suitable equipment for teaching and research? Suitable or, most of them, very good.

6.1.1 Findings

The Department of Veterinary Clinical Sciences includes the internal medicine, surgery and herd health for companion animals (small animals and horses), new companion animals (birds, fish and reptile and amphibian), food animals (ruminants, pigs, poultry and fish).

Laboratories for practical lectures and lecture halls for clinical rotations students and smaller rooms for group work are available in all Institutes and Units (tables 6.3, 6.4 and 6.5 of SER, p69-70). The

Institutes of Virology, Pharmacology and Toxicology and Parasitology are now moving into new premises at the Biomedical Research Centre that will be shared between the Faculties of Medicine and Veterinary Medicine.

Diagnostic laboratories are also available from the majority of the Institutes and Units, open to students during their 5th year clinical rotations.

The Institute of Veterinary Food Science also has a foodstuff processing unit equipped for the production, processing and storage of meat products. Access to a slaughter house located in the proximity is regulated by a contract.

The Faculty is extremely well equipped for basic sciences, clinical studies (including food technology) and research: CT scan, MRI, digital X ray systems, ultra-sound equipments, 2D fluoroscopy, scintigraphy, intensive care unit for premature neonates, minimal invasive endoscopy, electron microscopy, cell sorters, molecular biology advanced technology equipment, among many other advanced technology equipment.

The Education and Research Station “Oberer Hardthof”, belonging to the Institute of Animal Breeding and Genetics (Faculty for Agricultural Sciences, Nutritional Sciences and Environmental Management) provides the facilities required for animal production and management.

All waste (general waste, litter and manure, cadavers, laboratory, clinical and radioactive waste) disposal and removal is centrally organised and comply with legal and safety requirements.

Diagnostic laboratory facilities are available and provide special diagnostic services to in-patients and out-patients from the different Institutes and Units and to the general public (for description, refer to p70-71 of the SER).

The Faculty operates a permanent emergency service for intensive care, small animals, horses, ruminants and pigs, and a limited emergency service specific for birds, reptiles, amphibian and fish.

Services are charged and the income partially reverts to the Institute/Unit.

Other facilities, such as central library, rooms for group work with specific books and other student support services (canteen, computer facilities, Wi-Fi, etc) are available.

Besides clinical cases from the Faculty and ambulatory services, animals from the Experimental Farm and food products, animal material is also available from slaughterhouses, stables and farms, including fish farms. Arrangements can be made with outside organisations (e.g. animal charity organisation, farms and companies) to provide further animals and material for teaching.

Safety and biosafety procedures are in use and taught. Health and safety warnings and equipments are available and working.

6.1.2 Comments

The available lecture halls for large groups of students are shared at University level. Lecture halls for smaller groups are available and allow for most of the teaching. Besides, students may use the seminar rooms of the Institutes/Units. The physical space and teaching equipment is good. Some of the lecture halls are too small for a whole class. However, the logistics of teaching room allocation is based on every-year experience that full numbers of students never attend lectures and the rooms seem to be

used efficiently. It does not seem that reconstructions of old lecture halls or even building new ones would be efficient in this perspective as well as in the perspective of the numbers of students anticipated for the future.

Different subjects are taught in facilities located in different buildings, according to animal species and, sometimes, services. Services are rendered to faculty units and to the outside by the relevant different Institutes/Units, in articulation with diagnostic laboratories. Facilities are easily accessible for students and very well equipped.

Not all buildings are adapted to handicapped persons, which is not possible in some cases. The new buildings are very well set in terms of safety and adaptation to handicapped people. In general terms, the safety requirements are met.

The requirements regarding Physical Facilities and Equipment as they are laid down in Annex I of the SOP are met.

6.1.3 Suggestions

- The Faculty should make an effort to maintain a close link to a slaughter house in the surroundings of Giessen, and to actively support the building of a new abattoir, financed by private stakeholders.
- Isolation facilities for horses and production animals could be improved, with the possibility of controlling high-risk infectious microorganisms in air and manure which is incorporated in the new clinical facilities planned to be finalised in 2014-15.

6.2 CLINICAL FACILITIES & ORGANISATION

Questions to be covered:

- 1) *Brief overview of facilities indicating departmental responsibilities* See below.
- 2) *Are there diagnostic laboratory facilities and do they carry out external work?* Yes.
- 3) *Comment on clinical facilities and organization of clinical services.* See below.
- 4) *Degree of specialisation with list of services.* See below.
- 5) *Is there a 24h Emergency Service (companion animals) , adequate hospitalization/treatment and isolation facilities and/or mobile clinic?* Yes.
- 6) *24 hr Intensive Care Unit?* Yes.
- 7) *Are there possibilities for additional animal materials from stables, farms, kennels, game reserves etc?* Yes.
- 8) *Discipline or species specific orientation ?* Both.
- 9) *List any advanced technology equipment (CT-Scan, MRI, Radiotherapy....).* e.g.CT, MRI, EPF, Ultrasound, Endoscopy, Direct transmission from surgery.

6.2.1 Findings

A large majority of clinical facilities are presently located in older buildings that are not in line with the growth and development of clinical practice. The work places at some locations appeared cramped and very tight. In all rooms, however, the level of maintenance is very high. The plans for new buildings are highly appreciated.

Department of Veterinary Clinical Sciences includes Clinic for Small Animals (Internal medicine and Surgery); Clinic for horses (Internal medicine and Surgery); Clinic for Ruminants and Pigs (Internal medicine and Surgery); Clinic for Obstetrics, Gynaecology and Andrology (large and small animals, and ambulatory service); Clinic for Birds, Reptiles, Amphibia and Fish; Unit for Animal Welfare and ethology; and Unit for Clinical Anatomy and Experimental Surgery.

Diagnostic laboratory facilities are present and the following institutes/clinics provide special diagnostic services to other institutes/clinics and the general public:

- Institute of Veterinary Anatomy, Histology and Embryology: Analysis of testicular biopsies (human, animal), isolation of stem cells (animal)
- Institute of Veterinary Pathology: Tumour and other biopsy diagnostics, autopsies and linked work
- Institute of Veterinary Food Science: Bacteriological and mycological diagnostics
- Institute of Hygiene and Infectious Diseases: Bacteriological and mycological diagnostics
- Institute of Virology: Virological diagnostics
- Institute of Parasitology: Parasitologic diagnostics (human, animal)
- Institute of Pharmacology and Toxicology: Analysis of *mdr1* defects in dogs
- Clinic for Small Animals: Haematology, cytology, clinical chemistry, MRT, CT, high resolution US, Endoscopy
- Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals: Semen evaluation, endocrine parameters, clinical chemistry, endocrine diagnostics
- Clinic for Ruminants and Pigs: Molecular diagnostics of infectious agents and heredity disease in pigs
- Clinic for Birds, Reptiles, Amphibia and Fish: Virological, bacteriological and parasitological diagnostics in birds, reptiles, amphibia and fish.

External samples are delivered by messenger or regular mail. Results of samples originating from faculty bound patients are directly feed into the patients documentation system, otherwise information is via mail, E-mail or fax.

The Ambulatory (Mobile) Clinic is run by the Ambulatory Service of the Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals. It operates on a 24hrs/day/year basis.

The present clinical facilities are adequate in the short-term perspective, but clearly inadequate for future needs and development in the clinical field. Thus, the new building plans, which are already visible, are highly appreciated.

The clinical facilities are in the process of rebuilding and renovation. The present physical facilities are located in older buildings which dictate subdivision and diversion of clinical teaching. However, the plans for the future clinical facilities seem to address this. The maintenance standard is very high, even in the older buildings.

Clinical sciences are divided between a number of departments/institutes but the division is logical and common to many veterinary teaching facilities.

The Faculty operates an emergency service 24hrs/day/year for small animals, horses, ruminants and pigs, and a limited emergency service specific for birds, reptiles, amphibian and fish.

The Institute of Hygiene and Infectious Diseases of Animals has provided the Faculty with a general Guideline for prevention of infection in animal clinics and institutes. Based on this guideline each institute and clinic has implemented its own strategy and guidelines, accounting for the specific situation.

Concerning food animals, swine presented at the clinics in general are not returned to the farms. Only on exception swine from hobby farmers may return. Hospitalised pigs are kept isolated from – for example – pigs held for teaching purposes.

Cattle hospitalised in the Clinic for Obstetrics, Gynaecology and Andrology are kept in isolated stalls.

A special isolation unit for highly suspected cases is with the Clinic for Ruminants and Pigs.

The Clinic for Horses has 5 well isolated stalls with 4 of them having a special entrance area.

Provisions to hospitalise dogs and other pet animals with an apparent infectious risk are with the Clinic for Small Animals. A special isolation unit for high risk pet-patients is with the Clinic for Obstetrics, Gynaecology and Andrology.

A 24/7 intensive care unit is present and running nicely.

The Faculty also has an animal ambulance which mainly brings in production animals.

A farrier, and an associated farrier school, are present and involved in the education of veterinary students.

Animal material is also available from slaughterhouses, stables and farms. Arrangements with an animal charity organisation charged of castrations of dogs, cats and other pet animals are planned.

Equipment, age, range and diversity of special diagnostic/therapeutic equipment is highly satisfactorily. Ultrasound, CT, MRI are present, radiotherapy is done in cooperation with an external partner.

6.2.2 Comments

The maintenance level is generally high. However, there is some variation in the overall level of biosecurity and safety within the Faculty. This is partly due to the condition of older buildings and it is expected to disappear after the move to new facilities.

The requirements regarding Clinical Facilities and Organisation as they are laid down in Annex I of the SOP are met.

6.2.3 Suggestions

- The rebuilding initiative by the university/faculty is to be appreciated and this is needed, and in the near future highly needed, in the clinical area. This should bring improved patient flow and facilities for all involved departments.

7 ANIMALS & TEACHING MATERIALS OF ANIMAL ORIGIN

Questions to be covered:

- 1) *What sources are available which provide access to animal material?* See below.
- 2) *Is there a working farm where students can do practical work in the animal production subjects?* Yes. *List animal species kept on teaching farm;* Cattle, pigs, sheep, goats, chicken, rabbits, dogs.
- 3) *Ratios students graduating versus clinical caseload pets / livestock / necropsies* All well within or exceeding the EAEVE ratios.
- 4) *Adequate fresh chilled or prepared material for anatomy?* Yes. *List methods of preservation;* Formalin washed in alcohol and presented/worked with on state-of-the-art tables with individual extraction of formalin/alcohol fumes
- 5) *Adequate necropsy material and is it balanced?* Yes.
- 6) *Is adequate clinical material available to enable staff to maintain and improve skills and is there a reasonable balance between small animal and large animal cases?* Yes.
- 7) *Are the students given adequate exposure to slaughtering of various species as well as to materials for supporting food hygiene training?* Yes.

7.1 Findings

The sources for access to animals and material of animal origin are:

1. Animals owned by the faculty itself for both teaching and research, in with beside the normal species there is also a very well equipped exotic and fish department
2. Patients admitted to the clinics
3. The working farm "Oberer Hardthof" is owned by the Faculty of Agriculture, but has a good relationship with the Veterinary Faculty (horses, cattle, swine, sheep, goats, poultry, rabbits and canines) and where practical courses and research are done
4. Slaughterhouses for bovines and swine
5. Visits to poultry, bovine and swine farms during the ambulatory services or practical studies, and extramural possibilities to fish farms, horse studs, zoos, slaughterhouses, etc.
6. Necropsies both from clinics, outside farms and external sources

According to the ratios calculated (the number of different animals/ necropsies versus the number of students), there is more than enough exposure for the students to all animals (See SER table 7.6, p87), both seen inside the faculty or seen on outside visits.

The anatomy department has plenty of prepared material for study and also has a regular supply of fresh material (see SER table 7.1, p76). Prepared materials are preserved in formalin 3% and are displayed on special vacuum tables to assure that formalin fumes are extracted straight away and don't enter the air inhaled by students or staff.

The Pathology department has plenty of necropsies with all different species presented in adequate numbers (see SER table 7.2, p77) and is well within the prescribed ratio.

In general there is an adequate caseload of patients in all clinical departments for both staff and students, with the exception of the swine caseload. However, this is compensated for by the very intensive farm visit schedule run by the swine unit. Time and workload seems to be the most important factor that limits staff in clinics maintaining their skills or develop new skills in order to improve themselves.

Students have the opportunity of performing post mortem inspection of a high number of cattle and pigs slaughtered. Also their exposure to milk and milk products, eggs and fish species is adequate.

Students' practical training on poultry is rather scarce, as far as practical food inspection is concerned. Extra material to support food hygiene training brought to the Faculty is adequate and students also have the opportunity to visit four foodstuff producing companies.

7.2 Comments

Not all animals and materials are available to the students to develop their skills within the facilities of the Faculty or the related farm, and a lot of experience has to be acquired by the students themselves in outside practical training (5th year) in both private hospitals and external slaughterhouses. The quality of this outside training is hard to evaluate and without a doubt differs a lot between individual students.

According to the students in the final practical year, there is a big difference in the "hands-on" experience in different clinical departments, some offering more possibilities to students to develop their skills than others.

The requirements regarding Animals and Teaching Material of Animal Origin as they are laid down in Annex I of the SOP are well met.

7.3 Suggestions

- The working farm "Oberer Hardthof" is very valuable to the teaching of veterinary students and it might be advisable to transfer the ownership this farm from the faculty of Agriculture to the Veterinary faculty, so optimal use can be made of all the animals available and hands-on experience for students during for instance the organ-based teaching can be improved.
- There should be a better follow-up of the experiences and skills developed of students in the obligatory practical training in private clinics and external slaughterhouses and experiences with this kind of education should be continuously exchanged between all involved parties on a very regular basis.
- There should always be great effort to increase the quality of exposure of students to live animals and materials of animal origin and all clinics should set a minimum of practical skills and clinical experiences that they will teach their students.

8 LIBRARY & EDUCATIONAL RESOURCES

Questions to be covered:

- 1) *Brief overview of library facilities* See below.
- 2) *Number of journals subscribed to and on-line services?* See below.
- 3) *Exchanges with other university libraries?* Yes.
- 4) *Central library indexing?* See below.
- 5) *Departmental libraries, accessible easily to students?* Yes, see below.
- 6) *Are journals, periodicals, standard texts sufficient?* Yes.
- 7) *Are the opening hours student-friendly and is there adequate staff?* Yes.
- 8) *Do students use the library well and is training offered as how to use it?* Yes.

8.1 Findings

There is a main university library, with computer access, located 4 km away from the veterinary campus. Chemicum, Heinrich-Buff-Ring, a subsidiary life science library is a branch of the above mentioned library. Shared with other faculties, located 1,5 km away. Offers textbook loan, computer access. Available library material listed in electronic catalogue (OPAC), which also provides access to electronic publications.

A university digital library (<http://dbs.ub.uni-giessen.de/digibib.php>), accessible from school network and home. Access to licensed University electronic material.

There are fifteen libraries belonging to individual departments on campus. Offers student access to textbooks, without possibility of home loan. Complete index of University library material and several online journals available to students on University online information system (<http://rzblx1.uni-regensburg.de/ezeit/>).

Student Learning Centre on campus, operated by student organization. Textbooks available for students on campus, without possibility of home loan of textbooks.

“Vet-Learn” (<https://vet-learn.uni-giessen.de>), an online e-learning center. Educational videos available online or by request.

The Chemicum library subscribes to 47 veterinary journals, and offers online access to 84 veterinary journals. Generally the number of online journals exceeds 30,000.

The departmental libraries are open during office hours (08.00-16.00). The Chemicum life science library is open every day from 8:30-21:00 except on Sundays. The student learning center is operated by one full time employee. The Chemicum library is manned by four fulltime, well educated employees with a part time/full time employee ratio of 2,5. Combined, these libraries offer students adequate facilities for studying.

The veterinary students make up 30% of the Chemicum library users, and the library made 18,430 loans to students in 2010. This indicates that the Chemicum is a very important asset in the veterinary students' learning.

8.2 Comments

In chapter 8.3 of the SER the Faculty recognizes that the distance to the Chemicum library is inconvenient to the students, although it is emphasized that the online catalogue relieves this problem to some degree. It is also mentioned that the study situation in this library is less than optimal for the students. This is mainly because of the age and structural organization of the current Chemicum library building. However, the current building is functional in meeting student needs, and the staff is accommodating in counteracting the shortcomings in the building.

The University offers a wide range of computers, located in different departments. Chip cards ensure access to Student Learning Centre computers every day, including after faculty office hours. It is apparent that the Faculty and the University are making a great effort to provide the students with computers or internet access to their personal computers. All information resources usual in standard universities and veterinary schools are available for Giessen students.

The requirements regarding Library and Educational Resources as they are laid down in Annex I of the SOP are met.

8.3 Suggestions

- None.

9 ADMISSION & ENROLMENT

Questions to be covered:

1) Is a selection procedure for admission in operation? Yes.

2) Is there a “numerous clauses” and what are the criteria used? Yes, a rather complex system of criteria, see text below.

3) What is the link between budget and the number of students? The numerous clausus is set up based indirectly also on budgetary considerations but outside the university. The number of students is directly dependent on a calculated ratio between the number of students and available teaching capacity. This number is the same for all German veterinary universities and any fluctuations in student numbers will have a comparative effect on teaching capacity.

4) Does the intake take account of the national need for veterinarians? Yes.

5) Does the admission procedure result in students who have the aptitude, knowledge base and motivation for veterinary studies? Not in all cases.

6) Does the admission procedure take into account the limitations of the resources available? Yes, but not by the faculty. See text below.

7) Is there a high drop-out rate and what are the reasons? Low, good quality students.

8) Does the admission process take into account accessibility to EU and foreign students and under what criteria? Yes, in competition with German students limited by quota.

9) What is the degree of internationality, participation on student exchange programs, is there a language barrier and if yes, what is the availability and frequency of English used for teaching? There are foreign students from both EU and non-EU countries. There is no language barrier for German students, some selective courses are taught in English. Foreign students must be able to study in German.

9.1 Findings

The numbers of students and the student flow are summarized as follows:

- Total number of undergraduate students 1321
- Total number of male students 189
- Total number of female students 1132
- Foreign students 44
 - - from EU countries 24
 - - from non-EU countries 20

Study in veterinary medicine is subject to admission restrictions. The University nor Faculty do not perform any pre-admission student interview and have no influence on the admission of students, as this is regulated by federal law. The University of Giessen has no means to influence and guide the number of students, the gender of students, and any pre-admission training.

All students must apply via a central agency in Dortmund. 210 students per annum are accepted in Giessen. It is determined according to teaching capacities and teaching staff in the institutes. According to this regulation, 182 students have to be accepted. However, in order to avoid law suits related to the identification of a still open place, the Faculty in general accepts 210 students per year. Due to high numbers of high school graduates trying to get into university, the number of students accepted in 2010 was 226, which was an exception.

Study in veterinary medicine requires a higher education entrance qualification. 20% of the students get admission solely on the basis of their grades (this quota comprises foreign students as well). 20% get admission on a combination of grades and waiting time, 10 % of the remaining 60 % (that is 6 % of all places available in Giessen) are allocated on the basis of the grade (for the higher education entrance qualification which usually is the "Abitur") combined with the criteria "Berufsausbildung" (apprenticeship).

Foreign students (both EU and non-EU citizens) are accepted according to their grades and compete with German students in this group. This entire admission group composed of foreign and German applicants makes up 20% of the yearly admissions. Approximately 3% of the total number of undergraduate students are foreign students.

PhD programs are offered in English. As German students are more interested in the Dr.Med.Vet. Programme, the English PhD program attracts international applicants to the Faculty.

9.2 Comments

Neither the University nor the Faculty have any influence on the number of students admitted. According to the SER, 80% of the basic Faculty funding is distributed by the University mainly based on the number of students. This indicates that although the Faculty may not control the number of students admitted, it does have a financial interest in high numbers of students (SER 9.3, p 99). On the other hand, high numbers of students require significant additional resources for assuring practical training and hands-on experience complying with the EAEVE standards (ratios and indicators), including equipment, material, transportation etc.

The competition for a study place at the Veterinary Faculty is strong, and the ratio between applicants and admissions is high. The Faculty has an overall low drop-out rate, indicating that the admission procedure is effective.

As there is no English Program on the undergraduate level, any successful foreign student is required to have fluent abilities in the German language. This limits the availability of the study for non-German speaking foreign students.

The degree of internationality on the undergraduate program is rather low.

The requirements regarding Admission and Enrolment as they are laid down in Annex I of the SOP are met.

9.3 Suggestions

- A lower numbers of students (without changing the number of teachers and staff) would surely contribute to improving the quality of veterinary education in terms of hands-on experience, day-one skills and efficiency of teaching and research in German veterinary schools. However, the team is aware that this issue is out of the hands of the Faculty and University.

10 ACADEMIC TEACHING & SUPPORT STAFF

Questions to be covered:

- 1) *Ratio of teaching staff versus students is?* 5.92
- 2) *Ratio of teaching staff versus support staff is?* 0.87
- 3) *How and by whom are all staff appointments and staffing levels decided?* See below.
- 4) *Percentage of staff who are veterinarians?* 88 %.
- 5) *Comment on staff ratios in relation to the SOP.* Within range.
- 6) *Comment on staff shortage or miss-proportion.* See below.
- 7) *Can staff move within the establishment?* Yes, see below.
- 8) *Are posts which become vacant automatically filled?* No not necessarily.
- 9) *Are certain staff able to be flexibly deployed i.e. for clinical services etc.?* Yes.
- 10) *Does the establishment encourage staff to acquire additional skills and training?* Yes.
- 11) *How free is the establishment to decide staffing levels and benefits?* To a degree but basic salary is fixed.
- 12) *What search criteria are being used for employment of senior level teaching staff?* Internationally advertised.
- 13) *Are searches for professor positions internationally advertised?* Yes.

10.1 Findings

It is clearly evident that there is a very high team spirit and desire to cooperate among the scientific and technical staff at the Faculty. All staff is dedicated, motivated and very innovative and entrepreneurial.

		SOP
Ratio of teaching staff versus students	5.92	8.85-10.42
Ratio of teaching staff versus support staff	0.87	0.53-2.20

The ratio of teaching staff versus student and the ratio of teaching staff versus support staff are satisfactory when compared to the standard. However, the faculty expresses a need for more administrative personnel, particularly within clinics and diagnostic services.

Most academics with administrative duties, e.g. the deans and vicedeans have research and teaching obligations along with their administrative duties. A reduction in required teaching hours is employed but because more and more administrative tasks are transferred from the central university level to the faculty level without simultaneous transference of technical staff, there is a need for more technical staff.

Furthermore, the number of animal care takers is also low.

Veterinarians constitute 195.75 FTEs of a total of 223.25 FTEs, i.e. 88%. In certain areas such as Anatomy, Physiology, Biochemistry, Pharmacology and Toxicology, and Parasitology, positions have been or will be filled with highly qualified non veterinarians (e.g. biologists, medical doctors).

Allocation of staff to the faculty is decided by the “Presidium” and is to some extent based on tradition though ratio of scientific staff to professors seems to be somewhat above average when compared to other faculties gives the impression that at least some consideration has been given to the extra teaching load and duties emerging from the veterinary curriculum.

Decisions upon staff allocation are made by the Deanery. Whenever structural questions are touched, the Committee for Structural Development and the Faculty Council has to be heard. There is no fixed mathematical procedure and allocation considering teaching and clinical duties as well as research.

Salaries and benefits are based on a fixed scheme, the W-Besoldung, which consists of a basic salary and benefits from distinct accomplishments, e.g. in research, teaching or administration.

Academic posts are internationally advertised and selection is based on merits/performance in science and teaching. For professorships, potential candidates are also invited to an interview.

10.2. Comments

The faculty is lucky to have dedicated, enthusiastic and open-minded personnel, from professors to support staff. The same is true for students, who are well appreciated within the university as excellent students.

The faculty experience difficulties in recruiting professors and finds that this may be due to limited numbers of applicants and the amount of staff/support staff especially in the clinical area.

The Faculty notes that there are too few tenured academic positions. For administrative personnel, the salary outside the university is higher and more attractive.

The team noticed that the junior academic staff expressed concerns about a very great work load and to some extent also a lack of clear carrier tracks within the university.

The requirements regarding Academic, Teaching and Support Staff as they are laid down in Annex I of the SOP are met.

10.3 Suggestions

- It is suggested to increase, if possible, the number of tenured academic positions and to improve the teacher/student ratio
- Junior academic staff (and others) may benefit from an annual, individual carrier interview with the department head/professor in charge to help junior staff develop in the correct direction for a professional university career.
- A system for motivating also technical staff through offering of a permanent learning program (life long learning) could be considered.

11 CONTINUING EDUCATION

Questions to be covered:

- 1) *Is Continuing Professional Education (CPE) in the objectives?* Yes.
- 2) *Is a CPE programme in place?* Yes.
- 3) *Who is the CPE programme aimed at (practitioners, state veterinarians, specialists, production animal/herd health veterinarians, small animal veterinarians)?* Mainly practitioners.
- 4) *How is the CPE structured?* See below.
- 5) *How is income generated by CPE allocated and used?* Partly (mostly) to the faculty.
- 6) *Is CPE mandatory for veterinarians?* Yes.

11.1 Findings

CPE (Continuing Professional Education) is in the objectives of the faculty, and has to be accredited by “the Academy for Continuous Veterinary Training”.

The CPE programme is in place and is also obligatory for the faculty to organize. It is organized with suggested courses from each department and individual researchers and the faculty collects all the suggestions for approval by the Academy for Continuous Veterinary Training.

The CPE courses are mainly aimed at practitioners and veterinary specialists (See table 11.1 SER p107). Courses are organised by the separate department and/or professor. The income generated is mainly kept by the organizing party except for a small fee for use of the facility of faculty.

Registration and attendance are logged with the Academy for Continuous Veterinary Training.

This CPE is mandatory for all veterinarians, with 20 hours needed per year for practioners and 25 to 40 hours for veterinarians with special accreditation.

11.2 Comments

As seen by the high levels of attendance the CPD courses are highly appreciated.

The requirements regarding Continuing Education as they are laid down in Annex I of the SOP are met.

11.3 Suggestions

- It is suggested that courses are also offered to state veterinarians, especially in the fields of epidemiology, and food hygiene and food production.

12 POSTGRADUATE EDUCATION

Questions to be covered:

1) Outline the types and structure of post graduate research training See below.

2) How many EBVS-residency programmes are approved and in which disciplines? 12 programmes approved and 3 in preparation – see below.

How many College Diplomates are on staff and how many residents are enrolled? 32 diplomates, 20 interns and 26 residents.

3) Is there a formal rotating internship program in place? No

4) Does a Masters or PhD programme exist and what structured training is given? A PhD is offered (see below).

5) Are there any minimum publication requirements for postgraduates programs? No.

12.1 Findings

There are 4 types of postgraduate education offered by the Faculty, for professional and academic tracks:

Professional tracks

European Diplomates - The Faculty had, in November 2011, 32 diplomates that were members of the teaching staff, being engaged in graduate and postgraduate teaching, in research and in clinical services rendered to the community. Twelve EBVS residency programmes are offered and the 20 interns and 26 residents that are presently being trained are officially employed within the Faculty.

Specialists – the Faculty offers training, according to German regulations, to veterinary specialists. The majority of junior lecturers working in clinical services are either specialist or trainees - these are subjected to examination by the state veterinary chambers and acknowledged by this Institution.

Academic tracks

Dr. med. vet – or, to non-veterinary graduates, Dr. biol. anim. – usually has a 3 years' duration and, after completion of a scientific project, students must write a thesis which will be presented and subject to a viva examination by a jury. Students are supported either by a fellowship or by part-time clinical work, and they participate in practical clinical work and undergraduates supervision. "Scientific assistants" are hired for 5 years and are expected to graduate within this period. The number of new graduates is 80 to 100 per year.

PhD – offered since 2003 by the faculties of Medicine and Veterinary Medicine as a combined title, this structured course (comprising core courses, elective subjects and research project) is mostly followed by foreign students that must present evidence of adequate funding before entering the program.

12.2 Comments

The Faculty has strongly invested in Diplomates of Colleges from the European Board of Veterinary Specialisation, which represents an added value for both undergraduate and postgraduate teaching and training and to the quality of the services rendered.

The high rate of veterinary graduates choosing to pursue post-graduate education is indicative of both a German tradition and the quality of teaching/training offered by the Faculty and also contributes to the scientific performance and visibility of the Institution.

The requirements regarding Postgraduate education and as they are laid down in Annex I of the SOP are met.

12.3 Suggestions

- The effort of the school to develop training activity for European college specialization should be continued and further addressed to yet uncovered areas such as public health and animal welfare and behavioural medicine.
- The PhD programme could be further encouraged, as it is an interesting offer for foreign students and could also be important for German students considering an international professional path in research and academia.

13 RESEARCH

Questions to be covered:

- 1) *Briefly outline the research commitment and concepts* See text below
- 2) *Is there sufficient use of existing research to introduce undergraduates to the concepts?* Very good research, little motivation for undergraduate students, more for post-graduate students.
- 3) *Is the research effort cohesive or fragmented?* Fragmented, on a personal basis, but with many cooperative research projects within and between departments.
- 4) *Is there a clear research strategy within the establishment?* No and probably no need for this.
- 5) *What is the degree of research funding? (government, grants, private-public ?)* Mostly governmental funding agencies, partly through the University budget. In specific cases (pharmacology, some clinics) industry/contractual research, clinical research, joint research biomedical research,
- 6) *Number and type of PhD programs* See Chapter 12. Low interest in the PhD program, mostly interest in international students.
- 7) *International research collaboration ?* Individual according to the department.

13.1 Findings

The Faculty covers a wide range of research activities; each professor is expected to establish his/her own research activities. They range from the study of membrane transporters over the molecular characterization of animal pathogens or food of animal origin, the pathophysiology of reproduction and the development of innovative diagnostic and therapeutic methods. Both individual and joint research projects run in the faculty.

The research activities generated an income amounting up to about 2,450,000 € per year (2008: 2,586,322 €, 2009: 2,306,077 €; 2010: 2,470,284 €) According to the ranking list of the German Research Foundation, the Justus-Liebig-University Giessen is the leading research university (place 1) in the field of Veterinary Medicine and Agriculture.

The curriculum of veterinary education in Germany does not foresee the involvement of undergraduate students in research due to high teaching load. The Faculty allows students participation in research activities during their undergraduate education. They have the opportunity to spend a maximum of 350 hours also in an institute of a university with a scientific medical discipline. Students choosing this type of practical instructions are automatically involved in ongoing research projects. Individually, student can also join ongoing research projects in the hospital and clinics. In addition, 15 elective courses are highly research oriented.

The current legislation concerning the certification of veterinary surgeons does not aim primarily to involve undergraduate students in research. This is in agreement with legislation related to the post-graduate education to obtain the degree of a doctor in medicinae veterinariae (Dr. med. vet.) or PhD, requiring that undergraduate education has been successfully completed. Out of 585 students graduating from veterinary medicine between 2008 and 2010, 264 students successfully finished their post-graduate education with the degree of a Dr.Med.Vet. and 7 students from the faculty obtained the degree of a Ph.D. (46 %). This highly qualified cluster of students is the pool for recruitment of academic and scientific staff for university and non-university institutions.

13.2 Comments

Individual motivated students can join ongoing research projects, based on their personal interest and activity. There is no specific formal motivation and/or from the faculty. There is more motivation for

post-graduate research carrier within the German system (Dr. Med. Vet.) than for the PhD programme, due to the local system of career promotion.

There is no integration or definition of faculty priorities. The faculty's philosophy is based on the bottom-up approach. Taken into account the situation and the quality of research, the faculty has currently no motivation to change it.

The requirements regarding Research as they are laid down in Annex I of the SOP are met.

13.3 Suggestions

- As the Justus-Liebig-University Giessen is the leading research university in the field of Veterinary Medicine and Agriculture, it could be considered to put more emphasis on motivating more actively talented veterinary students for research. The reputation of a faculty relies on the quality of all types of graduates, including their competitiveness in research at a national as well as an international level.

EXECUTIVE SUMMARY

The team experienced a very friendly welcome and was professionally treated and served throughout the entire site visit and the team was supplied with all further information asked for.

The professional self-evaluation report was a most helpful tool, reflecting the true status of the Veterinary Faculty at the JustusLiebigUniversity, Giessen. It was easy to read and in an exemplary way it explained to the site visiting team the special national requirements in Germany (the TAppV and other regulations).

A clear organization focused on research and research based teaching coupled to a foresighted strategy has given the faculty its strong research and teaching position. Apart from this the financial status of the faculty is healthy and gives the Dean and his team a wide range of opportunities to proceed with a carefully planned construction programme. This includes e.g. the construction of new clinical facilities.

These will be beneficial to the high quality level of teaching and clinical services provided to students, animal owners, and community. And also increase the already very good opportunities for training of diplomates supported by 12 residencies of European colleges of veterinary specializations. The system of clinical records and its use within the faculty is also a good example of a successful project.

The clinical caseload is impressive and contrary to many other faculties the Giessen faculty has managed to keep a very high caseload of production animals and at the same time introduce and evolve a high standard herd health teaching and service on e.g. swine diseases.

The quality of the teaching and the learning environment is generally excellent and all ratios are met or exceeded.

The team has identified several other strong points.

The faculty benefits of the support from the university in such areas like library, access to electronic resources and especially integrated research facilities. This situation will improve further with the move of some departments and clinics to new buildings.

Across the faculty, from basic sciences to the clinics, there are several examples of well performing units, with excellent professional reputation, teaching and research.

The faculty is lucky to have dedicated, enthusiastic and open-minded personnel, from professors to support staff. The same is true for students, who are well appreciated within the university as excellent students.

The faculty should think of better exploring the potential of the new clinically oriented curriculum and the caseload flow for further increase not only in students' hands-on experience but also in its individual assessment. The organization of practical clinical teaching between propedeutics and clinical rotations, and high direct teaching load in this part of the curriculum should be re-thought.

There is a variation in the quality of practical clinical teaching among different clinical units and disciplines. In general, undergraduate students should get more opportunities to take advantage of the caseload flow and of experiencing teachers on the floor.

There is some variation in the overall level of biosecurity and safety within the Faculty. This is partly due to the condition of older buildings and it is expected to disappear after the move to new facilities.

The teaching farm is a very important tool for practical teaching. Therefore, the team supports the Faculty's intention to renovate it for teaching and research purposes. On the other hand, the farm is currently used mostly for the two-week stays of students in the first part of their study. The potential of the teaching farm can certainly be better explored, especially if it is renovated properly.

Some of the subjects, especially basic and animal production disciplines are not taught by the Faculty departments. Although their programs are veterinary oriented, it seems beneficial for the faculty to have direct impact on their quality. Therefore, the team supports the idea of seeking ways how to re-integrate the Institute of Animal Breeding and Genetics into the Faculty structure, like it is in many other European veterinary schools.

The Faculty needs more staff in many departments and clinics, taking into consideration high numbers of students, the need for more intensive practical clinical teaching and increasing administration load.

Veterinary medicine is a fast developing field. New integrated concepts, like stable to table approaches, herd health management, veterinary public health, and animal welfare emerged and became important. A modern veterinary school should teach students analytical thinking and solving problems, which is in general terms even more important than specific individual skills. These concepts must be presented to students as a whole and not *per partes*, in fragments. Therefore, as in almost all veterinary schools, a better coordination, better horizontal and vertical integration and better communication among all organizational units is strongly recommended to cope with these new challenges.

Overall the team found no indications of Category I deficiencies at the Veterinary Faculty at the JustusLiebigUniversity, Giessen.

Annex 1 Indicators (version date: LyonGA, 2011)

Ratio	Numerator/Denominator	1/Denominator faculty figures	Established range of denominators	Notes
R1 p102 SER	223.25/1321	1/5.92	8.85-10.42 (UL 9.11)	Above range = better than
R2 p102 SER	N/A		8.75/12.54 (UL)	There is no non-vet students
R3 p102 SER	195.75/1321	1/6.75	10.62-12.62 (UL 11.22)	Above range = better than
R4 p102 SER	195.75/195.6	1/1	4.91-7.21 (UL 2.54)	Above range = better than
R5 p102 SER	223.75/194.75	1/0.87	0.53-2.20 (Ratio)	Within range
R6 p50 SER	2346/1414	1/0.60	0.51-0.36 (LL 0.59)	Above range = better than
R7 p50 SER	720/694	1/0.96	1.88-2.21 (UL 2.12)	Above range = better than
R8 p50 SER	94/3760	1/40	0.51-7.87 (Range)	Above range
R9 p51 SER	238/3760	1/15.79	6.00-42.26 (Range)	Within range
R10 p51 SER	238/250	1/1.05	0.05-0.82 (Range)	Above range = better than
R11 p87 SER	195.6/1666	1/8.52	2.47-1.73 (LL 2.03)	Above range = better than
R12 p87 SER	195.6/10002	1/51.13	0.51-7.87 (LL 8.94)	Above range = better than
R13 p87 SER	195.6/96	1/0.49	0.20-0.09 (LL 0.41)	Above range = better than
R14 p87 SER	195.6/2623	1/13.41	1.78-0.92 (LL2.29)	Above range = better than
R15 p87 SER	195.6/1552	1/7.93	0.58-0.37 (LL 0.41)	Above range = better than
R16 p87 SER	195.6/12349 195.6/14444	1/63.13 1/73.84	48.74-37.94 (LL 51.34)	Above range = better than
R17 p87 SER	195.6/176 196.6/931	1/0.9 1/4.74	0.07 (LL)	Above range = better than
R18 p87 SER	195.6/577	1/2.95	0.75-0.46 (LL 0.96)	Above range = better than
R19 p87 SER	195.6/306	1/1.56	0.26-0.12 (LL 0.40)	Above range = better than
R20 p87 SER	195.6/504 195.6/1019	1/2.58 1/5.21	1.26-0.89 (UL 1.73)	Above range = better than

Annex 2 Listing of Category 1 Deficiencies

The team has no suggestions of Category I deficiencies.

Annex 3 Student`s Report (optionally separate)

The student`s findings have been discussed fully by the team and they are incorporated in the full report.

DECISION BY ECOVE: FULL APPROVAL