JUSTUS-LIEBIG-
UNIVERSITÄT
GIESSEN

Faculty of Veterinary Medicine Giessen

Self Evaluation Report
for the European Association of Establishments for Veterinary Education

Giessen, Mai 2003

Self Evaluation Report (SER)

INTRODUCTION

The origin of the Faculty of Veterinary Medicine dates back to the year 1777, when the first lectures in the field of veterinary medicine (animal healing) were offered by the Faculty of Economy of the former Ludwigs-University, the “Ludoviciana”, the present Justus-Liebig-Universität Giessen. During its further development education in veterinary medicine was integrated into the Medical Faculty, with regular classes starting in 1828. Admittance to qualify for a higher veterinary education required a “highschool diploma” (Matura), at the same time the Medical Faculty was granted the right of promotion to a “Dr. in arte veterinaria”.

In 1914 the Faculty of Veterinary Medicine emerged as an independent faculty.

As a result of the destructions in World War II and the political situation the Ludwigs Universität was suspended with the exception of the Faculty of Veterinary Medicine and the Faculty of Agricultural Sciences, leading to the formation of a College for the Culturing of Soil and for Veterinary Medicine (Hochschule für Bodenkultur und Veterinärmedizin). This college formed a nucleus for the restoration of the whole university, which was refounded in 1957 and given the new name “Justus-Liebig-Universität Giessen” in honour of the great scientist Justus von Liebig, who acted as a professor in chemistry for 28 years from 1824 to 1852.

According to the Hessian University Law passed in 1971 the division of universities into faculties was abandoned and replaced by the division into “Fachbereiche” (departments). However, other than most faculties, the Faculty of Veterinary Medicine maintained its integrity and only changed the name from “Faculty” to “Fachbereich für Veterinärmedizin und Tierzucht” (Fachbereich of Veterinary Medicine and Animal Breeding). With the restructuring of the former Agricultural Faculty, the Institute of Animal Breeding and Genetics of Domestic Animals was moved in 1985 from the Faculty of Veterinary Medicine to the Faculty of Agricultural Sciences. These organisational changes, however, did not affect the involvement of the Institute of Animal Breeding and Genetics of Domestic Animals in the veterinary curriculum. This involvement is based on strong academic interrelationships. Similar interrelationships exist with other institutes of the Justus-Liebig-Universität Giessen which have led to a fruitful interdisciplinary cooperation.

The Faculty of Veterinary Medicine greatly appreciates the measures taken on a European level seeking to ensure that undergraduate veterinary training is of a comparably high standard throughout the European Union. With evaluation being the core of these measures, the faculty was submitted to a first evaluation from November 29th to December 2nd, 1993, by the Advisory Committee for Veterinary Training. A draft report has been provided to the faculty with letter of March 3rd, 1995. So far, however, no final report has been made available to the faculty. In view of the forthcoming evaluation the faculty would therefore appreciate to receive the final report of the first evaluation. In addition the faculty supports all measures which relate to setting into effect the recommendations and conclusions passed forward with the evaluation report.

Prof. Dr. Dr. h. c. Bernd Hoffmann
(Dean)

CHAPTER 1 OBJECTIVES

1 FACTUAL INFORMATION

In the Federal Republic of Germany veterinary education is regulated by the "Verordnung zur Approbation von Tierärztinnen und Tierärzten" (TAppO). An English translation of this "Approbationsordnung" has been added to the Self Evaluation Report (SER).

Literally translated the title "Verordnung zur Approbation von Tierärztinnen und Tierärzten" reads as "Ordinance concerning the Certification of Veterinary Surgeons and concerning the amendment of other regulation relating to Certification Law". This ordinance was amended in November 1999 and is the present basis for the veterinary education in Germany.

The objectives of veterinary education are clearly spelled out in Article 1, para 1. It contains the following requirements:

"The objectives of the training is an academically and practically trained veterinary surgeon who is capable of practising the veterinary profession responsibly and independently within the meaning of Section 1 of the Federal Veterinary Code:

1. the fundamental skills of veterinary medicine, the scientific, interdisciplinary and methodological skills,
2. practical skills,
3. spiritual and ethical foundations and
4. a professional attitude committed to the well-being of humans, animals and the environment

shall be imparted as they are necessary for the entire scope of the veterinary profession."

In order to achieve these objectives Article 1, para 2 lists the prescribed contents of veterinary education, laid down in detail in Annex 1 of the TAppO. In the Federal Republic of Germany all institutions of veterinary education are bound to this list of topics which has to be covered in the number of hours indicated.

Article 2 of the TAppO requires that teaching is split into lectures, seminars, clinical demonstrations, practicals (exercises) and instructions (exercises) at the animal. It also requires a certain amount of interdisciplinary teaching and the offering of elective courses. In addition Article 2 regulates that the compulsory and elective courses shall not exceed 33 hours per week per student.

Meeting these objectives is the utmost goal of all veterinary establishments in Germany, also of the Faculty of Veterinary Medicine at the Justus-Liebig-Universität Giessen. In order to guarantee and to control success the faculty operates on the following basis:

1. Based on the philosophy of Humboldt of an inseparable unity of research and teaching the faculty tries to hire the most qualified C3- and C4-professors for the respective discipline. After having been posted as a professor it would be the prime responsibility of these people to adequately cover their respective subject or discipline.
2. The committee for study affairs, appointed by the faculty council, is headed by the Dean for Study Affairs and deals with all matters related to teaching. The Committee for Study Affairs consists of three members from the group of professors, three members of the group of students and one member of the scientific staff. In addition two members of the student council can participate in an advisory function. As has been experienced in the past, students participate actively in this committee, guaranteeing an active feedback system and hence allowing for corrections where necessary, e. g. in the execution of practical courses.

   Evaluation of universities in the Federal Republic of Germany is not yet a common procedure. It is, however, now required by the Hessian University Law and the Justus-Liebig-Universität Giessen has started implementation in 1998.

   In respect to evaluation the Faculty of Veterinary Medicine has pointed out to the president of the Justus-Liebig-Universität Giessen that it will be evaluated by the EAEVE and this procedure has been accepted as a substitute for the evaluation organised by the university administration. In addition the Faculty of Veterinary Medicine has organised during the past winter semester 2002/2003 an evaluation of the teaching quality (see chapter 5). In addition students have been asked to come up with a general assessment of the curriculum and the teaching facilities (see chapter 5).
3. Based on the amended Hessian University Law, mutual agreements on development in respect to teaching, research, staff and structure have to be developed and signed by the faculty (dean) and the president of the university. These mutual agreements cover a period of two years. Following this period the

achievements will be evaluated. Depending on the results presidential actions will be taken and a new mutual agreement has to be developed for the next two years. At present the first “draft memo” has been discussed between the president and the faculty, the final memo has still to be developed.

4. The TAppO exactly lays down the points of time when students have to pass an examination during the course of veterinary education. The passing rate and the grades obtained are also taken as a measure for assessing the achievements of the establishment.
5. To secure a straightforward student-career, based on the execution of the TAppO, the faculty has passed Rules for Study which got into effect on January 14, 2002. A copy is enclosed.

2 COMMENTS

Since 1968 admission of students to the Faculty of Veterinary Medicine at the Justus-Liebig-Universität Giessen is regulated by a numerus clausus. That means that depending on the “capacity” of the teaching staff a given number of students is assigned to the faculty by a central agency (Zentralstelle für die Vergabe von Studienplätzen, ZVS) where students are selected according to their quality of highschool diploma (Abitur) and other credit points. A certain number of students applying for admission through this central agency are selected for an interview by the faculty, 40 out of 120 may then be accepted through this procedure. Thus out of the total of 215 students accepted per year for the veterinary curriculum about 20 % are accepted after an interview. An investigation comparing the success of the students assigned after an interview or assigned directly through the central agency has been started; the first results will hopefully be available during the time of the visit in June 2003.

In accepting 210 to 220 students the ratio of students to teaching staff is 1 to 7.56 (see chapter 10). This ratio is considered too wide. In spite of the fact that about 20 percent of the students fail the first examination (Physikum), the number of students

per year does not decrease until the 9th semester (final semester) due to the fact that vacancies are refilled by students coming in from other universities, e. g. Budapest and other non-German universities where student fees are obligatory.
In order to give an optimal education and to likewise maintain excellency in service (treatment of patients, pathological and other diagnostic services) and research, a constantly high motivation and devotion to the faculty and the students are required from all teaching and service staff. This, of course, is not always easy to maintain, particularly in respect to the fact that there are no perspectives in changing the ratio of students to academic staff.

3 SUGGESTIONS

The TAppO has been in effect since 1. August 2000. Its implementation asked for a tremendous effort by the faculty, particularly since for a period of about two years implementation of the old and new curriculum had to be run in parallel. Meanwhile some flaws of the new TAppO have become obvious, particularly relating to the extension of the subjects of Food Science. A modest correction is requested by our faculty. In addition efforts should be made to at least improve in some way the ratio of students to teaching staff. This however is certainly a political decision and somewhat out of the scope of this SER. A suggestion brought forward by the veterinary profession was to increase the so-called “Curricular-Normwert”, a value resulting from the grading of the study and dictating the ratio of students teaching staff. However, from a faculty point of view the teaching situation would already greatly benefit from an extension of the technical staff.

CHAPTER 2 ORGANISATION

1 FACTUAL INFORMATION

Details of the establishment

Name of the establishment: Fachbereich Veterinärmedizin

Adress: Frankfurter Str. 94, D-35392 Giessen

Telephone: +49-641-99-38000

Fax: + 49-641-99-38009

E-Mail: dekanat@vetmed.uni-giessen.de

Website: Establishment may be reached through the website of the university, the address is as follows: http://www.uni-giessen.de/fb18/

The establishment is part of the: Justus-Liebig-Universität Giessen, Ludwigstr. 23, 35390 Giessen or Postbox 11 14 40, 35359 Giessen

Telephone: +49-641-99-12000
Fax: +49-641-99-12009
E-Mail: Hormuth@admin.uni-giessen.de

2.1: Organisation and Legal Background:

Management and education at universities and colleges in the state of Hessia is regulated by the Hessian University Law (Hessisches Hochschulgesetz, HHG) as amended and passed on July 31st, 2000.

Section 4, Articles 38 to 56 deal with the organisation of the university. The following chapter is an attempt to briefly describe the administrative structures, based on a commented diagram.

2.1.1: Central Level: Organs of the University, Election Procedures, Appointments and Responsibilities

2.1.1.1: Central organs, appointments

The university is governed by democratic principles. As is indicated in Fig. 2.1 there are four groups of members of the university entitled to vote for the respective university councils:

- a) professors (C2 to C4 professor)
- b) non-professorial scientific staff (Wissenschaftliche Mitarbeiter)
- c) administrative/technical staff
- d) students

Each group may form different parties standing up for election (equivalent to political parties). The two central university councils are the Senate (Senat) and the Election Assembly (Wahlversammlung); the session lasts for 2 years.

Senate:

Distribution of the seats in the senate is as follows:

- group of professors: 9 seats
- group of students: 3 seats
- group of non-professional scientific staff: 3 seats
- group of the administrative/technical staff: 2 seats

The senate is chaired by the president, who, as other members of the university administration, has only an advisory and not a voting function.

Election assembly:

It consists of 43 members. These are the members of the senate plus 13 professors, 7 students, 4 members of the non-professorial scientific staff and 2 members of the administrative/technical staff.

Thus in both councils the group of professors has a one-vote-majority.

President and vice-presidents:

Main responsibility of the “Wahlversammlung” is to elect the president after public announcement of the position and an interview procedure also involving the senate. Term of office is 6 years, re-election is possible. Final appointment, however, is through the Hessian Ministry for Science and Art (Hessisches Ministerium für Wissenschaft und Kunst, HMWK).

On proposal by the president the election assembly may elect the first vice-president, term of office is 2 years. If proposed by the president, a second vice-president may also be elected.

Chancellor (Kanzler):

The chancellor of a university is appointed by the Hessian Ministry for Science and Art after nomination by the president following counselling with the senate. Term of office is 8 years. [1)] The ministry may ask for a list of three candidates for choosing one.

Präsidium:

The president, the two vice-presidents and the chancellor form another university body, the so called “Präsidium”. Decision of the “Präsidium” is by majority vote, in case of a deadlock situation the vote of the president decides.

2.1.1.2: Responsiblities

In a simplified manner the senate can be viewed at as the legislative organ, the “Präsidium” as the executive organ of the university.

Senate:

Article 39, HHG, lists the responsibilities of the senate. A distinction is made between three levels of competence:

a) to decide, b) to approve, c) to develop an opinion.

Among other matters the senate has to decide about:

- the developmental plan of the university (Entwicklungsplanung)
- orders regulating research, teaching and examinations
- introduction or suspension of courses of studies.

Among other matters the senate has to approve of the

- structuring of the university into faculties (Fachbereiche)
- the orders of the faculties (Fachbereiche)

1) This does not apply to those chancellors who were in a permanent position prior to passing the Hessisches Hochschulgesetz in 2000.

The senate has to develop an opinion on
- the proposal of the faculties for the appointment of professors
- the introduction or suspension of central scientific and technical units.

Article 39 further states that the senate supervises the management of the “Präsidium”; the senate discusses the report presented by the “Präsidium” through the president.

Präsidium:

In respect to the “Präsidium” article 42 states the following:
“The “Präsidium” has the responsibility for all matters, which are not otherwise regulated by law or which do not fall into the responsibility of another organ. It manages and further develops the university in cooperation with the Hochschulrat, the other organs, the faculties and the members of the university. It annually reports to the senate.
Thus, based on the developmental plan of the university (Entwicklungsplan) which has to be passed by the senate, all financial and personnel matters are executed by the “Präsidium”.

Hochschulrat:

The “Hochschulrat” is an advisory committee, membership is on an honorary basis. It consists of 4 persons recruited from trade and industry and 3 persons coming from the area of science and art. Members of the university cannot be appointed to the “Hochschulrat”; appointment is by the Hessian Ministry for Science and Art, following the proposal of the “Präsidium” and the senate of the university.

Figure 2.1 is a graph showing the central organs and bodies regulating the university, the election and appointment procedures and the respective interactions.

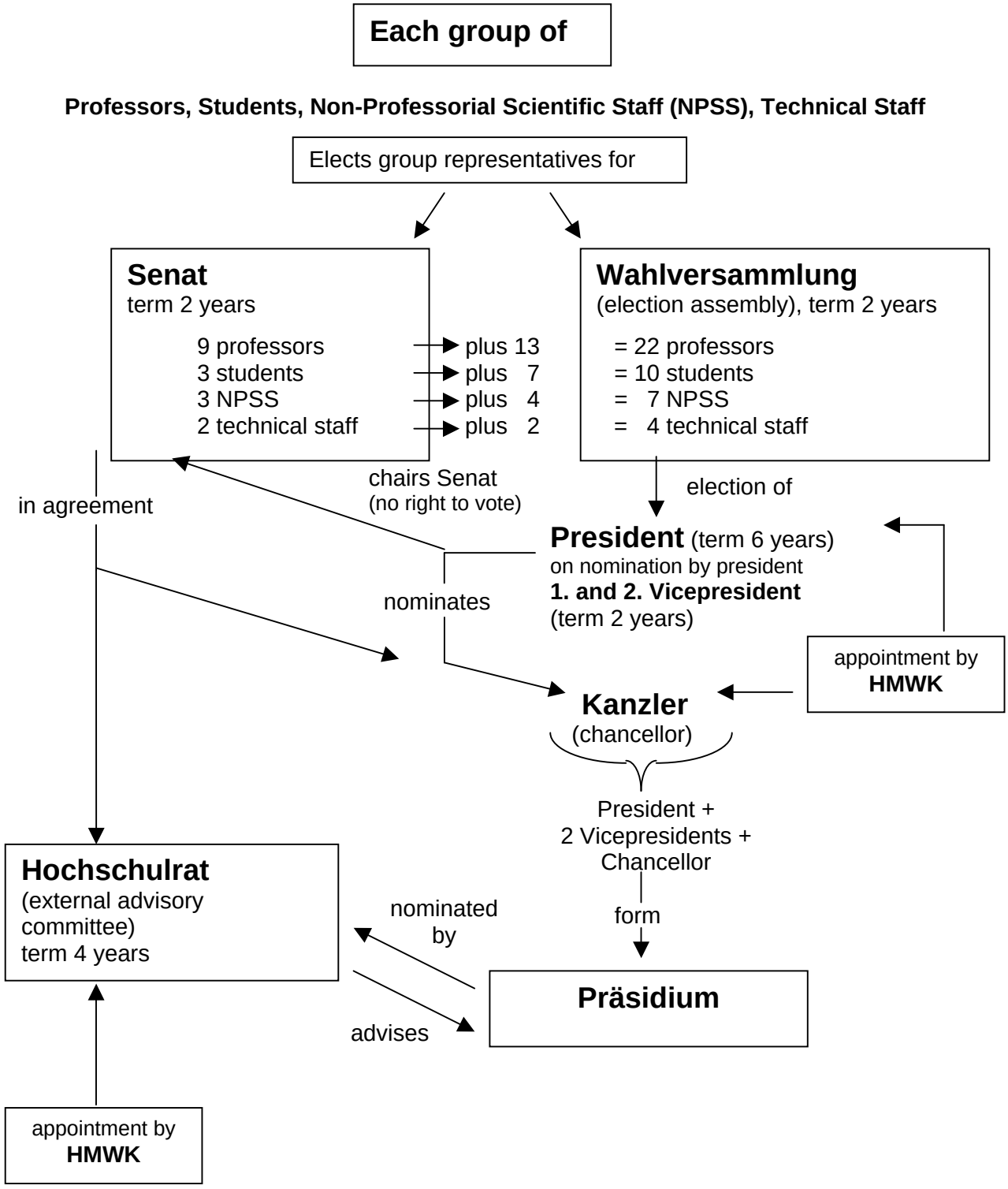

Fig. 2.1: Central organs regulating the university; election and appointment procedures, interactions; HMWK = Hessian Ministry for Science and Art

2.2.1: Faculty Level

2.2.1.1: Organs, appointments

Faculty council:

On the faculty (Fachbereichs) level the “Fachbereichsrat” (faculty council) may be considered as the “legislative body”. As is laid out above for the senate and as shown in Fig. 2.2, the faculty council is elected by the members of the faculty on a “group basis”. Distribution of seats in the faculty council is as follows:

- group of professors: 7 seats
- group of students: 3 seats
- group of the non-professorial scientific staff: 2 seats
- group of the administrative/technical staff: 1 seat

The dean chairs the faculty council, he may or may not be an elected member of the faculty council; if he is no member he has no right to vote.

Time of session of the faculty council is 2 years.

Dean:

Representative of the faculty is the dean. He is elected out of the group of professors by a majority vote of the faculty council.

Vice-Dean, Dean for Study Affairs:

On proposal by the dean the faculty council elects the dean for study affairs and the vice-dean.

Term of office is 3 years.

Dekanat:

Dean, dean of study affairs and vice-dean form the Dekanat which is the executive body of the faculty.

2.2.1.2: Responsibilities

Faculty council:

Similar to the senate the faculty council acts on the level of decisions (e. g. about nominations for appointments of professors, development of the structure of the faculty, regulations concerning study, installation or suspension of working groups), and approval (e. g. on the memos of understanding between the faculty and the

“Präsidium”, the installation and suspension of courses of study, the installation and suspension of scientific and technical units, the co-ordination of research projects).

Dekanat:

The “Dekanat” manages the faculty, unless otherwise regulated. It prepares the proposals for decision of the faculty council and executes them. It is responsible for the mutual agreements on development between the faculty and the “Präsidium”, it decides within the plan of the structural development of the faculty about the assignment of personnel and financial sources to the various institutes or other units.

Dean:

The faculty is represented by the dean. Irrespective of the presidential responsibilities the dean cares that the teaching personnel fulfils its respective teaching and examination obligations.

2.2.1.3 Faculty subcommittees

Article 53, HHG, allows the constitution of certain faculty council sub-committees.

Close to obligatory is the installation of a committee for study affairs, which is headed by the dean for study affairs. This committee consists of 3 members of the group of professors, 3 students and 1 member of the group of non-professorial scientific staff; 2 members of the student council act as advisory members.

Further committees installed by the Faculty of Veterinary Medicine at the Justus-Liebig-Universität are:

- the committee for structural development
- the committee for financial matters
- various other sub-committees, e. g. in respect to the acceptance of special case students or building development

All committees and sub-committees report to the faculty council.

Another committee is the “Promotionsausschuss”, implementing the “Promotionsordnung” (graduation to a Dr. med. vet.) as passed by the Hessian Ministry for Science and Art on February 6th, 2002. Together with the faculty of medicine the faculty of veterinary medicine has adopted a PhD-curriculum, leading to

the degree of a PhD after a minimum of a 3 year study. The order, however, has passed the Hessian Ministry for Science and Art in March 2003.

2.2.2: The Positioning of a Professor

A special procedure exists for the appointment of the professorial staff. Posting a vacancy has to be agreed on by the president. Having obtained the agreement a search committee is appointed by the “Dekanat”, consisting of 5 members of the group of professors, 2 members of the group of students and 2 members of the non-professorial scientific staff. At least one person, preferably from the group of professors or the non-professorial scientific staff, should be female. Neighbouring faculties are usually asked to delegate a consulting member.

This group is responsible for the posting of the vacancy, the interviews, and – after having come up with a list of possible candidates (it should be a minimum of 3 names) – the nomination of external experts asked to give an opinion and to rank the listed candidates. Based on the interviews and the experts’ opinions this committee then forwards a ranked list (proposal) to the faculty council.

The faculty council must then decide on the list.

When accepted, the list together with a special document (Senatsvorlage) is forwarded to the president who submits it to the senate who has to give an opinion.

If the list is accepted by the senate and subsequently by the president, it is then forwarded to the Hessian Ministry for Science and Art, where the respective minister may select one of the three candidates. Lists with only one or two candidates are the exception and hardly accepted. It is also an exception if in-house candidates are posted on such a list.

The position is then offered to one of the candidates by the ministry, the bargaining about staff and financial sources begins at this point and may last for another 6 to 12 months. Bargaining is not so much with the faculty, where personnel and financial resources are limited, but rather with the “Präsidium”.

Usually the appointment of a new professor is the chance not only to bring in new ideas and new spirits, but also to recruit extra money from central funds of the university, in exceptional cases also from the Hessian Ministry for Science and Art.

This procedure has great advantages but also great disadvantages, particularly in respect to the length of time.

2.2.3: Interactions of the Faculty with the Präsidium

Interaction of the faculty with the “Präsidium” and the central administration (see below) on a daily basis is directly on a case by case basis. However, to further guarantee a regular feedback system, the Hessian University Law has led to the installation of a “Erweitertes Präsidium” (Extended Präsidium). It is an assembly of the deans of the university, the president, the two vice-presidents and the chancellor. Invited for participation are the women representatives, the head of the student council and the head of the personnel-council.

The Extended Präsidium consults common matters in respect to finances, personnel organisation and management. It also develops the plans for economic management and the basic principles for mutual agreements on development (Zielvereinbarungen, see chapter 1) and the budget.

2.2.4: Administration

Administration is highly centralised. At the level of a faculty it is virtually restricted to secretarial work.

Central administration is headed by the chancellor, it is divided into 5 departments:

a) department for study and research matters, transfer of science and international relationships
b) department for legal matters, central obligations and safety
c) department for personnel matters
d) department for finances
e) department for matters of real-estate, construction and technics.

An important sub-division of department a) is the Institute for Foreign Student Affairs (Akademisches Auslandsamt) and the “Secretariat for Students” managing the whole enrollment procedures.

For two years the Hessian universities have been running according to economic principles, requesting to draw up a balance sheet. Funding of the universities by the state of Hessia is based on a model accounting for the number of students within the allotted times to study and the scientific achievements as determined by the gaining of extra-mural funds (grant money). Within the university the total sum allotted for

research and teaching is distributed along a procedure following a similar model accounting for the number of scientific staff, the number of students per faculty within the time allotted for the respective study and the scientific success as determined by the gaining of extra-mural funds and the success in post-graduate education, i. e. the number of students obtaining a doctor's degree. The money allotted to the faculty is distributed within the faculty following a similar system (see chapter 3.2).

Introduction of this system to the university led to an increase of the financial support for the Faculty of Veterinary Medicine while other faculties lost support; this was largely due to the relatively high number of students enrolling in a post-graduate study in order to obtain the degree of a "Dr. med. vet".

Only a small amount of the money allotted to the faculty is used for central coverages, e.g. running of the dean's office.

Faculty of Veterinary Medicine

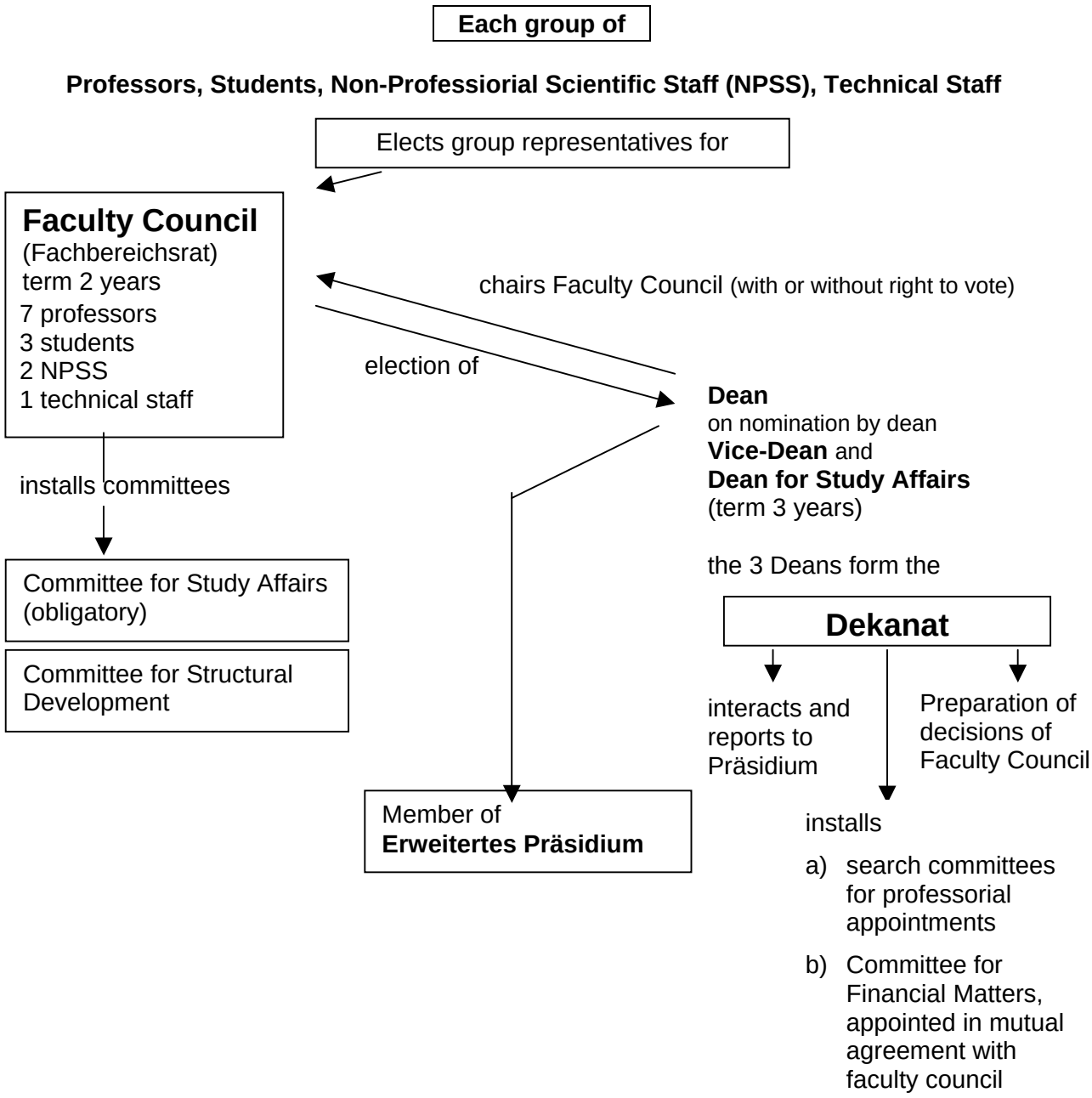

Fig. 2.2: Central organs regulating the faculty; election procedures; interactions.

2.2.5: Organisation of the Faculty of Veterinary Medicine

The Faculty of Veterinary Medicine consists of institutes and clinics, the office of the dean and – as an addition to it – the examination office. Located on the premises of the faculty is a technical support unit belonging to Department E (Real-estate, construction and technics) and a small administrative unit being part of the Department D (Finances). These two units are not under the control of the Faculty of Veterinary Medicine. Also the drivers of the animal ambulance and two janitors are members of Department E. However, they are controlled by the Faculty of Veterinary Medicine.

Until about 1990 the clinical institutions of the Faculty of Veterinary Medicine were divided into disciplines, i. e. internal medicine, surgery and obstetrics, gynaecology and andrology.

Following an evaluation in 1987 the faculty decided in 1995 to rearrange the clinical structure by going into the direction of species clinics.

The faculty was aware of the fact that there had to be a compromise in view of the limited number of academic and non-academic positions and the need to maintain excellency in research and teaching.

The institutes and clinics forming the present Faculty of Veterinary Medicine at the Justus-Liebig-Universität Giessen are listed in Table 2.1.

The decision of the faculty to change the clinical structures was approved by the "Präsidium" and the Hessian Ministry for Science and Art with letter of June 1st, 1995.

The possibilities to execute the new concept on the personnel level were bound to the situations of professorial retirement and reappointments. All professorships with the denominations according to the new concept have been occupied by now or are in the process of being occupied.

Not yet fully completed is the organisational rearrangement. However, with the perspective of building a new small animal clinic and a new clinic for horses until 2008, it is planned to restructure the organisation of clinics in 2003, inspite of not yet changing locations.

Table 2.1: List of Institutes and Clinics forming the Faculty of Veterinary Medicine

Institute of Veterinary Anatomy, -Histology and Embryology
2 C4-Professors
2 C3-Professors

Institute of Veterinary Physiology
1 C4-Professor
2 C3-Professors, one representing the professorship for animal welfare and ethology; furthermore the institute homes the Unit of Biomathematics and Data Processing

Institute of Biochemistry and Endocrinology
1 C4-Professor
1 C3-Professor
1 C2-Professor

Institute of Veterinary Pathology
1 C4-Professor
2 C3-Professors

Institute of Veterinary Food Science
2 C4-Professors
1 C3-Professor

Institute of Hygiene and Infectious Diseases of Animals
1 C4-Professor
1 C3-Professor

Institute of Virology
1 C4-Professor
1 C3-Professor
1 C2-Professor

Institute of Parasitology
1 C4-Professor
1 C3-Professor

Institute of Pharmacology and Toxicology
1 C4-Professor
1 C3-Professor

Clinic for Birds, Reptiles, Amphibia and Fish
1 C4-Professor
1 C3-Professor

Veterinary Surgical Clinic
2 C4-Professors
1 C3-Professor

Clinic for Internal Medicine of Small Animals and Horses
2 C4-Professors
1 C3-Professor

Clinic for Ruminants and Pigs (internal medicine and surgery)
1 C4-Professor
1 C3-Professor

Clinic for Obstetrics, Gynaecology and Andrology of Large and Small animals with an Ambulatory Service
2 C4-Professors
1 C2-Professor

Table 2.2: Future Structure of the Clinical Institutes

Clinic for Birds, Reptiles, Amphibia and Fish (established)
1 C4-Professor
1 C3-Professor

Clinic for Small Animals [(Internal Medicine and Surgery (to be established)**]**
2 C4-Professors
2 C3-Professors

Clinic for Horses (Internal Medicine and Surgery) (to be established)
2 C4-Professors

Clinic for Ruminants and Pigs [Internal Medicine and Surgery (established)]
1 C4-Professor
1 C2-Professor

Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals with an Ambulatory Service (established)
2 C4-Professors
1 C2-Professor

First priority is building the small animal clinic, construction might start in 2006. In close connection the clinic for horses will be built. Construction should be finished within 2 to 3 years after beginning. All construction will be on the present campus, space for construction will be obtained by taking down various buildings (e. g. the present clinic for internal medicine).

The future organisation of the clinical institutes is given in Table 2.2.

Each institute or clinic is headed by an acting director, who is elected by the "Direktorium", which consists of all professors belonging to a clinic or institute and a representative number of the non-professorial scientific staff, the technical staff and a student [1)]. Re-election is possible, minimum term of office is 2 years. Depending on the arrangements made between the Dekanat and the institute, the money allotted for research and teaching may either be under the responsibility of the institute (acting director) or a single professorship.

Acting directors report to the dean, all correspondence with the president and the central organisation is through the dean's office.

2.2.6: Teaching Import and Export, Examinations

As is obvious from the institutions listed in Table 2.1 and 2.2, some teaching has to be imported from other faculties to cover the curriculum as outlined in the "TAppO". Thus, teaching import is from the Institutes of Biology and Chemistry of the "Fachbereich Biology, Chemistry and Geological Sciences", the Institute of Physics, "Fachbereich Mathematik und Informatik, Physik, Geographie" and the Institutes of Animal Breeding and Genetics of Domestic Animals and of Animal Nutrition and Nutritional Physiology of the "Fachbereich of Agricultural Sciences, Oecotrophology and Environmental Management".

Likewise, the Faculty of Veterinary Medicine exports teaching to the Faculty of Agricultural Sciences, Oecotrophology and Environmental Management; similarly the Faculty of Biology, Chemistry and Geological Sciences is supported with teaching from the Faculty of Veterinary Medicine.

There is no direct involvement of the veterinary profession and the general public in running the establishment. Indirect involvement of the general public may be seen by the constitution of the "Hochschulrat", indirect involvement of the veterinary profession results from the fact that the Faculty of Veterinary Medicine is represented

1) according to the Hessian University Law 2000 the Acting Director is appointed by the Dean. However, it had been recommended by the Präsidium to maintain the former regulations as indicated.

at the Central Veterinary Chamber (Bundestierärztekammer). In addition many faculty members act as external examiners in the field of veterinary specialisation, allowing for a good feedback-system (see also chapter 5).

Finally it should be noted that the exams posed on the veterinary curriculum are state exams. Any qualified veterinarian may be appointed by the respective State Ministry as an examiner. However, as it turns out virtually all examinations are taken by members of the faculty. Thus the Examination Office, though practically run on a faculty level, “de jure” is not a part of the faculty. The office is run by the head and vice-head of the examination committee.

2 COMMENTS AND SUGGESTIONS

Within the frame work of constitutive regulations and other directions the Faculty of Veterinary Medicine has tried to gain as much independence as possible. This was achieved by a straight-forward strategy during the past 10 to 15 years, which - among others – led to the concept of re-structuring the faculty. Implementation of this concept is one of the highest goals of our faculty. It has almost been achieved on the personnel level, however, there is still a tremendous deficit in provision of the necessary buildings and constructions. We are calling for support to speed up these slowly ongoing processes.

Introduction of the new household, based on the development of a balance sheet, was associated with tremendous troubles in managing financial matters. Much work is duplicated by handling matters first on the secretarial level of the various institutes and then, secondly, on the central level. Under these circumstances it was sometimes extremely difficult to run a clinic or institute offering public service. It would therefore be in the interest of the faculty, to either optimise the central book-keeping procedures or to install a separate administration for veterinary purposes only.

In this respect the faculty tries to install a central veterinary documentation system which should allow a more rapid procession of patients, data and invoices. The faculty would also profit from the possibility of the electronic storage of huge amounts of patient data for research purposes. The estimated cost to install such a system is between 200,000 € and 800,000 €.

The faculty lacks an experimental farm. The premises “Schwarzacker” are by no means a substitute; in addition it has to be expected that due to housing and settlement plans of the City of Giessen the “Station” Schwarzacker will have to be closed.

The Institute of Animal Breeding and Genetics of Domestic Animals was part of the Faculty of Veterinary Medicine until 1985. In 2002 the Institute and the faculty concluded, that a remerging would be beneficial for both, also in respect to teaching.

This proposal was not supported by the Faculty of Agricultural and Nutritional Sciences, Home Economics and Environmental Management and the Präsidium.

The EAEVE-experts are asked to consider this situation and to possibly support the position of the institute and faculty.

CHAPTER 3 FINANCES

Introductory Remarks

Due to the structure of German universities a clear distinction between teaching staff and research staff is not possible. Thus, in the submitted Self Evaluation Report the figures listed under research staff only refer to those persons who are contracted through grant money. All other academic staff is listed under teaching staff; the figures listed also contain estimated expenditures for staff of other faculties of the Justus-Liebig-Universität Giessen providing teaching for the Faculty of Veterinary Medicine. The estimate was done on the basis of the percentage of teaching obtained from personnel of other faculties (13.39%) as compared with the amount of teaching provided by the faculty of Veterinary Medicine. A percentage of 13.77% is added on the same basis as an estimate of the operating and maintenance costs of utilities of these other faculties rendering teaching to veterinary students, as well as for the building Ludwigstr. 21, where the Professorship for Milk Hygiene is located. Furthermore, an estimate of the proportion of the costs of the central administration and central service departments of the university (4.84% - 17% of their total costs, depending on the proportion of their activities for the faculty) is included.

1 FACTUAL INFORMATION

3.1: Expenditure

Table 3.1.1: Annual expenditure of the establishment
Calendar year 2001, if not specified otherwise

a. Personnel	Expenditures in Euros
a.1 teaching staff	9,162,586
a.2 support staff	8,215,991
a.3 research staff	766,305
a.4 central administration[1]	2,813,687
Total (for a)	20,958,569
b. Operating costs	
b.1 utilities[2]	841,781
b.2 expenditure relating specifically to teaching	7,238,817
b.3 expenditure relating specifically to research	2,393,883
b.4 general operations (excluding the above)[1, 3]	398,638
Total (for b)	10,873,119
c. Equipment	
c.1 teaching	362,135
c.2 research	169,631
c.3 general (or common) equipment[1]	112,368
Total (for c)	644,134
d. Maintenance of buildings[4, 5]	
d.1 faculty buildings	1,597,331
d.2 general operations (excluding the above)[1]	51,797
Total (for d)	1,649,128
e. Total expenditure	34,124,950

[1] *The cost for the central support obtained by the Faculty of Veterinary Medicine is estimated as 11.47 % of the total cost of the central administration, 4.84 % of the library cost, 17 % of the cost of the central biotechnological services and 11.7 % of the cost of the central computer services.*
[2] *Only utilities of the faculty included.*
[3] *Including expenditures and operating cost for utilities of central administration and central services according to the indicated proportions.*
[4] *Due to technical reasons (installation of a computer program for book-keeping) the costs for maintenance of buildings are from the calendar year 2002*
[5] *The expenditures for construction of new buildings (clinic of obstetrics) are not included in this sum.*

Table 3.1.2: Cost of veterinary training

	Cost in Euros
1. Annual direct training cost per student [(a.1 + a.2 +b.2 +c.1) / # undergraduate students]: 24,979,529 / 1076[1)] =	23,215
2. Direct cost of training for a diploma [1. x 5.5[2)]] =	127,683
3. Estimated complete annual cost for training per student [e / # undergraduate students]: 34,124,950 / 1076[1)] =	31,715
4. Estimated complete cost for a diploma [3. x 5.5[2)]] =	174,433

[1] *number of undergraduate students on May 31, 2001, in the regular course of the study (5.5 years of study or less)*
[2] *regular course of study; 5.5 years or less*

3.2: Revenues

Table 3.2.1: Annual revenues of the establishment
Calendar year 2001, if not specified otherwise

Type of Revenues	**Revenues in Euros**
a. revenue from the state or public authorities [1)]	3,268,077
b. revenue from private bodies [2)]	38,713
c. revenue from research	3,257,687
d. revenue earned and retained by the establishment	
d.1 registration fees from students	0
d.2 revenue from continuing education	0
d.3 revenue from clinical activities	5,835,308
d.4 revenues from diagnostic activities	653,795
e. revenue from other sources (please specify)	0
f. Total revenue from all sources	13,053,580

[1)] *includes revenues from state or public authorities plus allowance for operating costs and building maintenance*
[2)] *Revenues from foundations specifically donating to the Faculty of Veterinary Medicine*

Table 3.2.2: Changes in public funding [1)]

year	2003	3,386,820
	2002	3,360,949
	2001	3,268,077
	2000	3,250,017
	1999	3,259,626

[1)] *includes revenues from state or public authorities plus allowance for operating costs and building maintenance*

Question: *What percentage of income from the following sources does the veterinary teaching establishment have to give to other bodies?*

Answer:

clinical work:	none
analysis for commercial clients:	none
analysis for veterinary practitioners:	none
research grants:	none
other: private invoices for clinical or diagnostic work	25%

Question: *Indicate the proportion of additional income that is retained within the institution in each case?*

Answer: a) Additional income (revenue from clinical and diagnostic activities) is retained by each institute or clinic if invoices are classified as bills coming from the university. 5% or 10% of this income are “centralised” and put under the authority of the dean to cover general matters of the faculty.

b) Additional income is not retained by the institute or clinic if invoices come from professors authorised to put forward private bills. Of this sum 25% are retained as “facility and staff using costs” by the university. The money is used for project support within the whole university so that part of it may flow back to projects in the faculty.

Question: *Outline how the allocation of funding to the establishment is determined, and by what body.*

Answer: The allocation of funding to the faculty is determined by the “Präsidium” of the university. The way of allocation is as follows:

The Hessian Ministry for Science and Arts distributes (beginning 2003) 80% of the funds for a university according to the student number within the regular study schedule, weighed by a factor for “norm student costs per year”. With 29,710 € this factor is the highest one for veterinary medicine compared with other faculties.

The university itself runs a “factor-supported distribution of funds” (indikatorgestützte Mittelverteilung). 85% of the funds are allocated according to the teaching load with main factors being the number of students within the regular study schedule and the number of scientific staff: The remaining 15% are distributed according to “scientific success” as determined by the number of dissertations, habilitations and the amount of extramural funds acquired by the faculty.

There is a discipline-specific weighing factor which is lowest (1) for fine arts and humanities and highest (3) for natural sciences. The factor for veterinary medicine has been reduced from 3 to 2.5 in order to maintain some balance between the different faculties.
As a result of the politically introduced support program for women, all dissertations and habilitations submitted by females are counted double. The factor-supported distribution of funds has led, until now, to an increase of funds for the Faculty of Veterinary Medicine.

Question: *Outline how the allocation of funds within the establishment is decided*

Answer: The decision for the allocation of funds within the establishment is made by the “Dekanat” (deans).
A factor-supported system for distribution of funds is used which closely resembles the university funding distribution system. Main factors are:

- number of scientific staff
- amount of teaching (“Curricularanteil”)
- number of dissertations and habilitations
- income from outside sources [(different factor for grant money (3) and clinical income (1)].

Question: *What are the mechanism(s) for funding capital expenditure (e.g. building work, major items of equipment) and how are decisions taken on this?*

Answer: For capital expenditure applications have to be submitted to the university. If a positive decision is made by the “Präsidium”, smaller activities can be funded directly by the university, larger activities need an application of the University to the Ministry for Science and Art in order to get funding from the state. In most of the latter cases, the State of Hessia then applies for 50% funding to the Federal Government according to the “Hochschulbauförderungsgesetz” (Law of University Building Support).
Per year about 30.000.- € of the income centralised by the faculty (see above, page 27) are provided on application to institutions for funding of equipment. Proposals have to be submitted to the dean’s office. The committee for financial matters of the faculty gives its opinion, the “Dekanat” (deans) make the final decision.

Question: *Do students pay tuition/registration fees?*
Answer: No

2 COMMENTS

The weighing factor for Veterinary Medicine (2.5) applied for distribution of funds within the university should at least be equivalent to that of the other faculties of natural sciences, i.e. 3!

An increase of the budget is absolutely necessary in order to replace outdated and old equipment (constantly high repair cost) like computers, multimedia apparatus, freezers and other laboratory equipment and to allow employment of additional support staff for teaching (undergraduate and postgraduate students).
Increased funding is also highly necessary for maintenance and reconstruction of the buildings as well as to erect new buildings.

In general the autonomy and flexibility of the establishment in financial matters has been increased during the last years. However, while certain financial responsibilities, e.g. technical support for maintaining the equipment and the functionality of the buildings, have been transferred to the faculty and institutes, no additional finances have been provided and part of the technical support staff has even been withdrawn.

After having changed the accountancy of the university in 2000, at least for the time being the central financial control system (book-keeping) of the university is very complicated and not transparent to most of the staff; thus most institutes and clinics run their own “self-made” systems in order to control their budgets.

As indicated in chapter 8, apart from the central library peripheral libraries were also run by the clinics and institutes of the Faculty for Veterinary Medicine. While the central library had always received central funds, the peripheral libraries were maintained through the budget of the various institutes and clinics, allowing them to adjust management of the libraries with the necessary flexibility. In 2002 as a result of the Hessian University Law the library-budgets of the various institutes and clinics were fixed at their present level and transferred into the responsibility of the central library. With this move any flexibility was lost, all institutions of the faculty are stuck with the amount of money they spent for their peripheral library on an annual basis during the last three years. We consider this loss in flexibility as a step backwards.

Other than in former years the 25% retained by the university from private invoices for clinical services (see page 27) are not or only in part refunded to the faculty. This money which is held back for using equipment of the faculty is now primarily used to fund projects throughout the university. We request that it is being used for what it is being withheld, namely the wear and tear of faculty owned equipment.

3 SUGGESTIONS

The financial control system of the university should be more transparent and understandable or the revenue provided to the establishments should be controlled directly by the faculty and/or the clinics and institutes. This, however, would require the transfer of staff from the central administration to the faculty.

Likewise the university must transfer staff and finances when it transfers obligations and responsibilities to the faculty.

The major part of the money paid for using facilities of the university when private invoices are put forward should be refunded to the faculty.

It should be within the responsibility of each institute and clinic to decide on the amount of money from their budget which should be used for their peripheral library.

CHAPTER 4 CURRICULUM

1 FACTUAL INFORMATION

National curriculum

As indicated in chapter 1, veterinary training is regulated by a national law, the so-called Tierärztliche Approbationsordnung in Germany (Certification Code for Veterinary Surgeons; TAppO from 12.11.1999 with its modifications from 12.01.2001). The national curriculum as defined in § 1 TAppO consists of 3850 hours of obligatory and elective courses at a university, 70 h practical training in agriculture at the university, 1100 h obligatory extramural work (which in part can be done at the university), and 2 state examinations (Preclinical Veterinary Examination[1)] consisting of 2 stages, and Veterinary Examination consisting of 3 stages).

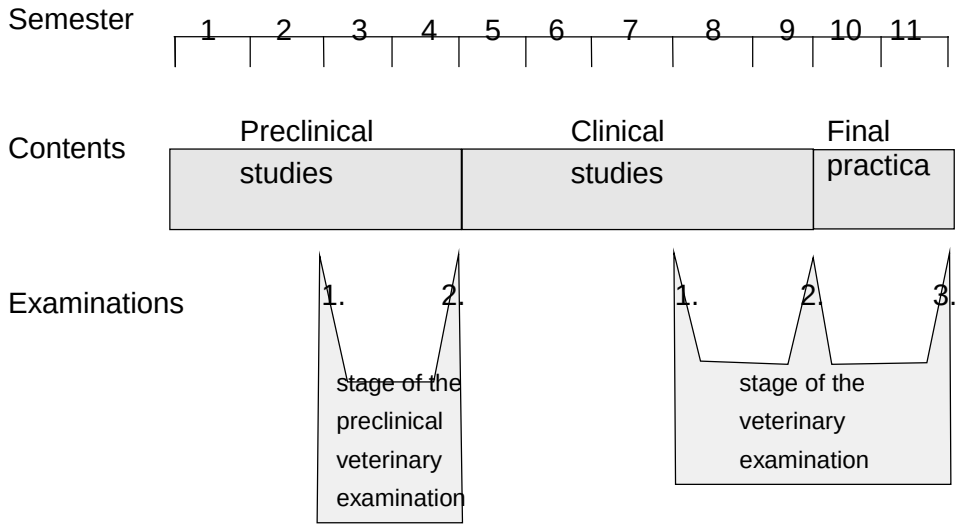

Figure 4.1: Organization of the national curriculum

The distribution of teaching hours is exactly defined for each subject (Annex 1 TAppO). These are:

[1)] Referred to in the TAppO as “preliminary veterinary examination”.

Table 4.1: Distribution of teaching hours for the individual subjects (the numbers in brackets give the number, under which the subject is referenced in all following tables).

Subject	Hours	Realisation in Giessen
1. Physics [1]	56	46 h lecture, 10 h practical work
2. Chemistry [2]	126	56 h lecture, 56 h practical work, 14 h seminar
3. Zoology [3]	70	70 h lecture
4. Botany [4]	70	42 h lecture, 28 h practical work
5. Biometry [5]	28	28 h seminar
6. Theory of Profession including Terminology [6.1], History of Veterinary Medicine [6.2]	42	28 h practical work [6.1], 14 h lecture [6.2]
7. Anatomy [7]	224	70 h lecture, 154 h practical work
8. Histology [8.1] and Embryology [8.2]	98	84 h practical work [8.1], 14 h seminar [8.2]
9. Ethology [9]	28	28 h lecture
10. Agricultural Theory [10]	28	28 h lecture
11. Animal Husbandry [11.1] and Animal Hygiene [11.2]	56	28 h lecture [11.1], 28 h lecture [11.2]
12. General Radiology including Physics of Radiation [12]	42	28 h lecture, 14 h seminar
13. Physiology [13.1] and Biochemistry [13.2]	280	84 h lecture [13.1], 35 h practical work [13.1], 21 h seminar [13.1], 84 h lecture [13.2], 35 h practical work [13.2], 21 h seminar [13.2]
14. Nutritional Science [14]	42	14 h lecture, 28 h practical work
15. Animal Breeding and Genetics [15]	84	56 h lecture, 28 h practical work
16. Clinical Propaedeutics [16]	98	98 h clinical work
17. Animal Welfare [17]	56	56 h lecture
18. Laboratory Animal Science [18]	14	14 h lecture
19. Animal Nutrition [19]	56	28 h lecture, 28 h practical work
20. Veterinary Professional Law [20]	28	28 h lecture
21. Poultry Diseases [21]	28	28 h lecture
22. Pharmacology and Toxicology [22.1] and Prescription/Drug Preparation [22.2]	126	28 h lecture [22.1], 56 h seminar [22.1],14 h lecture [22.2], 28 h practical work [22.2]
23. Bacteriology and Mycology [23.1], Virology [23.2], Parasitology [23.3] and Immunology [23.4]	224	39 h lecture [23.1], 39 h lecture [23.2], 56 h practical work [23.1], [23.2] and [23.4], 42 h lecture [23.3], 42 h practical work [23.3], 6 h lecture [23.4]

Table 4.1: Continued

24. Diseases in Reptilia, Amphibia, Fish and Honey Bees [24]	28	28 h lecture
25. Combating Epizootic Diseases [25]	42	28 h lecture, 14 h seminar
26. General Pathology [26.1] and Special Pathology [26.2]	182	84 h lecture, 63 h practical work, 35 h seminar
27. Internal Medicine including Laboratory Diagnostics [27]	126	126 h lecture
28. Physiology and Pathology of Reproduction [28]	126	84 h lecture, 14 h seminar, 28 h clinical work
29. Surgery including Anaesthetics and Clinical Radiology [29]	126	112 h lecture, 14 h clinical work
30. Stock Care and Out-Patients [30]	42	28 h lecture, 14 h clinical work
31. Food Science and Meat Food Science [31.1] and Milk Science [32.2]	196	98 h lecture [31.1], 52 h practical work [31.1], 4 h seminar [31.1], 28 h lecture]31.2], 14 h practical work [31.2]
32. Clinical Education in Avian Diseases [32.1], Internal Medicine [32.2], Reproduction [32.3] and Surgery [32.4]	518	262 h seminar 284 h clinical work
33. Interdisciplinary Subject Clinical Medicine [33]	126	126 h seminar
34. Interdisciplinary Subject Food [34]	126	126 h seminar
35. Practical Training in Agriculture, Animal Husbandry and Animal Welfare at the university [35]	70	70 h practical work
36. Practical Extramural Training with Practitioners for the 1. stage of the Veterinary Examination [36.1; 150 h], for the 3. stage of the Veterinary Examination [36.2; 700 h]	850	150 h clinical work [36.1], 700 h clinical work [36.2]
37. Practical Extramural Training in Hygiene Control [37.1; 75 h] and Food Inspection [37.2; 100 h]	175	75 h practical work [37.1], 100 h practical work [37.2]

Table 4.1: Continued

38. Practical Extramural Training in Food Hygiene [38]	75	75 h practical work
39. Elective Courses for the 2. stage of the Preliminary Veterinary Examination [39.1; 84 h], for the 1. stage of the Veterinary Examination [39.2; 42 h], for the 2. stage of the Veterinary Examination [39.3; 42 h], for the 3. stage of the Veterinary Examination [39.4; 42 h], until the 3. stage of the Veterinary Examination [39.5; 98 h]	308	308 h practical work, seminar or clinical work selected from a big variety of subjects (listed in Table 4.2)
Total	**5048**	

The duration of the study including the time for the final examination is 5.5 years.

Degree of freedom within the national curriculum

According to the national regulation (§ 2a TAppO) 10 % of the scientific-theoretical studies at the university (3850 hours of the obligatory and elective courses) can be shifted from one subject to another. Excluded are subjects with only 42 h or less total teaching time. The only subject, in which the Justus-Liebig-Universität Giessen has used this possibility, is the strengthening of the subject clinical education [32], which covers 546 h at our faculty.

Decisions on curriculum matters

The national curriculum mainly defines the total number of hours for each subject, not the distribution between lectures, seminars and practical or clinical work. The balance between theoretical teaching and practical teaching is defined by the **Rules for Study** ('Studienordnung'), which also provide a model curriculum (http://www.uni-giessen.de/~gi1439/; select keyword 'Studienordnung' in the left window).

Within the faculty, the curriculum is prepared by the committee for study affairs ('Studienausschuss'). It consists of the dean for study affairs ('Studiendekan'), 3 professors, 3 students and 1 scientific assistant. The allocation of hours between the various subjects is primarily done by the dean for study affairs, however, in general only after intensive discussion with the committee for study affairs. Approval of the Faculty Council has to be obtained.

The curriculum for each year is published in the internet (http://www.uni-giessen.de/~gi1439/; select keyword 'Stundenpläne' in the left window). Furthermore, the size of the groups (i.e. student : teacher ratio) for each course is published in the internet (http://www.uni-giessen.de/~gi1439/; select keyword 'CNW' in the left window).

4.1: Curriculum followed by all Students

Table 4.1.1 is a synopsis of Tables 4.1.2.1. to 4.1.2.6 with the courses of year one to six and table 4.4 with the obligatory extramural courses, which in most cases can also be observed at the university (see Table 4.4 for details).

Table 4.1.1: General table of curriculum hours taken by all students

	Hours of training					
	Lectures	Practical work	Supervised work (seminars)	Clinical work	Other*	Total
First year	382	276	70			728
Second year	294	252	70	98		714
Third year	490	28	201	249*1		968
Fourth year	336	243*2	243	198		1020
Fifth year	112	187*3	165	71		535
Sixth year		75*4		700*5		775
Total	1614	1061	749	1316		4740*6

*Please specify

*1 *Included are obligatory courses from year 3 and Practical Training with Practitioners [36.1] (150 h).*

*2 *Included are obligatory courses from year 4 and Practical Training in Hygiene Control [37.1] (75 h).*

*3 *Included are obligatory courses from year 5 and Practical Training in Food Inspection [37.2] (100 h).*

*4 *Included is Practical Training in Food Hygiene [38] (75 h).*

*5 *Included is Practical Training with practitioners [36.2] (700 h).*

*6 *Together with the minimum number of elective courses (308 h), the sum of obligatory intra- and extramural courses exceeds slightly (by 28 h) the sum of hours defined in the national curriculum. The surplus is due to extra-clinical training, which our faculty has incorporated in the local curriculum.*

Table 4.1.2.1: First year of the course (the numbers in brackets refer to the subjects listed in Table 4.1.)

Subject	Hours of training					
	Lectures	Practical work	Supervised work	Clinical work	Other*	Total
Physics [1]	46	10				56
Chemistry [2]	56	56	14			126
Zoology [3]	70					70
Botany [4]	42	28				70
Biostatistics [5]			28			28
Terminology [6.1]		28				28
History of Veterinary Medicine [6.2]	14					14
Anatomy [7]	42	98				140
Histology [8.1]		56				56
Embryology [8.2]			14			14
Ethology [9]	28					28
Animal Husbandry [11.1]	28					28
General Radiology [12]	28		14			42
Animal Protection [17]	28					28
Total	382	276	70			728

*Please specify

Table 4.1.2.2: Second year of the course (the numbers in brackets refer to the subjects listed in Table 4.1.)

Subject	Hours of training					
	Lectures	Practical work	Supervised work	Clinical work	Other*	Total
Anatomy [7]	28	56				84
Histology [8.1]		28				28
Agricultural Theory [10]	28					28
Physiology [13.1]	84	21	35			140
Biochemistry [13.2]	84	21	35			140
Nutritional Science [14]	14	28				42
Animal Breeding and Genetics [15]	56	28				84
Clinical Propaedeutics [16]				98		98
Practical Training in Agriculture, Animal Husbandry and Animal Welfare [35]		70				70
Total	294	252	70	98		714

*Please specify

Table 4.1.2.3: Third year of the course (the numbers in brackets refer to the subjects listed in Table 4.1.)

Subject	Hours of training					
	Lectures	Practical work	Supervised work	Clinical work	Other*	Total
Animal Hygiene [11.2]	28					28
Animal Welfare [17]	28					28
Laboratory Animal Science [18]	14					14
Animal Nutrition [19]	28	28				56
Veterinary Professional Law [20]	28					28
Pharmacology and Toxicology [22.1]			56			56
Bacteriology and Mycology [23.1], and Immunology [23.4]	14					14
General Virology and Immunology [23.2]	14					14
Parasitology [23.3] and Immunology [23.4]	42					42
Diseases in Reptilia, Amphibia and Fish [24]	14					14
General Pathology [26.1]	42		14			56
Internal Medicine [27]	98					98

Table 4.1.2.3: Continued

Physiology and Patho-physiology of Reproduction [28]	42		14	14		70
Surgery [29]	84					84
Food Science [31.1]	14					14
Clinical Education [32]			117[1)]	85[1)]		202
Total	490	28	201	99		818

*Please specify

1) 14 h of the course "Clinical demonstration" [32] of each year (168 h in total) are clinical training for an individual student, the rest (154 h) is supervised work.

Table 4.1.2.4: Fourth year of the course (the numbers in brackets refer to the subjects listed in Table 4.1).

Subject	Hours of training					
	Lectures	Practical work	Supervised work	Clinical work	Other*	Total
Poultry Diseases [21]	14					14
Pharmacology and Toxicology [22.1]	28					28
Prescription/ Drug Preparation [22.2]	14	28				42
Special Bacteriology [23.1]	28	44				72
Special Virology [23.2]	28	12				40
Parasitology [23.3]		42				42
Diseases in Reptilia, Amphibia and Fish [24]	14					14
Combating Epizootic Diseases [25]			14			14
Special Pathology [26.2]	42	14				56
Internal Medicine [27]	28					28
Physiology and Patho-physiology of Reproduction [28]	42			14		56
Surgery [29]	28			14		42
Stock Care and Out-Patients [30]	28			14		42

Table 4.1.2.4: Continued

Food Science [31.1]	42	28				70
Clinical Education [32]			117[1)]	156[1)]		273
Interdisci-plinary Subject Clinical Medicine [33]			56			56
Interdisci-plinary Subject Food [34]			56			56
Total	336	168	243	198		945

*Please specify

1) 14 h of the course "Clinical demonstration" of each year (168 h in total) are clinical training for an individual student, the rest (154 h) is supervised work.

Table 4.1.2.5: Fifth year of the course (the numbers in brackets refer to the subjects listed in Table 4.1.)

Subject	Hours of training					
	Lectures	Practical work	Supervised work	Clinical work	Other*	Total
Poultry Diseases [21]	14					14
Combating Epizootic Diseases [25]	28					28
Special Pathology [26.2]		49	21			70
Food Science [31.1]	42	24	4			70
Milk Science [31.2]	28	14				42
Clinical Education [32]				71		71
Interdisci-plinary Subject Clinical Medicine [33]			70			70
Interdisci-plinary Subject Food [34]			70			70
Total	112	87	165	71		435

*Please specify

In the sixth year of training, the final practical training (listed in table 4.1.2.6) and the final examination (3rd stage of the Veterinary Examination) take place. The practical training is often extramural, however, the practical training with practitioners can also be absolved at a clinic of the university. The same holds true for the practical training in food hygiene [38] (§ 58 TAppO). Therefore, both are printed in parenthesis, because they take place – for a part of the students – at the university.

Table 4.1.2.6: Sixth year of the course (The numbers in brackets refer to the subjects listed in Table 4.1.)

Subject	Hours of training					
	Lectures	Practical work	Supervised work	Clinical work	Other*	Total
Practical Training with Practioners [36.2]				(700)		(700)
Practical Training in Food Hygiene [38]		(75)				(75)
Total		(75)		(700)		(775)

*Please specify

Table 4.1.3: Curriculum hours in EU-listed subjects taken by every student (the numbers in brackets refer to the subjects listed in Table 4.1).

	Subject	Hours in course					
		Lectures	Practical work	Supervised work	Clinical work	Other	Total
A.	**Basic subjects**						
	Anatomy (incl. histology and embryology) [7], [8.1], [8.2]*1	70	238	14			322
	Biochemistry and molecular biology [13.2]*2	80	21	35			136
	Biology (incl. Cell biology) [3], [4]*3	112	28				140
	Biophysics [1]	46	10				56
	Biostatistics [5]*4			24			24
	Chemistry [2]	56	56	14			126
	Epidemiology [23], [25]*5	28		14			42
	Genetics [15]*6	28					28
	Immunology [13.1], [13.2], [23.4], [26]*7	18	4				22
	Microbiology [23.1], [23.2]*8	68	52				120
	Parasitology [23.3]*9	38	42				80
	Pathological anatomy (macroscopic & microscopic) [26.1], [26.2]*10	80	60	35			175
	Pharmacy [22.2]	14	28				42
	Pharmacology [22.1]*11	28		28			56
	Physiology [13.1]*12	80	21	35			136
	Physiopathology*13	28					28
	Scientific and technical information and Documentation methods*14			4			4
	Toxicology (incl. environmental pollution) [22.1]*15			28			28

B.	**Animal Production**						
	Agronomy [10], [35]*16	21	70				91
	Animal behaviour (incl. behavioural disorders) [9]	28					28
	Animal husbandry (incl. livestock production systems) [11.1], [11.2], [15]*17	77	28				105
	Animal nutrition and feeding [14], [19]*18	42	56				98
	Animal protection and welfare [17]*19	50					50
	Environmental protection [11.2]*20	7					7
	Preventive veterinary medicine (incl. health monitoring programmes) [27]*21	12					12
	Reproduction (incl. artificial breeding methods) [28]*22	14		14	14		42
	Rural economics [10]*23	7					7
C.	**Clinical subjects**						
	Anaesthetics [29] *24	21					21
	Clinical examination and diagnosis and laboratory diagnostic methods [16]*25				98		98
	Clinical medicine [21], [24], [27], [32], [33]*26	119		388	277		784
	Diagnostic imaging [12], [29]*27	42		14			56
	Obstetrics [28]*28	28			14		42
	Reproductive disorders [28]*29	42					42
	State veterinary medicine, zoonoses, public health and forensic medicine [25], [27]*30	23					23
	Surgery [29]*31	77			14		91
	Therapeutics [27]*32	14					14
D.	**Food Hygiene***33						
	Certification of food production units [31], [34]	14	14	14			42
	Food certification [31], [34]	14	14	14			42
	Food hygiene and food quality (incl. legislation) [31], [34]	28	14	42			84
	Food inspection, particularly food of animal origin [31]	28	12	10			50
	Food science and technology [31], [34]	42	12	50			104
E.	**Professional knowledge**						
	Practice management*34						0
	Professional ethics [6.2], [17], [20]*35	27					27
	Veterinary certification and report writing [26], [32]*36			3	7		10
	Veterinary legislation [20]*37	21					21

Comments:

**1 To the EU-listed subject Anatomy (incl. histology and embryology) contribute the following subjects from the national curriculum: Anatomy [7] with 70 h lecture and 154 h practical work, Histology [8.1] with 84 h practical work, and Embryology [8.2] with 14 h supervised work.*

**2 The EU-listed subject Biochemistry and Molecular Biology is part of the subject Biochemistry [13.2] from the national curriculum with 84 h lecture (80 h Biochemistry and Molecular Biology, 4 h Immunology), 21 h practical work, and 35 h supervised work.*

**3 To the EU-listed subject Biology (incl. cell biology) contribute the following subjects from the national curriculum: Zoology [3] with 70 h lecture, and Botany [4] with 42 h lecture and 28 h practical work.*

**4 The EU-listed subject Biostatistics is part of the subject Biometry [5] from the national curriculum with 28 h supervised work (24 h for Biostatistics, 4 h Scientific and Technical information and Documentation Methods).*

**5 The EU-listed subject Epidemiology is part of the following subjects from the national curriculum: Microbiology [23.1], [23.2] (14 h lecture for epidemiology), and Combating Epizootic Diseases [25] from the national curriculum with 28 h lecture (14 h epidemic diseases, 14 h zoonoses) and 14 h supervised work.*

**6 The EU-listed subject Genetics is part of the subject Animal Breeding and Genetics [15] from the national curriculum with 56 h lecture (from which 28 h are used for Animal Production and 28 h for Genetics) and 28 h practical work (in Animal Production).*

**7 The EU-listed subject Immunology is part of the following subjects from the national curriculum: Physiology [13.1] (84 h lecture with 80 h Biochemistry and Molecular Biology, 4 h Immunology, 21 h practical work, and 35 h supervised work), Biochemistry [13.2] (84 h lecture with 80 h for Biochemistry and Molecular Biology, 4 h for Immunology, 21 h practical work, and 35 h supervised work), Microbiology [23] (126 h lectures, from which 6 h are used for Immunology, and 98 h for practical teaching, from which 4 h are used for Immunology), and Pathology [26] (84 h lecture with 80 h for Pathology, 4 h for Immunology, 63 h practical work and 35 h supervised work, from which 32 h are used for pathology and 3 h for report writing).*

**8 The EU-listed subject Microbiology is composed of the following subjects from the national curriculum: Bacteriology and Mycology [23.1] with 42 h lecture (3 h are used*

for Immunology, and 5 h for Epidemiology), and Virology [23.2] with 42 h lecture (3 h are used for Immunology, and for 5 h for Epidemiology); all subjects have a common practical work with 56 h total teaching time (52 h Microbiology, 4 h Immunology).

**9 The EU-listed subject Parasitology is composed of the subject Parasitology [23.3] from the national curriculum with 42 h lecture (38 h Parasitology, 4 h Epidemiology) and 42 h practical work.*

**10 To the EU-listed subject Pathological Anatomy (macroscopic & microscopic) contribute the following subjects from the national curriculum: General Pathology [26.1] and Special Pathology [26.2], which together give 84 h lecture (80 h Pathology, 4 h Immunology), 63 h practical work and 35 h supervised work (32 h for pathology, 3 h report writing).*

**11 The EU-listed subject Pharmacology is part of the subject Pharmacology and Toxicology [22.1] from the national curriculum, which gives in total 28 h lecture and 56 h supervised work [22.1]. From these 28 h are used as lecture, 28 h as supervised work in Pharmacology and 28 h as supervised work in Toxicology.*

**12 The EU-listed subject Physiology is part of the subject Physiology [13.1] from the national curriculum with 84 h lecture (80 h for Biochemistry and Molecular Biology, 4 h Immunology), 21 h practical work, and 35 h supervised work.*

**13 The EU-listed subject Physiopathology is mainly part of the subject Internal Medicine [27] from the national curriculum, which has 126 h lecture (28 h Pathophysiology, 12 h Preventive Medicine, 9 h State Veterinary Medicine, 14 h Therapeutics, 63 h Clinical Internal Medicine).*

**14 The subject Scientific and Technical Information and Documentation Methods is part of the subject Biometry [5] from the national curriculum with 28 h supervised work (24 h Biostatistics, 4 h Scientific and Technical information and Documentation methods).*

**15 The EU-listed subject Toxicology is part of the subject Pharmacology and Toxicology [22.1] from the national curriculum, which gives in total of 28 h lecture and 56 h supervised work [22.1]. From the latter 28 h are used as supervised work in Pharmacology and 28 h as supervised work in Toxicology.*

**16 To the EU-listed subject Agronomy contribute the following subjects from the national curriculum: Agricultural Theory [10] with 28 h lecture (7 h Rural Economics,*

21 h Agronomy), and Practical Training in Agriculture and Animal Husbandry at the university [35] with 70 h.

**17 To the EU-listed subject Animal husbandry (incl. Livestock Production Systems) contribute the following subjects from the national curriculum: Animal Husbandry [11.1] with 28 h lecture (7 h Environmental Protection, 21 h Animal Husbandry), Animal Hygiene [11.2] with 28 h lectures, and Animal Husbandry and Breeding [15] with 56 h lectures (28 h Animal Husbandry, 28 h Genetics) and 28 h practical work (in Animal Husbandry).*

**18 To the EU-listed subject Animal Nutrition and Feeding contribute the following subjects from the national curriculum: Nutritional Science [14] with 14 h lecture, 28 h practical work, and Animal Nutrition [19] with 28 h lecture and 28 h practical work.*

**19 The EU-listed subject Animal Protection and Welfare is part of the subject Animal Welfare [17] from the national curriculum with 56 h lecture (50 h Animal Welfare, 6 h Ethics).*

**20 The EU-listed subject Environmental Protection is part of the subject Animal Husbandry [11.1] from the national curriculum with 28 h lecture (7 h Environmental Protection, 21 h Animal Husbandry).*

**21 The EU-listed subject Preventive Veterinary Medicine (incl. health monitoring programmes) is part of the subject Internal Medicine [29] from the national curriculum, which has 126 h lecture (28 h Pathophysiology, 12 h Preventive Medicine, 9 h State Veterinary Medicine, 14 h therapeutics, 63 h Clinical Internal Medicine).*

**22 The EU-listed subject Reproduction (incl. artificial breeding methods) is part of the subject Physiology and Pathology of Reproduction [28] with 84 h lecture (14 h general reproduction, 28 h obstetrics, 42 h reproductive disorders), 14 h supervised work (general reproduction), 28 h clinical work (14 h for general reproduction, 14 h obstetrics).*

**23 The EU-listed subject Rural Economics is part of the subject Agricultural Theory [10] from the national curriculum with 28 h lecture (7 h rural economics, 21 h agronomy).*

**24 The EU-listed subject Anaesthetics is part of the subject Surgery [29] from the national curriculum with 112 h lecture (21 h Anaesthetics, 14 h Clinical Radiology, 77 h Clinical Surgery), and 14 h clinical work.*

*[*25] The EU-listed subject Clinical Examination and Diagnosis and Laboratory Diagnostic Methods is composed of the subject Clinical Propaedeutics [16] from the national curriculum, which comprises 98 h clinical work.*

*[*26] The EU-listed subject Clinical Medicine is composed of the following subjects from the national curriculum: Poultry Diseases [21] (28 h lecture), Diseases in Reptilia, Amphibia, Fish and Honey Bees [24] (28 h lecture), Internal Medicine [27] (126 h lecture with 28 h Pathophysiology, 12 h Preventive Medicine, 9 h State Veterinary Medicine, 14 h Therapeutics, 63 h Clinical Internal Medicine), and Clinical Education [32] (262 h supervised work, 284 h clinical work, from which 7 h are used for report writing), and the Interdisciplinary Subject Clinical Medicine [33] (126 h supervised work).*

*[*27] The EU-listed subject Diagnostic Imaging is composed of the following subjects from the national curriculum: General Radiology (28 h lecture, 14 h supervised work), and Surgery [29] with 112 h lecture (21 h Anaesthetics, 14 h Clinical radiology, 77 h Clinical Surgery), and 14 h clinical work.*

*[*28] The EU-listed subject Obstetrics is part of the subject Physiology and Pathology of Reproduction [28] from the national curriculum with 84 h lecture (14 h for General reproduction, 28 h Obstetrics, 42 h for Reproductive Disorders), 14 h supervised work (General Reproduction), 28 h clinical work (14 h General Reproduction, 14 h Obstetrics).*

*[*29] The EU-listed subject Reproductive Disorders is part of the subject Physiology and Pathology of Reproduction [28] from the national curriculum with 84 h lecture (14 h General Reproduction, 28 h Obstetrics, 42 h for Reproductive Disorders), 14 h supervised work (General Reproduction), 28 h clinical work (14 h General Reproduction, 14 h Obstetrics).*

*[*30] The EU-listed subject State Veterinary Medicine, Zoonoses, Public Health and Forensic Medicine is part of the following subjects of the national curriculum: Combating Epizootic Diseases [25] from the national curriculum with 28 h lecture (14 h epidemic diseases, 14 h zoonoses) and 14 h supervised work., and Internal Medicine [27] from the national curriculum with 126 h lecture (28 h Pathophysiology, 12 h Preventive Medicine, 9 h State Veterinary Medicine, 14 h Therapeutics, 63 h Clinical Internal Medicine).).*

**31 The subject Surgery [29] from the national curriculum has in total 112 h lecture (21 h for Anaesthetics, 14 h for Clinical Radiology, 77 h Clinical Surgery), and 14 h clinical work.*

**32 The EU-listed subject Therapeutics is part of the subject Internal Medicine [27] from the national curriculum with 126 h lecture (28 h Pathophysiology, 12 h Preventive Medicine, 9 h State Veterinary Medicine, 14 h Therapeutics, 63 h Clinical Internal Medicine). Of course Therapeutics is also a topic of the subject Pharmacology [22.1] from the national curriculum, which is listed under basic sciences in this table.*

**33 To the EU-listed subject Food Hygiene contribute the following subjects from the national curriculum: Food Science and Technology including Food Science [31.1] with 98 h lecture (7 h Certification of Production units, 7 h Food certification, 21 h Food Hygiene, 21 h Food Inspection, 42 h Food Science and Technology), 52 h practical work (14 h for certification of production units, 14 h for food certification, 12 h for food inspection, 12 h for food science and technology), and 4 h supervised work (Food science and Technology), Milk Science [31.2] with 28 h lecture (7 h for Certification of Production Units, 7 h Food Certification, 7 h Food hygiene, 7 h Food Inspection), 14 h practical work (14 h Food Hygiene), and the Interdisciplinary Subject Food [34] with 126 h supervised work (14 h Certification of Production Units, 14 h Food Certification, 42 h Food Hygiene, 10 h Food inspection, 46 h Food Science and Technology).*

**34 Practice management is not part of the national curriculum. It is, however, offered as an elective course in the 4th year.*

**35 To the EU-listed subject Professional ethics contribute the following subjects from the national curriculum: History of Veterinary Medicine [6.2] with 14 h lecture, Animal Welfare [17] with 56 h lecture (50 h Animal Welfare, 6 h Ethics), and Veterinary Professional Law [20] with 28 h lecture (7 h ethics, 21 h veterinary legislation).*

**36 The EU-listed subject Report Writing is part of the following subjects from the national curriculum: Pathology [26] with 84 h lecture (80 h Pathology, 4 h Immunology), 63 h practical work and 35 h supervised work (32 h pathology, 3 h Report Writing), and Clinical Education [32] from the national curriculum (262 h supervised work, 284 h clinical work, from which 7 h are used for Report Writing). During the Intensive Clinical Training in the 3. to 5. year, the students have to write a total number of 8 case reports in obstetrics, surgery, internal medicine, surgery and avian diseases. This procedure is described in the so-called 'Testatheft', in which all the steps a student has to absolve during his clinical education are given*

(http://www.uni-giessen.de/~gi1439/; select keyword 'Regelungen' in the left window; then follow the keyword 'Testatheft Klinik').

**37 The EU-listed subject Veterinary Legislation is part of the subject Veterinary Professional Law [20] from the national curriculum with 28 h lecture (7 h ethics, 21 h veterinary legislation).*

Table 4.1.4: Curriculum hours in other subjects taken by every student (the numbers in brackets refer to the subjects listed in Table 4.1.)

Subject	Hours in course					
	Lectures	Practical work	Supervised work (seminars)	Clinical work	Other	Total
Terminology [6.1]		28[1)]				28
Laboratory Animal Science [18]	14					14
Livestocks and Mobile Clinics [30]	28			14		42

[1)] Not mandatory for students with certified knowledge of the latin language

4.2: Elective Subjects

According to the National Curriculum there are groups of subjects, in which elective courses can be selected for a certain examination. Therefore, the courses in Table 4.2 are grouped in tracks corresponding to each examination. In total, 308 h elective courses must be passed.

The national curriculum defines a certain amount of elective course which have to be passed before the examinations. These are:

- 84 h elective courses for the 2nd stage of the Preliminary Veterinary Examination [39.1] in the subjects Anatomy [7], Histology [8.1], Embryology [8.2], Physiology [13.1], Biochemistry [13.2], Nutritional Science [14], Animal Breeding and Genetics [15], Clinical Propaedeutics [16].
- 42 h for the 1st stage of the Veterinary Examination [39.2] in the subjects Bacteriology and Mycology [23.1], Virology [23.2], Parasitology [23.3], Animal Nutrition [19], Animal Husbandry [11.1], Animal Hygiene [11.2].
- 42 h for the 2nd stage of the Veterinary Examination [39.3] in the subjects Poultry Diseases [21], Pharmacology and Toxicology [22.1], General Pathology [26.1], Special Pathology [26.2], Internal Medicine [27], Reproduction [28], Surgery [29].
- 42 h for the 3rd stage of the Veterinary Examination [39.4] in the subjects Animal Welfare [17], Veterinary Professional Law [20], Prescription/Drug Preparation [22.2], Combating Epizootic Diseases [25], Food Science and Food Science [31.1], [34], Milk Science [31.2].
- 98 h until the 3rd stage of the Veterinary Examination [39.5] in all subjects which contribute to the veterinary studies.

The number of places in each course is often limited. However, there is a strong excess (up to 100 %) of total course positions available. Thus, up to now every student could always cover sufficient hours in each subject combination [39.1 to 39.5] which are defined for the individual examinations. Within these combinations, there is a free choice of subjects.

Table 4.2: Courses organised as elective subjects (The numbers in brackets refer to the subjects listed in Table 4.1.

A: Track for the Preliminary Veterinary Examination [39.1].

Table 4.2: Courses organised as elective subjects (The numbers in brackets refer to the subjects listed in Table 4.1)

B: Track for the 1st stage of the Veterinary Examination [39.2]

Type of course	Hours in course					
	Lectures	Practical work	Supervised work (seminars)	Clinical work	Other	Total
Breeding of pet and wildlife animals 1 [11.1]			14			14
Breeding of pet and wildlife animals 1 [11.1]			14			14
Animal husbandy in tropical regions [11.1]			14			14
Animal hygiene – poultry and reptilia [11.2]			28			28
Nutrition of pets and laboratory animals [19]			42			42
Analytics of animal food [19]		56				56
Mechanisms of pathogenesis of bacteria [23.1]			14			14
Molecular virology [23.2]			14			14
Methods in molecular biology [23.2]		14				14
Introduction in cell biology [23.2]			14			14
Selected virus diseases [23.2]			14			14
Antiparasitica [23.3]			14			14
Parasitical zoonoses [23.3]			14			14
Parasitoses of small animals [23.3]			14			14
Prevention of parasitoses [23.3]			14			14

Table 4.2: Courses organised as elective subjects (the numbers in brackets refer to the subjects listed in Table 4.1)

C: Track for the 2nd stage of the Veterinary Examination [39.3]

Type of course	Hours in course					
	Lectures	Practical work	Supervised work (seminars)	Clinical work	Other	Total
Diseases of poultry and reptilia [21], [24]			28			28
General pharmacology [22.1]			14			14
Interactive learning in pharmacology [22.1]			14			14
General pathology 1 [26.1]			14			14
General pathology 2 [26.1]			14			14
Diseases of small ruminants [27], [29]			14			14
Diseases, ecology and genetics of wild ruminants [27], [29]			14			14
Laboratory diagnostics [27]			14			14
Neonatal diseases 1 [28]			28			28
Neonatal diseases 2 [28]			28			28
Obstetric surgery [28]				28		28
Diseases of the udder [28]			28			28
Equine obstetrics [28]				28		28
Surgery of the udder [28]				28		28
Biology of reproduction [28]			14			14
Artificial insemination [28]				14		14
Perioperative intensive care [29]			28			28
Equine abdominal surgery [29]				28		28
Equine sports medicine [29]			14	14		28

Table 4.2: Courses organised as elective subjects (the numbers in brackets refer to the subjects listed in Table 4.1)

D: Track for the 3rd stage of the Veterinary Examination [39.4]

Type of course	Hours in course					
	Lectures	Practical work	Supervised work (seminars)	Clinical work	Other	Total
Animal welfare [17]			14			148
Economic and legal aspects of practice management [20]			14			14
Legal aspects of medication [22.2]			14			14
Exotic epidemic diseases [25.0]			14			14
Vaccinations [25.0]			14			14
Selected viral epidemic diseases [25.0]			14			14
Actual problems in meat hygiene [31.1]			14			14
Milk science [31.2]			14			14
Microbial toxins in food [31.2]			14			14

Table 4.2: Courses organised as elective subjects (the numbers in brackets refer to the subjects listed in Table 4.1)

E: Track "free subjects" until the 3rd part of the Veterinary Examination [39.5]

Type of course	Hours in course					
	Lectures	Practical work	Supervised work (seminars)	Clinical work	Other	Total
History of the dog [6.2]			28			28
Diseases of the bee [24]			14			14
Diseases of reptilia [24]		4	10			14
Livestocks [30]			14			14
Porcine livestocks [30]			14			14

Courses in these subjects can only be used for this track, whereas all courses listed in parts A to D of table 4.2 can be used both for certain parts of the examination as well as free subjects. For example, a student who has acquired 98 h (instead of the necessary 84 h) for the 2nd stage of the Preliminary Veterinary Examination [39.1] can use the excess of 14 h for the track "free subjects".

4.3: Optional Subjects

A variety of optional subjects generally with a strong scientific background are offered every semester. Participation is in general by graduate students, however, also undergraduates may attend depending on the subject and their desired direction of specialisation.

4.4: Obligatory Extramural Work

Table 4.4: Obligatory extramural work that students must undertake as part of their training

Nature of work	Minimum period	Year of the course in which work is carried out
Practical Training with Practitioners for the 1st stage of the Veterinary Examination [36.1]	150	3
Practical Training with Practitioners for the 3rd stage of the Veterinary Examination [36.2]	700	6
Practical Training in Hygiene Control [37.1]	75	4
Practical Training in Meat Inspection [37.2]	100	5
Practical Training in Food Hygiene [38]	75	6

This practical training is often extramural. However, the practical training with practitioners ([36.1] and [36.2]) can also be absolved at a veterinary clinic of the university (§§ 56 - 57 TAppO). Practical training in food hygiene [38] can also be absolved at the Institute of Veterinary Food Science (§ 58 TAppO).
This extramural work is certified but not graded.

4.5: Ratios

The following calculations refer to the data listed in Table 4.1.1. All lectures and supervised work were summarised under the term ‘Theoretical training’.

Theoretical training	2,363	1
Practical and clinical training	2,377	1,01
Clinical training	1,316	1
Theoretical and practical training	3,424	2,60

4.6: Further Information on the Curriculum

A Basic subjects:

Biophysics [1]: The lecture and practical works in experimental physics deal with mechanics, acoustics, heat, electricity, optics, atomic and nuclear physics. This is provided by the faculty 07 ‘Mathematics, Informatics, Physics and Geography’ of the Justus-Liebig-Universität.

Chemistry [2]: The lecture (with experimental demonstrations) and the practical work is divided into anorganic and organic chemistry (each 50 %). One main focus in the practical work is the qualitative and quantitative proof of compounds. This is provided by the faculty 08 ‘Biology, Chemistry and Geo-Sciences’ of the Justus-Liebig-Universität.

Zoology [3]: Introduction to the function of cells, zoological systems with relevant species of protozoa, invertebrates and vertebrates. This is provided by the faculty 08 ‘Biology, Chemistry and Geo-Sciences’ of the Justus-Liebig-Universität.

Botanics [4]: General overview about main features of botany. In the course plants, especially poisonous and medical plants are presented. This is provided by the faculty 08 ‘Biology, Chemistry and Geo-Sciences’ of the Justus-Liebig-Universität.

Biometry [5]: In a seminar, the mathematical basis of biometry, theory of probability and methods of the descriptive and confirmative biostatistics are taught.

Anatomy [7]: Comparative gross anatomy of domestic animals is taught during 3 semesters with lectures and practical exercises (1. semester: locomotive apparatus including peripheral nervous system and blood vessel supply of the legs; 2. semester: head and central nervous system; 3. semester: thorax and skin, intestinal and urogenital tract). In addition a special course in bird anatomy is given. In parallel elective courses the topics are intensified.

Histology [8.1]: Cytology and histology including organs of the immune system is taught in the 1. semester. During the 2. and the 3. semester the microscopic anatomy of organ systems is taught in parallel to the topics concerned in gross anatomy. In parallel elective courses the topics are intensified.

Embryology [8.2]: Basic principles of embryonic development of domestic animals are taught as a seminar in the 2. semester. Special embryology of organ systems are given together with gross anatomy and histology during the 2. and 3. semester.

Physiology [13.1]: The nerve, muscle, cardiovascular and respiratory system, renal function, digestion and endocrinology are taught theoretically in a lecture and practically in a course using mainly domestic animals and computer simulations. In

elective seminars examples of diseases are considered to draw parallels to pathophysiology. In an elective *multimedia seminar* materials for teaching purposes (films, animations) are developed together with students.

Biochemistry [13.2]: The lecture is held over 2 semesters (semester 3: bioenergetics, proteins, enzymes, lipids, metabolism; semester 4: nucleic acids, protein biosynthesis, molecular biology, function of hormones]. In the practical work biochemical methods are taught. Three elective seminars (each over 2 semesters) cover the topics pathobiochemistry, regulation of metabolims and endocrinology.

Genetics [15]: Basics of genetics and breeding, domestication, selection, mutagenesis, gene transfer, biotechnology. This is provided by the 'Institut für Tierzucht und Haustiergenetik', faculty 09 'Agricultural Sciences, Oecotrophology and Environmental Management' of the Justus-Liebig-Universität.

Pharmacology and Toxicology [22.1]: Pharmacology is considered to be a most integrative discipline. General Pharmacology and Toxicology deals with principles of drug and toxin action, molecular basis of pharmacodynamics (in relation to cell biology, biochemistry, and pathophysiology), and pharmacokinetics. Special Pharmacology refers to therapeutic uses of drugs, their suitability and efficacy. Special Toxicology deals with severe side effects of drugs, naturally occuring toxins, human borne chemical threats, ecotoxicology, and toxic chemical elements.

Prescription/Drug Preparation [22.2]: Lecture and course cover prescription, production of preparations, manufacturing of drugs.

Microbiology and Immunology [23.1], [23.2], [23.4]: Biological and molecular principles, morphology, genetics, and taxonomy of bacteria, protozoa, fungi and viruses. Immunology, pathogenesis and prevention of infectious diseases; desinfection, sterility, chemotherapy, molecular biological and 'classical' diagnostic methods. The topics are taught in lectures and practical-courses.

Parasitology [23.3]: Lecture and course cover protozoa, helminths and arthropods of veterinary interest, the epidemiology, pathophysiology and immunology of infections and diseases caused by these parasites, therapeutic and control measures. Particular emphasis is put on zoonotic diseases. The course deals with basic morphology of parasites and diagnostic techniques.

Combating Epizootic Diseases [25]: General principles and legal regulations for control of epidemic diseases.

Pathology [26.1], [26.2]: Nomenclature, mechanisms, and pathogenesis of diseases (General Pathology); systemic (organ) pathology and diagnostics using biopsies and post mortem material (Special Pathology). The teaching is covered by lectures, seminars, a necropsy course, a course in systemic (organ) pathology, a course in histopathology, and an interdisciplinary seminar demonstrating post mortem material as basis of a case-dependent discussion of diseases together with clinicians (“Funktionelle Pathologie”).

B. Animal production

Ethology [9]: Principles of the study of animal behaviour, including normal behaviour and behavioural problems of farm animals, zoo animals, laboratory animals and pets.

Agricultural Theory [10], [35]: The lecture covers agricultural animal production in Europe, economics of animal production, agricultural marketing. It contains a 70 h practical course in agriculture, animal breeding and animal housing at a farm (‘Oberer Hardthof’). This is provided by the ‘Institut für Tierernährung und Ernährungsphysiologie, Fachbereich 09 ‘Agricultural Sciences, Oecotrophology and Environmental Management’ of the Justus-Liebig-Universität.

Animal Husbandry [11.1]: The main topics are animal breeding and environmental conditions for maintaining health of animals. This is provided by the ‘Institut für Tierzucht und Haustiergenetik’, faculty 09 ‘Agricultural Sciences, Oecotrophology and Environmental Management’ of the Justus-Liebig-Universität.

Animal Hygiene [11.2]: Animal husbandry, significance of environmental factors for health of animals and impact of animal husbandry on the environment. This is provided by the ‘Institut für Tierzucht und Haustiergenetik’, faculty 09 ‘Agricultural Sciences, Oecotrophology and Environmental Management’ of the Justus-Liebig-Universität.

Animal Breeding [15]: Basic principles of breeding and housing for traditional and ecological farming. This is provided by the ‘Institut für Tierzucht und Haustiergenetik’, faculty 09 ‘Agricultural Sciences, Oecotrophology and Environmental Management’ of the Justus-Liebig-Universität.

Animal Welfare [17]: Ethical principles and animal welfare legislation, the scientific assessment of well-being and suffering, welfare problems related to breeding, housing, management, transport, and killing of animals and animal experimentation.

Animal Nutrition [19]: Lecture and course cover criteria for feed evaluation, farm-grown and commercial feed sources, feed conservation, feed hygiene, nutrition of pet and laboratory animals including ecological aspects of animal nutrition. This is provided by the 'Institut für Tierernährung und Ernährungsphysiologie', faculty 09 'Agricultural Sciences, Home Economics and Environmental Management' of the Justus-Liebig-Universität.

C. Clinical subjects

Radiology [12]: Basic techniques in imaging procedures, radiotherapy, effects of radiation, principles of protection against radiation.

Clinical Propaedeutics [16]: Introduction in clinical examination methods. According to the new national curriculum from 1999 (effective since 1.8.2000), this topic is *already covered in semester* 4, i.e. during the preclinical studies, which is strongly estimated by students as one of the first real contacts with live animals.

Avian Diseases [21]: Topics of the lecture are handling, examination and physiological state of birds, pathophysiology, symptoms and treatment of avian diseases.

Diseases in Reptilia, Amphibia, Fish and Honey Bees [24]: The lecture covers fish diseases (50 %) and diseases of reptilia and amphibia (50 %). Topics are aetiology, pathogenesis, diagnosis, therapy and prophylaxis. Diseases of bees are offered as elective seminar.

Internal Medicine [27]: Lectures and clinical courses are given by the professors of the Clinic for Internal Medicine of Small Animals and Horses, and the Clinic for Ruminants and Pigs. Topics are pathophysiology, general principles of therapy and therapeutics covering all relevant internal diseases of different domestic mammals as well as laboratory diagnostics. Included are also basic concepts of Veterinary Clinical Pathology (i.e. the role of laboratory investigations in the diagnosis, prognosis, and monitoring of disease), aspects of veterinary haematology, clinical biochemistry as well as diagnostic cytology.

Physiology and Pathology of Reproduction [28]: Neuroendocrine control of male and female reproduction; gynecological, obstetrical and andrological examination. Neonatology and obstetrical problems, diseases of the male and female (including mammary gland) genital tract and the respective therapeutic approaches,

including surgery. Biotechnology of reproduction, i.e. artificial insemination. All topics are taught in lectures, seminars, practical and clinical courses.

Surgery [29]: Lectures and clinical courses are given by the professors of the Veterinary Surgical Clinic, and the Clinic for Ruminants and Pigs. Topics are asepsis, emergency therapy, shock, wound management, surgical and orthopedic diseases, hoof diseases, ophthalmology of different domestic mammals as well as clinical radiology. A course with exercises in soft tissue surgery and basic anaesthesia is managed during semester 7.

Stock Care and Out-Patients [30]: The lecture covers special problems of ambulatory medicine. In the course the students have to absolve 3 *ambulatory visits of farms* during the 6. to 9. semesters, which must cover at least 2 different species.

Intensive Clinical Training [32.2], [32.2], [32.3], [32.4]: A special feature of the clinical training at the Justus-Liebig-Universität is the so-called *Intensive Clinical Training.* During semester 6 to 9 students are taught for 2 weeks in small groups (about 3 students in each group) between 7:30 and 12:00 in 1.) the Clinic for Internal Medicine of Small Animals and Horses, 2.) the Clinic for Ruminants and Pigs or alternatively the Clinic for Bird, Reptiles, Amphibia and Fish, 3.) the Clinic for Obstetrics, Gnyaecology and Andrology of Large and Small Animals with an Ambulatory Service, 4.) the Veterinary Surgical Clinic (Small animals or Horses). In each semester, one of these clinics is passed, so that until end of semester 9 every clinical institution has been visited once.

All skills that a student has to learn during this time are described in the so-called ‘Testatheft’ (http://www.uni-giessen.de/~gi1439/; select keyword ‘Regelungen’ in the left window; then follow the keyword ‘Testatheft Klinik’).

Interdisciplinary Subject Clinical Medicine [33]: A *special feature* of the national curriculum is the seminar Interdisciplinary Subject Clinical Medicine, in which (at least) one clinical teacher discusses actual problems of this topic together with a teacher from a pre- or paraclinical institute. Students are included into this discussion. This is a new and very lively way of problem-based learning at our faculty.

D. Food hygiene

Food Science including Meat Hygiene [31.1]: Meat hygiene, EU and national legislation, inspection of slaughter animals, processing hygiene, technology of food of

animal origin, food microbiology, quality and risk management. The topics are taught theoretically in a lecture and practically in a course. During teaching about food of animal origin, students learn the *production and the technology* of different types of sausages; they perform the examination of *self-produced products* as well as products from retail.

Milk Science [31.2]: Basic knowledge of milk composition, technology of milk and dairy production, hygiene and bacteriology of milk. This is taught in a lecture and a practical course.

Interdisciplinary Subject Food [34]: A *special feature* of the national curriculum is the seminar Interdisciplinary Subject Food, in which (at least) one teacher of food sciences discusses actual problems of this topic together with a clinician and or a teacher from a pre- or paraclinical institute as well as with state veterinarians. Students are included into this discussion. This is a new and very lively way of problem-based learning at our faculty.

E. Professional knowledge

Medical Terminology [6.1]: The course covers medical, pharmacological and natural sciene terminology. It is necessary, because knowledge in Latin or Greek is no longer a prerequisite for admission to veterinary studies in Germany.

History of Veterinary Medicine [6.2]: The lecture covers the development of animal healing from the beginning of the 17th century under consideration of multiple aspects of man-animal relationships.

Veterinary Legislation [20]: History and the organisation of the veterinary profession, purchase agreements in animal trade, professional liability.

All seminars, practical work and clinically courses must be attended by the students. Depending on the seminar or course, different types of tests may be applied and attendance is verified by signature. At least 85 % of the time must be attended, otherwise the course has to be repeated. In lectures, attendance is in principle obligatory, however, a control is not allowed.

Summary of Obligatory lectures, seminars and courses:
- Experimental physics [1], lecture, 46 h, 1. semester

- Experimental physics [1], practical course, 10 h, 1. semester
- Organic and anorganic chemistry [2], lecture, 56 h, 1. semester
- Organic and anorganic chemistry [2], seminar, 14 h, 2. semester
- Exercises in chemistry [2], practical work, 56 h, 2. semester
- Zoology [3], lecture, 70 h, 1. semester
- Botany [4], lecture, 42 h, 1. semester
- Specification of plants [4], practical course, 28 h, 2. semester
- Biometry [5], practical course, 28 h, 2. semester
- Medical Terminology [6.1], course, 28 h, 1. semester
- History of Veterinary Medicine [6.2], lecture, 14 h, 1. semester
- Anatomy 1 [7], lecture, 28 h, 1. semester
- Anatomy 2 [7], lecture, 14 h, 2. semester
- Anatomy 3 [7], lecture, 28 h, 3. semester
- Preparatory course in anatomy 1 [7], practical course, 70 h, 1. semester
- Preparatory course in anatomy 2 [7], practical course, 28 h, 2. semester
- Preparatory course in anatomy 3 [7], practical course, 56 h, 3. semester
- Histology 1 [8.1], practical course, 28 h, 1. semester
- Histology 2 [8.1], practical course, 28 h, 2. semester
- Histology 3 [8.1], practical course, 28 h, 3. semester
- Embryology [8.2], seminar, 14 h, 2. semester
- Ethology [9], lecture, 28 h, 2. semester
- Agricultural Theory [10], lecture, 28 h, 2. semester
- Animal husbandry [11.1], lecture, 28 h, 2. semester
- Animal hygiene [11.2], lecture, 28 h, 6. semester
- General radiology and physics and radiation [12], lecture, 28 h, 2. semester
- General radiology and physics and radiation [12], seminar, 14 h, 2. semester
- Physiology of domestic animals 1 [13.1], lecture, 42 h, 3. semester
- Physiology of domestic animals 2 [13.1], lecture, 42 h, 4. semester
- Physiology [13.2], seminar with practical course, 56 h, 3. Semester
- Biochemistry 1 [13.2], lecture, 42 h, 3. semester
- Biochemistry 2 [13.2], lecture, 42 h, 4. semester
- Biochemistry [13.2], seminar with practical course, 56 h, 3. Semester
- Nutritional science [14], lecture, 14 h, 4. semester
- Nutritional science [14], practical course, 28 h, 4. semester
- Animal breeding and genetics 1 [15], lecture, 28 h, 3. semester
- Animal breeding and genetics 2 [15], lecture, 28 h, 4. semester
- Animal breeding and genetics 2 [15], practical course, 28 h, 4. semester
- Clinical propaedeutics [16] in all clinics, clinical work, 98 h, 4. semester
- Animal welfare 1 [17], lecture, 28 h, 2. semester
- Animal welfare 2 [17], lecture, 28 h, 5. semester
- Laboratory animal science [18], lecture, 14 h, 5. semester
- Animal nutrition 1 [19], lecture, 14 h, 5. semester
- Animal nutrition 2 [19], lecture, 14 h, 6. semester
- Course in animal nutrition 1 [19], practical course, 14 h, 5. semester

Summary of Obligatory lectures, seminars and courses: Continued

- Course in animal nutrition 2 [19], practical course, 14 h, 6. semester
- Veterinary professional law [20], lecture, 28 h, 5. semester
- Avian diseases 1 [21], lecture, 14 h, 8. semester
- Avian diseases 2 [21], lecture, 14 h, 9. semester
- General pharmacology [22.1], seminar, 28 h, 5. semester
- Toxicology [22.1], seminar, 28 h, 6. Semester
- Special pharmacology [22.1], lecture, 28 h, 7. semester
- Prescription/drug preparation [22.2], lecture, 14 h, 7. semester
- Course in prescription/drug preparation [22.2], practical course, 28 h, 8. semester
- General bacteriology and mycology [23.1] and immunology [23.4], lecture, 14 h, 5. semester
- Special bacteriology [23.1], lecture, 28 h, 7. semester

- Microbiological course [23.1], [23.2] and [23.4], practical course, 56 h, 7. semester
- General virology [23.2], lecture, 14 h, 6. semester
- Special virology [23.2], lecture, 28 h, 7. semester
- General parasitology [23.3], lecture, 28 h, 5. semester
- Special parasitology [23.3], lecture, 14 h, 6. semester
- Parasitological course [23.3], practical course, 42 h, 7. semester
- Diseases in reptilia, amphibia and fish 1 [24], lecture, 14 h, 6. semester
- Diseases in reptilia, amphibia and fish 2 [24], lecture, 14 h, 7. semester
- General epidemic diseases [25], seminar, 14 h, 8. semester
- Special epidemic diseases [25], lecture, 28 h, 9. semester
- General pathology [26.1], lecture, 42 h, 5. semester
- General pathology [26.1], seminar, 14 h, 6. semester
- Special pathology 1 [26.2], lecture, 28 h, 7. semester
- Special pathology 2 [26.2], lecture, 14 h, 8. semester
- Special pathology [26.2], seminar, 14 h, 9. semester
- Pathological-anatomical demonstrations 1 [26.2], practical work, 14 h, 8. semester
- Pathological-anatomical demonstrations 2 [26.2], practical work, 14 h, 9. semester
- Histopathology [26.2], practical course, 28 h, 9. semester
- Functional pathology [26.2], [27], clinical work, 14 h, 9. semester
- Necropsies [26.2], practical work, 10 h, can be absolved in semesters 7 to 9.
- Internal medicine of small animals 1 [27], lecture, 14 h, 5. semester
- Internal medicine of small animals 2 [27], lecture, 14 h, 6. semester
- Internal medicine of small animals 3 [27], lecture, 14 h, 7. semester
- Internal medicine of the horse 1 [27], lecture, 14 h, 5. semester
- Internal medicine of the horse 2 [27], lecture, 14 h, 6. semester
- Internal medicine of the horse 4 [27], lecture, 14 h, 7. semester
- Diseases of ruminants 1 [27], [29], lecture, 28 h, 5. semester
- Diseases of ruminants 2 [27], [29], lecture, 14 h, 6. semester
- Physiology and pathophysiology of reproduction 1 [28], lecture, 28 h, 5. semester
- Physiology and pathophysiology of reproduction 2 [28], lecture, 14 h, 6. semester
- Physiology and pathophysiology of reproduction 3 [28], lecture, 14 h, 7. semester
- Physiology and pathophysiology of reproduction 4 [28], lecture, 28 h, 8. semester
- Physiology and pathophysiology of reproduction [28], seminar, 14 h, 6. semester
- Andrology [28], clinical work and course, 14 h, 6. semester
- Obstetrics [28], clinical work and course, 14 h, 8. semester
- General surgery [29], lecture, 28 h, 5. semester
- Special surgery 1 [29], lecture, 42 h, 6. semester
- Special surgery 2 [29], lecture, 28 h, 7. semester
- Surgery of ruminants [29], lecture, 42 h, 6. semester

Summary of Obligatory lectures, seminars and courses: Continued

- Operation techniques [29], practical course, 14 h, 7. semester
- Livestocks 2 [30], lecture, 28 h, 8. semester
- Mobile clinics [30], clinical work, 14 h, can be passed between semester 6 and 9.
- Food science 1 [31.1], lecture, 14 h, 6. semester
- Food science 2 [31.1], lecture, 42 h, 9. semester
- Food science [31.1], seminar with course, 42 h, 9. Semester
- Meat hygiene [31.1], lecture, 42 h, 8. semester
- Meat examination [31.2], practical course, 28 h, 8. semester
- Milk science [31.2], lecture, 28 h, 9. semester
- Milk examination [31.2], practical course, 14 h, 9. semester
- Clinical demonstrations 1 [32], supervised work, 84 h, 5. semester

- Clinical demonstrations 2 [32], supervised work, 72 h, 6. semester
- Clinical demonstrations 3 [32], supervised work, 67 h, 7. semester
- Clinical demonstrations 4 [32], supervised work, 67 h, 8. semester
- Intensive clinical training 1 [32], clinical work, 68 h, 6. semester
- Intensive clinical training 2 [32], clinical work, 71 h, 7. semester
- Intensive clinical training 3 [32], clinical work, 60 h, 8. semester
- Intensive clinical training 4 [32], clinical work, 57 h, 9. semester
- Interdisciplinary Subject Clinical Medicine 1 [33], seminar, 56 h, 8. semester
- Interdisciplinary Subject Clinical Medicine 2 [33], seminar, 70 h, 9. semester
- Interdisciplinary Subject Food 1 [34], seminar, 56 h, 8. semester
- Interdisciplinary Subject Food 2 [34], seminar, 70 h, 9. semester
- Practical training in agriculture [35], practical course, 70 h, 3. semester

4.7 Specific Information on the Practical Clinical Training

There is a structured rotation in the clinical education:

- In the so-called clinical demonstrations [32] (3 x 2 h per week in semester 5, 6, 7 and 8) each day 2 h have to be passed in internal medicine, surgery and reproduction.
- In the intensive clinical training [32] during semester 6, 7, 8 and 9 students are taught for 2 weeks in small groups (on the average 3 students in each group) between 7:30 and 12:00 in 1.) the Clinic for Internal Medicine of Small Animals and Horses, 2.) the Clinic for Ruminants and Pigs or alternatively the Clinic for Bird, Reptiles, Amphibia and Fish, 3.) the Clinic for Obstetrics, Gynaecology and Andrology, 4.) the Veterinary Surgical Clinic (Small Animals and Horses).
- In each semester, one of these clinics is passed, so that until end of semester 9 every clinical institution has been visited once. Among others, the students are responsible for patients which they have to examine to start diagnostics and therapy; everything under the control of an experienced teacher. It is obligatory to pass one 24 h emergency service per semester during the semesters 6 to 9.
- Mobile clinics [30] is an essential part of the German national curriculum. The students have to absolve 3 ambulatory visits of farms during the 6. to 9. semesters, which must cover at least 2 different species. The number of hours is included in Table 4.1.4 and 4.1.2.4.

4.8: Specific Information on the Practical Training of Food Hygiene

A practical course of 100 h in a slaughterhouse is an essential extramural course [37.2]. It can only be performed in a slaughterhouse with EU certification, a full-time veterinarian and if cattle and pigs are slaughtered at the institution. This extramural training is self-organized by each student and can be passed at each slaughterhouse which fulfils the above mentioned criteria.

The course meat examination [31.1] (total teaching time: 28 h) in the 8th semester takes place in about 70 % of the hours at the slaughterhouse in Giessen which is about 2 km from the faculty. Group size is about 10 – 15 students per teacher. About 30 % is focussed upon practical training in a laboratory (bacteriological examination, assessment of meat quality).

During teaching on food of animal origin [31.1] students learn the production and the technology of raw, cooked and boiled sausages at the technology unit of the Institute of Veterinary Food Science. They perform the examination (by means of microbiology, histology, chemistry, sensory) of self-produced products as well as of products from retail.

2 COMMENTS

The veterinary curriculum in Germany prepares the students quite well for preclinical and paraclinical work, especially in food science, which covers a lot of additional hours after the last revision of the national curriculum. To acquire the desired practical skills, however, most student have to pass a certain time in a practice or clinic. The curriculum in Giessen is checked each semester by the committee for study affairs, in which the students hold 3 of 7 positions.

3 SUGGESTIONS

We do not have a lot of freedom to modify the content of the curriculum, because the main parts are regulated by a national law. However, several points are still considered suboptimal and should be changed in the near future.

These points are:

- Better communication between the basic natural sciences (especially Chemistry [2] and Physics [1]) and the pre- and paraclinical subjects (e.g. Biochemistry [13.2], Physiology [13.2]) about the medically relevant contents of scientific education.
- Several subjects, which are listed as essentials in the EU curriculum, are not an integral part of the national German curriculum. Some of them, e.g. Medical Documentation (incorporated in the national curriculum as a minor part of Biometry [5]) should be built up as an elective course. This should soon be possible, because our faculty plans to establish a central electronic documentation system, allowing students to get trained.
- In several seminars (e.g. Combating Epizootic Diseases [25], General Pharmacology [22.1], Toxicology [22.1]) group size is much too high; this has to be reorganised.
- The timing of the state examinations (Preliminary Veterinary Examination and Veterinary Examination) as given by the curriculum has to be improved. The examinations should be organised in such a way that there is an intervall of at least two weeks between the end of a semester and the start of the examinations. This should be organised by the examination office (Prüfungsausschuss). It should also be possible to start the 2nd stage of the Veterinary Examination after the obligatory extramural courses in the 10th or 11th semester (practical training with practitioners [36.2], practical training in food hygiene [38]) in order to avoid interference of repeat-examinations with the extramural training.

CHAPTER 5 EDUCATION: QUALITY AND EVALUATION

1 FACTUAL INFORMATION

As indicated in chapters 1 and 4, veterinary training in Germany is regulated by a national law, the so-called Tierärztliche Approbationsordnung (Ordinance concerning the Certification of Veterinary Surgeons; TAppO from 12.11.1999 with its modifications from 12.02.2001). The national curriculum as defined in § 1 TAppO consists of 3850 hours of obligatory and elective courses at a university, 70 h practical training in agriculture at the university, 1100 h obligatory extramural work (which in part can be done at the university), and 2 state examinations (Preliminary Veterinary Examination consisting of 2 stages, and Veterinary Examination consisting of 3 stages).

5.1: Teaching Program

In addition to the objectives of veterinary education as laid down in § 1 of the TAppO (see page 3) the pedagogical aims of the Veterinary Faculty of Giessen is to achieve optimal efficiency and transparency in education as well as transparency and fairness in the examinations.

To achieve transparency in education the curriculum (see chapter 4 – factual information) is regulated by the **Rules for Study** (*"Studienordnung"*), including a model curriculum which is available on the internet (http://www.uni-giessen.de/~gi1439/; keyword: Studienordnung). In addition the curriculum (Time Table) for each semester is also published on the internet (http://www.uni-giessen.de/~gi1439/; keyword: Stundenpläne). The Rules for Study and the Time Tables have been added to the SER (Appendix 2 and 3).

In respect to the Time Tables "ad hoc" corrections can be made if necessary. Any corrections or other study related matters are published on the internet (Homepage, Dean for Study Affairs, http://www.uni-giessen.de/~gi1439).

The Rules for Study implement a systematically structured curriculum consisting of lectures, seminars, practical work and clinical work (see chapter 4 – factual information). Due to strict time tables timing of lecturing is highly coordinated. On a gross scale the Rules for Study also coordinate the subjects of teaching; the fine

tuning, however, is mainly achieved by coordination on the institute- and clinic level in interaction with the preclinical, paraclinical and clinical teaching staff. Any problems are handled by the Committee for Study Affairs. However, as is indicated in chapter 1, it is the prime responsibility of the individual professor to adequately cover his area of expertise and, as indicated in Chapter 4, point 3 Suggestions, a better communication with the basic natural sciences is desired.
Execution of the curriculum is controlled by the Dekanat and in particular by the Committee for Study Affairs.
The organisation of teaching into lectures, seminars, practical and clinical work allows to approach the student with the necessary flexibility.
Teaching is largely based on standard textbooks (written in German). In addition, several institutes and clinics produce their own scripts. Scripts based on notes by the students are also made available by the Fachschaft (student council).
For interactive computer-assisted learning 12 computers are available in the Institute of Physiology, Unit of Biomathematics and Data Processing. In general slides and table material used for teaching is made available to the students. The presentations of this material on the internet is at its beginning.

In general considerable importance is placed upon theoretical education. Students are expected to understand the general principles of biology in order to intelligently respond in the future to new, emerging diagnostic and therapeutic approaches. Nonetheless, we also ensure that each student receives an optimal clinical and practical education within the limits of the curriculum (see Chapter 4).

A thorough clinical education is assured by the availability of a large variety of patients presented in respect to both, species and disease. In addition, a large collection of diagnostic material is available at the paraclinical institutes. There are several reasons why our faculty has such a wealth of relevant teaching materials:

1. The veterinary faculty is located between the wealthy, highly populated “*Rhein-Main-Neckar”* area and the *Ruhr* region with a high pet density (south, north) and the agricultural area with a comparatively large cattle and horse population (west, east; *Vogelsberg*).

2. The faculty is close to a main rail connection and to a highway (about 500 meters away; see map enclosed). In addition we have established our own transportation service for farm animals.

3. Each clinic has a policlinic where local and emergency patients are treated. The clinics are open day and night, all year round. The clinicians also undertake routine tasks such as immunisation, cleaning of ears etc. However, the majority of the patients has highly complicated illnesses and are referred by practitioners.

4. Each student is integrated into the clinical work in the so-called intensive clinic for two weeks during the 6^{th}, 7^{th}, 8^{th} and 9^{th} semester.

5. Several clinics participate in the animal health services organisation of the Bundesland Hessen (Federal State of Hessia), supported by the *"Hessische Tierseuchenkasse"* (Hessian Animal Epidemic Fund). Per farm visit two or three students are taken along, offering them the opportunity to experience the practical foundations of herd health management (Appendix 5.1 – 5.5 of this chapter). This training is part of the "Herd Health Management and Ambulatory Work" (§ 35 TAppO) and is mandatory for all students.

6. The "Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals" runs an ambulatory unit with student participation. Groups of 3 – 4 students are taken to a farm visit for outpatient care (Appendix 5.2 of this chapter).

7. The farm belonging to the Institute for Animal Breeding and Genetics of Domestic Animals, the Oberer Hardthof, provides an excellent environment for practical training in Animal Breeding, animal nutrition, agriculture, animal husbandry and animal welfare.

8. Interdisciplinary courses in Food Science also benefit from the proximity of a dairy in a nearby town. Veterinary education will also benefit from the fact that the Hessian government has decided to concentrate all hygiene and food testing facilities in Giessen at the respective Veterinary State Institute in close proximity to the premises of the Veterinary campus.

5.2: The Teaching Environment

Technical aspects

In 2000 the whole Faculty was equipped with a fibre-optic network. In addition, implementation of a veterinary documentation system for clinical and paraclinical institutes is presently undergoing a trial phase. Upon final implementation of this system it will be possible to demonstrate authentic data for teaching and research. For this purpose digital projectors are being installed in all lecture halls and by now all lecture halls have access to the internet.

Human resources

Independent teaching is restricted to the professorial staff. In recent years placement of a professor has required the demonstration of his/her didactical skills. To further develop these skills in the junior staff, the Justus-Liebig-University offers a didactical training for the teaching staff.

The faculty has not yet developed a system to reward excellence of teaching; however, on the university level a respective price is given per year on nomination by the students.

The non-professorial scientific staff is involved in “controlled teaching” only, i. e. practical and clinical work. In this position and to get trained they are, however, also asked to participate on a limited basis in lectures and seminars.

Apart from the teaching import mentioned in chapter 1.5.2 the faculty depends on external expertise in some special subjects. The following classes are taught by external lecturers:

- Medical Terminology [6.1] [1)]
- History of Veterinary Medicine [6.2]
- General Radiology, especially Physics of Radiation [12]
- Laboratory Animal Science [18]
- Veterinary Professional Law [20]
- Practice Management [20]
- Diseases in Honey Bees [24]
- Diseases in Fish [24]

[1)] The number in brackets refers to the number of subjects in the national curriculum as defined in chapter 4, table 4.1

In respect to human resources one of the main factors determining the teaching environment is the availability of academic teaching staff.
The ratio of teaching staff per student is fixed, it results from 3 ordinances, the *"Kapazitätsverordnung"* (KapVO; Gesetz- und Verordnungsblatt für das Land Hessen vom 29.12.1975 sowie 10.01.1994)", the *"Lehrverpflichtungsverordnung (Verordnung über den Umfang der Lehrverpflichtung des wissenschaftlichen und künstlerischen Personals an den Universitäten und Fachhochschulen des Landes Hessen vom 21. Dezember 1999, GVBl. 2000 I S. 35)"* and the *TAppO* (see Chapters 2 and 4).

The *"Kapazitätsverordnung"* regulates the number of students that can be accepted per year by the Faculty of Veterinary Medicine. The figure is delineated from the calculated teaching capacity of the faculty and the CN-value (Curricular-Normwert).

CN-Value:The CN-value is based on a theoretical model and is the sum of the Sub-CN-values calculated for each lecture or course offered during the whole curriculum. The model corrects for different types of teaching and for the group size.
Calculation of the Sub-CN-Value for individual lectures or courses is as follows:

$$\text{Sub-CN-value} = \frac{\text{teaching hours per week X number of weeks per semester }^{1)} \text{ X factor }^{2)}}{\text{number of students attending }^{3)}}$$

[1] the fixed number is 14 weeks per semester
[2] the factor is 1 for lectures and seminars and 0.5 for practical and clinical work
[3] the number of students is indicated in the Rules for Study, it varies from 180 (lectures) to 3 (clinical work)

For veterinary medicine in Germany the CN-value is 7.60.

Teaching capacity: The *"Lehrverpflichtungsverordnung"* dictates the number of hours (SWS, Semester-Wochen-Stunden) the academic personnel has to devote to teaching. According to this ordinance the teaching load is as follows:

Professors: 8 hours per week
Non professorial scientific staff: 4 hours per week
Non professorial scientific staff with specific status (tenured): 8 hours per week.

This teaching load is reduced by 30 % for those involved in clinical and diagnostic services.
From these figures the total teaching capacity of the faculty can be calculated in hours on a yearly basis. This figure divided by the CN-value (7.6) results in the number of students to be accepted per year.
While the CN-value is the same for all German veterinary schools, the number of teaching staff varies, resulting in different numbers of students to be accepted. Thus the student-teacher ratio cannot be changed (any increase in teaching capacity would result in the acceptance of more students). Reference is made to Chapter 1.3 and the suggestions given there.
In 2001 the number of students applying for 1 vacancy at the faculty of Veterinary Medicine in Giessen was 4.5 (see chapter 9). Thus the meeting of the CN-value is under constant control by court due to some not accepted students filing suits. In order to avoid problems the faculty generally accepts an extra load of 10 to 20 students.

Other aspects
Success in learning is rewarded. The six best students of each year receive awards, 3 for the preclinical and 3 for the clinical examination.
With implementation of the TAppO in 2001 also a mentored system had been introduced. Professors act as mentors for groups of up to 15 students from the 1st to the 4th semester. Experience so far is limited but good; students seeking advice know where to go; the mentors may forward any complaint or criticism. If necessary the Committee for Study Affairs will be involved.

5.3: The Examination

The scheme of examinations is presented in Chapter 4, Figure 4.1. As is pointed out in Chapter 2.3.2 the exams are state exams.

Examinations are generally held between semesters either from March through April or from August through September. Examinations are in general oral, including practical and clinical examinations according to the TAppO. Examinations may also be taken by external examiners. On request by the students and if offered for the respective subject, part of the final grade [at present up to 40 % (Pharmacology and Toxicology)] may be obtained by passing written exams after a specified seminar or practical course.

Within the normal curriculum students have the possibility to repeat an examination twice. If, however, a student has departed from the normal curriculum, i. e. he or she has required a longer period of time to reach the examination, only one retake is allowed. According to the rules for study [§ 3 (2)] students can only participate in clinical courses (i. e. after the 4th semester, see Chapter 4, Figure 4.1), if they have successfully finished at least 4 out of 5 subjects in the second part of the preclinical examination.

Fairness and correctness of the examinations are monitored by a commission, the *"Prüfungsausschuss"* It consists of two sections, one for the preclinical veterinary examination and one for the veterinary examination. A student may request a different examiner if he has failed the first examination. A member of the Prüfungsausschuss must be present during a retake.
The Examination Office (Prüfungsamt) *de iure* is not part of the faculty but under the supervision of the responsible State Ministry. Running matters, however, are delegated to the head of the Prüfungsausschuss. Students have to enroll for the examination on their own; to be accepted they must present the necessary certificates of having successfully passed the various seminars and practical classes.

5.4: Evaluation of Teaching

5.4.1: Evaluation of Teaching Organised by the Dean for Study Affairs

In 2002 for the first time teaching quality was evaluated by the students on a faculty level, organised by the dean for study affairs. For this purpose a standard questionnaire *"Fragebogen Lehrevaluation"* (see appendix 5.6 of this chapter) had been developed in cooperation with the Institute of Psychology (http://www.uni-giessen.de/~gi1439; keycard evaluation).

In total four parameters were assessed:

1. Relevance and usefulness of the presented subject-matters (“Do you believe that the presented subject-matter is relevant and useful for your education and upcoming professional life?”).

2. Structure and methods of teaching (“Did the lesson have an apparent structure or not? How was it presented?”).

3. Amount of information presented (“How do you estimate the ratio between the amount of information presented and the time available?”).

4. Attitude of the teacher (“Was the teacher interested in whether or not the students succeeded in learning the subject?”)

In addition an overall estimate was obtained on the instructor’s performance and the quality of lessons. The results based on 1900 individual questionnaires covering 49 individual lessons are presented in figures 5.1 to 5.6.

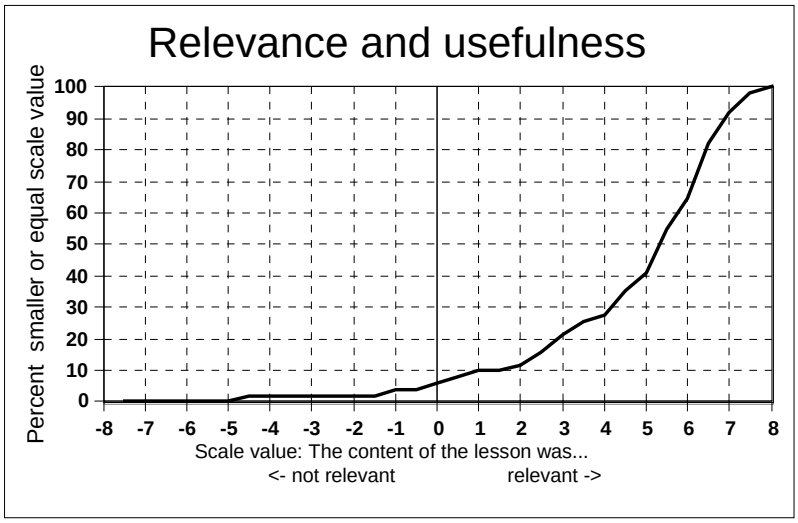

Figure 5.1: Evaluation of the relevance and usefulness of a lesson using a score range from –8 to +8 (-8: completely irrelevant, +8: very relevant). The results are based on 1900 individual questionnaires covering 49 individual lessons.

Figure 5.2: Evaluation of the attitude of the teachers using a score range from –8 to +8 (-8: the teacher was not interested in the success of teaching at all, +8: the teacher was very interested in the success of teaching). The results are based on 1900 individual questionnaires covering 49 individual lessons.

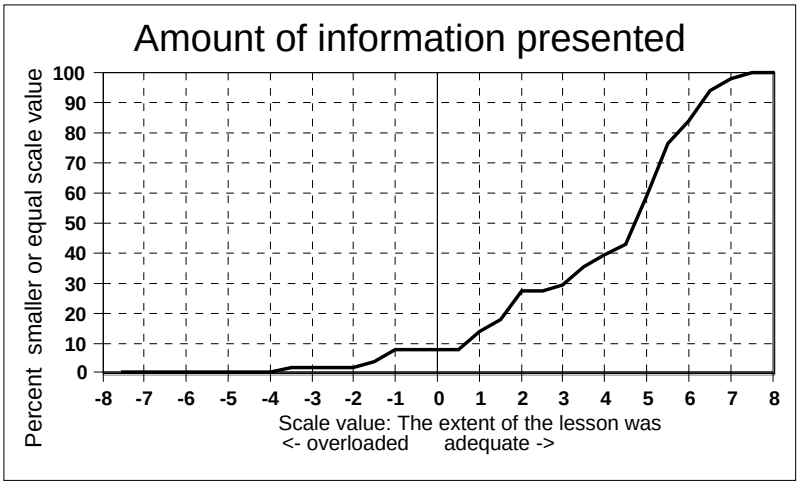

Figure 5.3: Evaluation of the amount of information presented using a score range from –8 to +8 (-8: the lesson was overloaded, +8: the amount of information was adequate). The results are based on 1900 individual questionnaires covering 49 individual lessons.

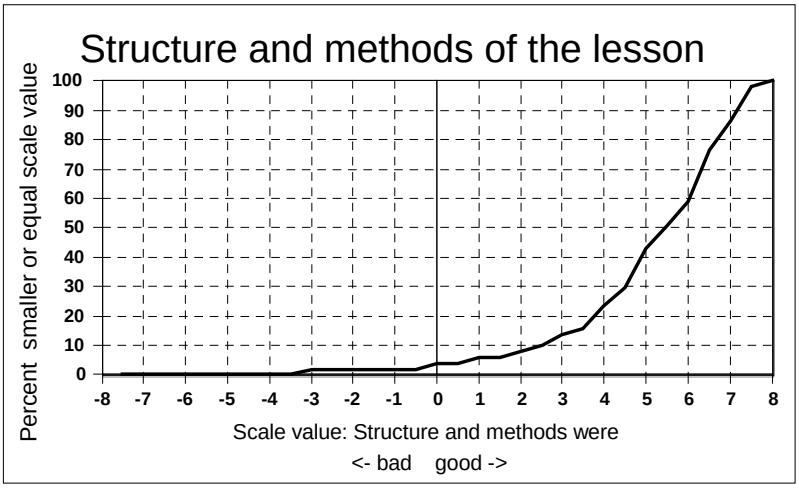

Figure 5.4: Evaluation of the structure and methods of the lessons using a score range from -8 to +8 (-8: very bad structure, +8: very good structure). The results are based on 1900 individual questionnaires covering 49 individual lessons.

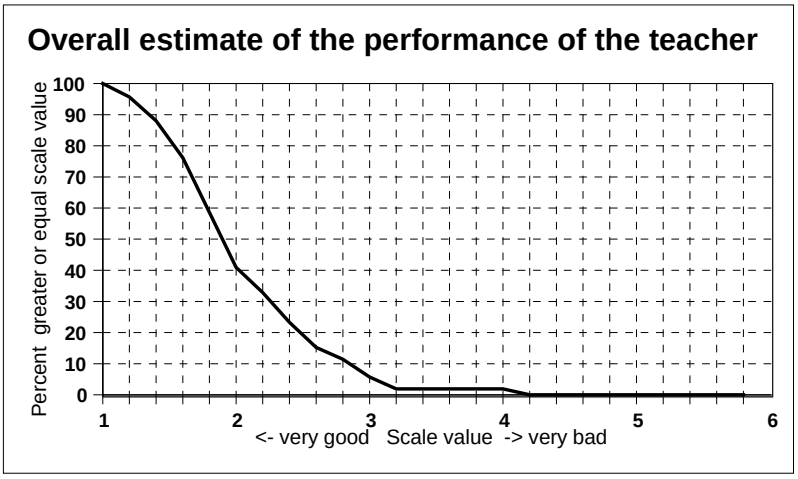

Figure 5.5: Overall estimate of the performance of the teachers using a score range from 1 to 6 (1: very good, 6: very bad). The results are based on 1900 individual questionnaires covering 49 individual lessons.

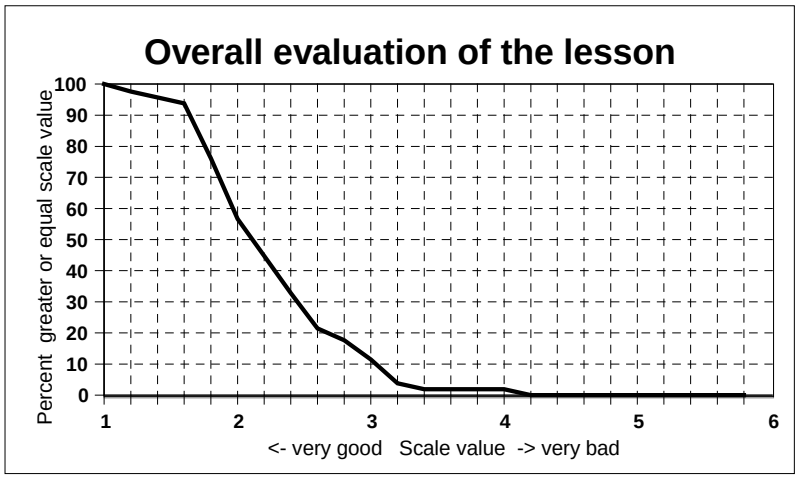

Figure 5.6: Overall estimate of the lessons using a score range from 1 to 6 (1: very good, 6: very bad). The results are based on 1900 individual questionnaires covering 49 individual lessons.

So far results of evaluation do not lead to official actions. However, consequences have been taken on an individual level to improve teaching quality. This evaluation is to be continued each year; current results are published on the internet (http://www.uni-giessen.de/~gi1439/; keyword: Evaluation).

5.4.2: Evaluation of Teaching and Teaching Environment by the Students

This evaluation was independently performed by the students (Fachschaft, student council) and is enclosed as presented in German in Appendix 4.
In this evaluation the following points were found unsatisfactory:

1) Qualification obtained after having passed the curriculum
2) Structure of the curriculum
3) Practical in surgery
4) Opening hours of the examination office and the secretariats of the various institutes and clinics

5.5: Student Welfare

Newly enrolled students can gain an initial impression of university life in groups of 12 to 15 during the introduction week which is organised by the office for student counselling (Studienberatung). Each group is tutored by a senior student.

For veterinary students three canteens are available. A small canteen run by students (cafeteria working group) is on the campus, two other large canteens *(Mensa),* the Otto-Eger-Heim and the Otto-Behaghel-Mensa, are located in a distance of about 0.5 and 3.0 km.
The *Mensa* is run by the *"Studentenwerk"* (Student-Aid-Organisation). The *"Studentenwerk"* is also responsible for the 8 student hostels. Also the Bundes-Ausbildungs-Förderungs-Gesetz (BAFöG), a system providing monetary support for students with low income, is handled by the Studentenwerk.
Students' sports and recreation are offered by the *"Allgemeiner Hochschulsport"* (http://www.uni-giessen.de/ahs/). It is open to students and faculty of the whole university.
In the past years the university has come up with great efforts to establish facilities for disabled students and faculty.

All veterinary students have access to free vaccination against rabies.
The fee charged with enrollment (119,40 €) accounts for a compulsory health insurance. Accidents occurring on campus, i. e. under supervision of the faculty, are also insured.
The fee also provides free riding on public transport within Giessen and its surrounding (diameter of about 100 km).

2 COMMENTS

As is evident from the evaluation by the students, they mostly question the adequacy of the present curriculum and the qualification obtained after having passed the veterinary curriculum. This criticism must be taken very seriously. However, it must also be considered that reorganisation of the veterinary curriculum only dates back to 1999 when it was attempted to strengthen the Public Health aspects. Strengthening of Public Health aspects was a clear political decision by the Federal Government, it was taken inspite of heavy objections by the clinical professors of the veterinary establishments in Germany, organised in “Vet. Clin.”.
According to the experiences of the Faculty of Veterinary Medicine of the Justus-Liebig-Universität Giessen, in this respect the following statements can be made:

a) in agreement with the students the moving of some paraclinical and clinical subject into the period of preclinical education had been shown to be a useful move.
b) there was no loss in clinical lecturing and training hours, on the contrary, by introduction of the so-called intensive clinic, clinical education was improved.
c) the “Querschnittsfach Klinik” (interdisciplinary subject clinical medicine [33]) has shown to be of high educational value. It has improved basic clinical thinking.
d) the Faculty of Veterinary Medicine of the Justus-Liebig-Universität Giessen will make use of the experimental clause allowing the shifting of 10 % of teaching hours in favour of clinical education and disfavour of Public Health aspects.
e) in respect to grading by the students the curriculum and the resulting education is insufficient. However, we would like to mention that it cannot be the goal of veterinary education to release veterinarians ready for practice but veterinarians who are able to acquire the readiness of practice within a reasonable length of time. It also should be mentioned that all the students responding to the student questionnaire so far have not passed the final practical required by the TAppO.

The student-teacher-ratio based on the CN-value is found too wide and hence unsatisfactory. However, as indicated above (see Chapter 5.2) this ratio can only be changed on political grounds. Yet, as in any situation, improvement is possible; for example by providing the faculty with additional technical support staff in respect to laboratory technicians, animal caretakers and on the secretarial level. The aim of these measures would be to relieve the academic staff from administrative loads and to give them more time for teaching and research. Without this additional time it will remain a slow process to implement interactive teaching via the internet and to further supply students with “in-house” teaching material and textbooks. Though due to physical reasons the faculty can hardly accept any more students, extension of the academic staff is required to allow the faculty the necessary clinical specialisation to maintain its national and international status. It is impossible to put any further load on the present number of academic staff.

Teaching and research facilities as well as facilities for clinical treatment and housing of patients have considerably improved over the past years. However, this process must continue and it is to the delight of the faculty that it is close to certain that by 2006/2007 building of the new Clinic for Small Animals (Internal Medicine and Surgery) in conjunction with the renovation of the Clinic for Horses (Internal Medicine and Surgery) will get started.

It will require the finishing of these two clinics before fully adequate facilities for surgical instructions will be available. However, also in respect to the critics forwarded by the students, prior to this the faculty will take adequate measures to improve teaching on this sub-field.

Relevance of genetic aspects in regard to diseases of farm and pet animals, animal production, human nutrition and ethology is constantly increasing. Tremendous progress in human and mouse genetics throughout the last decade has also accelerated domestic animal genetics. This newly generated knowledge is important for disease prevention by breeding and selection. To apply this knowledge for the characterisation of hereditary diseases and diseases of genetic disposition in pet and farm animals, a close collaboration between the different clinics and institutes with the Institute for Animal Breeding and Genetics of Domestic Animals is necessary. Thus, a return of the Institute of Animal Breeding and Genetics of Domestic Animals

to the Faculty of Veterinary Medicine would provide great benefits for both, teaching and research.

3 SUGGESTIONS

The dean of the faculty is in constant discussion with the deans, respectively the president of the other establishments of veterinary education in Germany in respect to improving the TAppO. However, no strategy has evolved since it will have to overcome the problem that – if specialisation would be allowed prior to getting the approbation – about 60 % of the students would enter small animal medicine, about 30 % equine medicine and the rest large animal medicine and public health. This certainly does not represent the professional distribution and most likely specialisation must remain on the post-graduate level.

To guarantee post-graduate education it is suggested to speed up introduction of the European Diplomat System.

A suggestion we are asking to be supported by the evaluation committee is to increase the support (laboratory assistance, secretarial assistance, animal caretakers) and teaching staff. This is a prerequisite to further improve the teaching environment. Through such a measure it should also be possible to increase the acquiring of extramural funds.

We are also asking for support to have the new Clinic for Small Animals built as soon as possible in conjunction with renovating and extending the Clinic for Horses and the return of the Institute of Animal Breeding and Genetics of Domestic Animals to the Faculty of Veterinary Medicine.

Appendix 5.1

Calf and Cattle Health Service

provided by the Clinic for Ruminants and Pigs

Tasks: Provision of advice to animal owners, practitioners and veterinary inspectors in case of health problems with cattle herds. Diagnostic actions to discover causes of disease, on request, either by examining samples that have been submitted or by visiting herds. Giving advice regarding the construction or reconstruction of cattle stalls, including climatic and hygienic conditions. The service is responsible for the whole state of Hessia.

Activities: The Calf and Cattle Health Service works closely with farm veterinarians and provides them with recommendations how to carry out the necessary treatments and preventative actions, including certain vaccination programmes. The calf and cattle health service does not carry out own treatments or vaccinations.

Financing: The clinic is provided with an annual allowance for these specific purposes by the *Hessische Tierseuchenkasse* (Hessian Animal Epidemic Fund). This money covers the cost of a part-time medical laboratory technician, operating costs for the clinic's own vehicle as well as laboratory costs that may occur.

Teaching Tasks directly connected with the Activities of the Calf and Cattle Health Service:

Visits to the herds take place with two or three students, so that they can experience the practical foundations of herd health management. This training is compulsory as part of the subject "Stock Care and Out-Patients" (§ 35 TAppO). For financial reasons it would not be possible for the Clinic of Ruminants and Pigs to carry out this teaching without the connection to the Calf and Cattle Health service activity.

Appendix 5.2

Ambulatory Service and Breeding Consultation Service of the Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals

Ambulatory service:

More than 10,200 patients (mostly farm-animals, some horses) per year are examined and treated by the ambulatory service. Not only obstetrical and gynaecological problems, but the entire range of farm animal diseases is covered by this service. Two fully equipped vans are available for visiting regional farms. Small groups of students (up to 4) are trained in this every-day-work, including diagnosis and treatment of individual and herd-problems as well as daily routine, such as vaccination or artificial insemination.

Breeding Consultation Service (Zuchthygienischer Konsultationsdienst, ZKD). This service reaches about 70 farms per year covering a total of about 2000 cattle. The students are instructed in the problems of monitoring herds with decreased fertility and contribute to gathering information, based on clinical examinations and laboratory analyses, which figure approximately 35000 tests per year.
Furthermore about 400 mares (mostly thoroughbred) and 200 stallions (mostly standardbred) per year are monitored concerning their fertility status. The opportunity for detailed insights into governmental, commercial and private horse breeding is provided for the students by letting small groups of 2 - 3 participate in each visit.

The training within the Ambulatory Service and the Breeding Consultation Service is compulsory as part of the subject “Stock Care and Out-Patients” (§ 35 TAppO).

Appendix 5.3

Swine Health Service

provided by the Clinic for Ruminants and Pigs.

Tasks: Advice to animal owners, practitioners and veterinary inspectors in the case of health problems with swine herds. Herd and sample examinations for the diagnosis of diseases. Advice regarding the construction or reconstruction of stalls including climatic and hygienic measurements. The service is responsible for the whole state of Hessia.

Activities: The swine health service works closely with the farm veterinarians and provides them with recommendations regarding necessary treatments and preventive actions, including vaccinations, neither of which are performed by the swine health service.

Financing: The clinic is provided with an annual allowance for these specific purposes by the *Hessische Tierseuchenkasse* (Hessian Animal Epidemic Fund). This money covers the cost of a part-time medical laboratory technician, operating costs for the clinic's own vehicle as well as laboratory costs that may occur.

Teaching Tasks directly connected with the Activities of the Swine Health Service:

Visits to the herds take place with up to four students, so they can experience practical foundations of herd health management. This training is compulsory as part of the subject " Stock Care and Out-Patients " (§ 35 TAppO). For financial reasons it would not be possible for the Clinic for Ruminants and Pigs to carry out this teaching task without the connection to the swine health service activity.

Appendix 5.4

Poultry Health Services

The Poultry Health Service is financially supported by the state government of Hessia. Repeated visits to large nearby poultry farms serve teaching in herd health. Special issues of prophylaxis and also occasionally on therapy are discussed after extensive parasitological, bacteriological, virological and serological examinations of samples from the flocks visited. This training is compulsory as part of the subject “Stock Care and Out-Patients” (§ 35 TAppO).

In addition, every year students have the chance to participate in excursions to a chicken hatchery and the export-import station and the centre for the perishable goods of the International Airport of Frankfurt am Main.

Appendix 5.5

Institute of Animal Breeding and Genetics of Domestic Animals

The Research Stations *Oberer Hardthof* and *Rudlos* are affiliated with the institute. Both stations, stocked with many species of livestock, are strongly involved in the training of veterinary students and represent the experimental basis for research projects.

The practical courses taking place at the Research Station *Oberer Hardthof* include the assessment of animal exterior and exercises in agriculture, animal breeding and animal husbandry. This course is obligatory for every student. One course comprises about 15 students in four subgroups. Every student has to care for a certain animal species (cattle, small ruminants, pigs, poultry and rabbits) for a few days under the guidance of well trained staff.

Appendix 5.6

Questionary of the Faculty for Evaluation of Teaching

VBVORvet Fragebogen zur Beurteilung von Lehrveranstaltungen

Veranstaltung	Veranstaltungsleiter WS/SS

Machen Sie bitte bei jeder Aussage durch Ankreuzen der entsprechenden Zahl kenntlich, wieweit Ihrer Meinung nach das Gesagte für die Veranstaltung zutrifft oder nicht zutrifft.

	**(-2)** stimmt nicht	**(-1)** stimmt überwiegend nicht	**(+1)** stimmt überwiegend	**(+2)** stimmt	
Man konnte dem Stoff der Veranstaltung leicht folgen.		**(-2)(-1)(+1)(+2)**			1
Das in der Veranstaltung erworbene Wissen habe ich gut im übrigen Studium anwenden können.		**(-2)(-1)(+1)(+2)**			2
Der Dozent war am Lernerfolg der Teilnehmer und Teilnehmerinnen nicht sonderlich interessiert.		**(-2)(-1)(+1)(+2)**			3
Die Veranstaltung war häufig verwirrend, weil keine Gliederung mehr zu erkennen war und einem so der Überblick verloren ging.		**(-2)(-1)(+1)(+2)**			4
Der Dozent vermittelte den Stoff anschaulich und verständlich.		**(-2)(-1)(+1)(+2)**			5
Das Thema dieser Veranstaltung halte ich im Rahmen des Veterinärstudiums für sehr sinnvoll.		**(-2)(-1)(+1)(+2)**			6
Das Verhalten des Dozenten gegenüber den Teilnehmern und Teilnehmerinnen wirkte kühl und unpersönlich.		**(-2)(-1)(+1)(+2)**			7
In der Veranstaltung wurde zu viel Stoff behandelt.		**(-2)(-1)(+1)(+2)**			8
Der Dozent hat die Veranstaltung didaktisch gut aufgebaut und durchgeführt.		**(-2)(-1)(+1)(+2)**			9
Es wurde zu schnell vorgegangen.		**(-2)(-1)(+1)(+2)**			10
Der Dozent schien Lehre als reine Pflichtübung und Routinetätigkeit zu betrachten.		**(-2)(-1)(+1)(+2)**			11
Die in der Veranstaltung erworbenen Kenntnisse kann man sicher gut in der späteren Berufspraxis gebrauchen.		**(-2)(-1)(+1)(+2)**			12
Um der Veranstaltung folgen zu können, war zu viel zusätzliche Arbeit notwendig.		**(-2)(-1)(+1)(+2)**			13
Die Veranstaltung verlief nach einer klaren Gliederung.		**(-2)(-1)(+1)(+2)**			14

Der dargebotene Stoff kam einem oft ziemlich unwichtig vor.	**(-2)(-1)(+1)(+2)**	15
Dem Dozenten ging es offensichtlich nur um das Durchziehen des Stoffes.	**(-2)(-1)(+1)(+2)**	16
An wie vielen Sitzungen der Veranstaltung haben Sie <u>nicht</u> teilgenommen?	An (____) Sitzungen	D

An wie vielen Sitzungen, an denen Sie nicht teilgenommen haben, war der Grund »Verhinderung durch äußere Umstände« - und an wie vielen der Grund »Keine Lust« ?

An (___)	Sitzungen war ich durch äußere Umstände verhindert (d.h. hätte sonst gerne teilgenommen)	E
An (___)	Sitzungen »hatte ich keine Lust, hinzugehen« (d.h. war durch keinen ernsthaften Grund verhindert)	F

Wie viel Zeit haben Sie im Durchschnitt pro Woche (außerhalb der Veranstaltung) für die Erarbeitung des Stoffes der Veranstaltung aufgewendet?

Etwa (___) Minuten pro Woche *(Bei der Zeitangabe bitte Stunden in Minuten umrechnen)* G

Welche Note würden Sie der »Vortragsleistung« des Dozenten geben? I

(1) sehr gut	(3) befriedigend	(5) mangelhaft
(2) gut	(4) ausreichend	(6) ungenügend

Welche Note würden Sie der Veranstaltung <u>insgesamt</u> geben? J

(1) sehr gut	(3) befriedigend	(5) mangelhaft
(2) gut	(4) ausreichend	(6) ungenügend

Ein Fragebogen mit vorgegebenen Aussagen und Antwortmöglichkeiten kann natürlich nicht bei jeder Veranstaltung allen Besonderheiten gerecht werden. Nutzen Sie deshalb - falls Sie es möchten - diesen Kasten zu Anmerkungen über weitere positive und/oder negative Aspekte der Veranstaltung.
Insbesondere Angabe über Qualität und Aktualität des in der Lehrveranstaltung verwendeten Lehrmaterial wären sehr hilfreich.

Appendix 5.7

Teaching Material Used by Various Professors

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
FB 07					
II. Physics Institute Prof. Dr. M. Düren	Beamer, experiments	1. Harms, Physik für Mediziner und Pharmazeuten, Harms Verlag. 2. Harten, Physik für Mediziner, Springer. 3. Haas, Physik für Pharmazeuten und Mediziner. 4. Giese, Kompendium der Physik für Veterinärmediziner, Enke. 5. W. Seibt, Physik für Mediziner. 6. Breuer, Taschenatlas Physik für Mediziner.	Yes Script: W. Hellenthal, Physik für Mediziner und Biologen, Wiss. Verlagsgesellsch., Stuttgart.	Yes, http://www.physik.uni-giessen.de/Dueren/physikmed.htm specialised by password	in preparation
Institute for Atomic and Molecular Physics Prof. Dr. A. Müller	Blackboard, overhead-projector	1. Kauffmann, Moser und Sauer, Radiologie, 2. Auflage (Urban und Fischer, München, 2001). 2. Krieger, Stahlenphysik, Dosimetrie und Strahlenschutz, Band 1 Grundlagen, 4. Auflage (Teubner, Stuttgart, 1998). 3. Krieger, Stahlenphysik, Dosimetrie und Strahlenschutz, Band 2, Strahlungsquellen, Detektoren und klinische Dosimetrie, 3. Auflage (Teubner, Stuttgart, 2001).	No script	A part of the lectures is available in: http://www.strz.uni-giessen.de/Radiologie/seminar.htm	Yes from Kauffmann, Moser und Sauer [1].

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
		4. Tritthart, Medizinische Physik und Biophysik (Schattauer, Stuttgart, 2001). 5. Kiefer & Kiefer, Allgemeine Radiologie, Parey Buchverlag (Blackwell)			
FB 08					
Institute for General Botany and Plant Physiology Prof. Dr. F. Ringe Prof. Dr. R. Schnetter	Blackboard, overhead-projector, slide-projector, sporadic multimedia films	1. Lüttge U, Kluge M, Bauer G: Botanik, VCH, Weinheim. 2. Kull U: Grundriss der Allgemeinen Botanik, Spektrum Akademischer Verlag, Heidelberg.	Students script available, but not supervised. Course notes for "Einführung in die Systematik der einh. Blütenplanzen"	No, only topics http://www.uni-giessen.de/vlv/ss01/pdffiles/fb08.pdf or http://www.uni-giessen.de/vlv/ss01/pdffiles/fb10.pdf	yes from students organisation
Institute for General Botany and Plant Physiology Membranes and Light Receptors Prof. Dr. G. Wagner	Slide-projector, beamer, multimedia films	1. Nultsch, Allgemeine Botanik; 2. Raven et al., Biologie der Pflanzen; 3. Taiz/Zeiger, Pflanzenphysiologie bzw. 4. Schopfer/Brennicke, Pflanzenphysiologie	Lectures, no script	Under construction: http://www.uni-giessen.de/%7Egf1114/rgwagner/agwagner.html	No
Institute of Animal Physiology Prof. Dr. W.G. Clauß	Overhead-projector, slide-projector	1. Ahne et al.: Zoologie für Vetmed, Schattauer Verlag. 2. Wehner/Geering: Zoologie, Thieme Verlag	No	Topics of the lectures: http://www.uni-giessen.de/fb15/tierphysio/download.htm	Yes
Institute of Inorganic and Analytical Chemistry Inorganic Chemistry Prof. Dr. M. Fröba			Course notes 1-4 homepage Froeba http://www.uni-giessen.de/~gi1439/		http://www.uni-giessen.de/~ge1024/froeba/index.html

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
Institute of Organic Chemistry Prof. Dr. J. Ipaktschi	Blackboard, overhead-projector, slide-projector, beamer; also multimedia films, television	1. Mortimer, Charles E, Chemie. Basiswissen der Chemie. Mit Übungsaufgaben. 7., korr. Aufl. 2001, Thieme. 2. Hart, Harlod; Craine, L. E.; Hart, D. J. Organische Chemie. Ein kurzes Lehrbuch. 2., überar. u. aktualis. Aufl. 2002, Wiley-VCH.	Lectures and course notes are available as PowerPoint presentation	CD-ROM available http://www.uni-giessen.de/fb14/vorlesung/einfuehrung_oc/start.htm	Yes
FB 09					
Institute of Animal Breeding and Genetics Prof. Dr. V. Dzapo Prof. Dr. G. Erhardt	Overhead-projector, slide-projector, blackboard	1. Scholtyssek S: Geflügel, Verl. E. Ulmer, Stuttgart. 2. Schlolau W: Das große Buch vom Kaninchen, DLG-Verlag, Ffm. 3. Glodek P: Schweinezucht-Grundlagen der Schweinproduktion, Verl. E. Ulmer, Stuttgart. 4. Kräußlich H: Tierzüchtungslehre, Verl. E. Ulmer, Stuttgart. 5. Brem G: Exterieurbeurteilung landwirtschaftlicher Nutztiere, Verl. E. Ulmer, Stuttgart.	No, by request own manuals are available for students.	No	No

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
Institute of Agricultural and Foodsystem Management Prof. Dr.Dr.h.c. F. Kuhlmann	Beamer, overhead-projector	1. Brandes, W.; Woermann, E. (1971): Landwirtschaftliche Betriebslehre, Bd. II: Spezieller Teil, Organisation und Führung landwirtschaftlicher Betriebe, Hamburg, Berlin. 2. Kuhlmann, F. (2002): Betriebslehre der Agrar- und Ernährungswirtschaft, 2. Aufl., Frankfurt. 3. Leiber, F. (Hrsg.) (1984): Landwirtschaftliche Betriebswirtschaftslehre, Hamburg. 4. Odening, M.; Bokelmann, W. (2000): Agrarmanagement - Landwirtschaft, Gartenbau, Stuttgart. 5. Reisch, E.; Zeddies, J. (1992): Einführung in die landwirtschaftliche Betriebslehre, Bd. II: Spezieller Teil, Grundlagen und Methoden der Entscheidung, Ökonomik der pflanzlichen und tierischen Produktion, 3. Aufl., Stuttgart.	Yes	Yes, http://www.uni-giessen.de/~gh1608 *"Allgemeine Landwirtschaftliche Betriebslehre für Veterinärmediziner"*	No

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
Institute of Animal Nutrition and Nutritional Physiology Prof. Dr. J. Pallauf (Animal Nutrition) Prof. Dr. E. Weigand *(Futtermittelkunde)*	Slide-projector, overhead-projector, in the future also beamer	1. Jeroch H, Drochner W, Simon O: Ernährung landwirtschaftlicher Nutztiere, Ulmer-Verlag Stuttgart 1999. 2. Kamphues J, Schneider D, Leibetseder J: Supplemente zu Vorlesungen und Übungen in der Tierernährung, 9. Aufl., Schaper Verlag 1999. 3. Kirchgessner M: Tierernährung, 10. Aufl., DLG-Verlag Frankfurt/M. 1997 4. Menke KH, Huss W: Tierernährung und Futtermittelkunde, 3. Aufl., Ulmer-Verlag Stuttgart, 1987.	Scripts for lectures and practical courses in animal nutrition (10. ed., 2002) Practical course notes: *"Anleitung zum Praktikum Tierernährung und Futtermittelkunde"* Other teaching material: *Futtermittelsammlung, Grünlandaufwuchs, Futtermittel-Muster*	No	No
FB 10					
Institute of Veterinary Anatomy, -Histology and -Embryology Prof. Dr. M. Bergmann Prof. Dr. M. Kressin Prof. Dr.Dr.h.c. R. Leiser	Overhead-projector (table paintings), original compounds, video-projector	1. Nickel-Schummer Seiferle, Anatomie der Haustiere, Band I-V, Parey Verlag. 2. König-Liebig, Anatomie der Haussäugetiere, Band I, II, Schattauer Verlag. 3. Salomon, Lehrbuch der Geflügelanatomie, Gustav Fischer Verlag. 4. König-Liebig, Anatomie und Propädeutik des Geflügels, Schattauer-	Script for lectures and seminars	No	No

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
		Verlag. 5. Schnorr-Kressin, Embryologie der Haussäugetiere, Enke Verlag.			
Institute of Veterinary Physiology Prof. Dr. M. Diener Prof. Dr. R. Gerstberger	Beamer, blackboard incl. self produced multimedia films, overhead-projector, slide-projector	1. Engelhardt W, Breves G, Physiologie der Haustiere, ISBN 3-7773-1429-3. 2. Schmidt RF, Thews G, Physiologie des Menschen, ISBN 3-540-63030-9. 3. Klinke R, Silbnagl S, Lehrbuch der Physiologie, ISBN 3-13-796002-9. 4. Deetjen P, Speckmann EJ, Physiologie, ISBN 3-43-741316-3. 5. Haschke G, Diener M, Multimedia Physiologie, ISBN 3-7773-1477-3.	Script for lectures (WS and SS).	Scripts for seminars and practical courses in physiology http://www.uni-giessen.de/fb18/vet-physiologie, Multimedia-CD (Haschke G, Diener M, Multimedia Physiologie)	Yes printed + http://www.uni-giessen.de/fb18/vet-physiologie, keyword: Physikum.
Animal welfare and ethology Prof. Dr. H. Würbel	PowerPoint presentation (Notebook, beamer), handouts	Legislation: 1. Maisack C: Tierschutzgesetz, Vahlen Verl., München, 2003 Ethology: 2. Alcock J: Animal Behavior, 7th ed., Sinauer Ass., Sunderland, MA. 3. McFarland D: Biologie des Verhaltens, Spektrum Verl. Heidelberg	Scripts (in preparation) Animal protection law, animal protection ordinances, European conventions, guidelines, reports and informations as available under: http://www.verbraucherministerium.de or under: http://www.uni-giessen.de/tierschutz/	In preparation	List of topics (in preparation)

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
		Animal welfare: 4. Sambraus HH, Steiger A: Das Buch vom Tierschutz, Enke, Stuttgart 5. Appleby MC, Hughes BO: Animal Welfare, CABI, Wallingford.			
Institute of Biochemisty and Endocrinology Prof. Dr. W. Schoner Prof. Dr. E. Eigenbrodt	Overhead-projector, slide-projector, Blackboard	1. Löffler G, Petrides PE: Biochemie und Pathobiochemie, 6. Aufl., Springer Verlag 1998. 2. Löffler G: Basiswissen Biochemie mit Pathobiochemie, 4., korr. Aufl., Springer Verlag 2001. 3. Nelson DL, Cox MM: Lehninger Biochemie, 3. Aufl., Springer Verlag 2001. 4. Stryer L: Biochemie, 4. Auflage, Spektrum der Wissenschaft 1996 5. Voet D, Voet JG: Biochemie, Verlag Chemie 1994.	Script for practical course and seminars in biochemistry *"Einführung in die Praktische Biochemie für Studierende der Veterinärmedizin".* Lectures: list of topics of the lectures	transparency to seminars: http://www.uni-giessen.de/fb18/biochem/Folien/Themen.html.	yes printed
Institute of Veterinary Pathology Prof. Dr. M. Reinacher	Slide-projector, overhead-projector, blackboard, beamer	1. Stünzi-Weiss: Allgemeine Pathologie 2. Kitt: Lehrbuch der allgemeinen Pathologie 3. Dahme-Weiss: Grundriss der speziellen pathologischen Anatomie der	No, list of topics of the lectures	No	Yes, list of topics printed

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
		Haustiere. 4. Slauson, Cooper: Mechanisms of disease. A textbook of comparative general pathology 5. Robbins: Pathologic basis of disease.			
Institute of Veterinary Food Science Prof. Dr. M. Bülte (Meat Science)	Overhead-projector (about 80%), slide-projector, video tapes, blackboard, beamer is requested for	1. Sinell, Einführung in die Lebensmittelhygiene, Parey im Blackwell Verlag, Berlin und Hamburg. 2. Geiger, Qualitätslehre, Vieweg Verlag. 3. Fehlhaber und Janitschke (Hrsg.), Veterinärmedizinische Lebensmittelhygiene, Fischer Verlag, Jena u. Stuttgart. 4. Fries et al., Praxis der Geflügeluntersuchung, Schlüter Verlag, Hannover. 5. Zrenner und Haffner, Lehrbuch für Fleischkontrolleure, F. Enke Verlag, Stuttgart.	1. Basic edition of meat hygiene law with annual supplements 2. Guidelines for ante mortem health inspection, meat inspection and reports, with annual update 3. Script for practical course of food examination and food processing, with annual update	No	No
Prof. Dr. E. Usleber (Dairy Science)	Overhead-projection, in parts video-tapes	1. Kielwein G. (1994) Leitfaden der Milchkunde und Milchhygiene, 213 S., Blackwell Wissenschaft, ISBN 3 8263 3012 9	No	http://www.uni-giessen.de/~gi1413/kursfolien/folien.htm	No

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
		2. Fox P.F & McSweeney P.L.H (1998) Dairy Chemistry and Biochemistry, 478 S., Blackie Academic and Professional, ISBN 0 412 72000 0 3. Weber, H., Hrsg. (1996) Mikrobiologie der Lebensmittel. Milch und Milchprodukte, 396 S., Behrs Verlag, ISBN 3 86022 235 X 4. Baumgart, J (1993) Mikrobiologische Untersuchung von Lebensmitteln. 514 S., Behrs Verlag, ISBN 3 86022 114 0			
Institute of Hygiene and Infectious Diseases of Animals Prof. Dr. G. Baljer Prof. Dr. R. Bauerfeind	Overhead-projector, slide-projector, laser-beamer, blackboard	1. Rolle, Mayr: Mikrobiologie, Infektions- und Seuchenlehre. 2. Bisping: Kompendium der Tierseuchen-bekämpfung. 3. Blobel, Schliesser: Handbuch der bakteriellen Infektionen bei Tieren. 4. Dedié et al.: Bakterielle Zoonosen bei Tier und Mensch. 5. Madigan et al.: Mikrobiologie.	Scripts for *"Mikrobiologische Übungen (bakteriologischer Teil)"* Scripts for *"Bakteriologie und Mykologie", "Tierhygiene" and "Tierseuchenbekämpfung"* produced and available by the students organisation.	No	Yes

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
Institute of Virology Prof. Dr. H.-J. Thiel Prof. Dr. T.H. Rümenapf	Beamer	1. Rolle M, Mayr A: Medizinische Mikrobiologie, Infektions- und Seuchenlehre, Enke Verlag, 7. Aufl., 2002. 2. Murphy FA, Gibbs EPJ, Horzinek MC, Studdert MJ: Veterinary Virology, Academic Press, 1999. 3. Liess B: Virusinfektionen einheimischer Haussäugetiere, Enke, 1997.	Scripts for *"Spezielle Virologie* *Allgemeine Virologie* *Virologisches Praktikum"*	No	printed list of topics
Institute of Parasitology Prof. Dr. H. Zahner	Blackboard, overhead projector, slide-projector, video tape	1. Rommel, M. et al. (2000): Veterinärmedizinische Parasitologie. Parey 2. Hiepe, Th. (1985): Lehrbuch der Parasitologie (4 Bände). Gustav Fischer Verlag 3. Lucius, R., Loos-Frank, B. (1997): Parasitologie. Spektrum Akademischer Verlag 4. Mehlhorn, H. (ed.) (2001): Parasitology (2 Vol.). Springer 5. Krauss, H. et al. (1997): Zoonosen. Deutscher Ärzte-Verlag	Course script: Bauer, C. (2002): *„Praktikum der veterinärmedizinischen Parasitologie“,* Verlag Ferber´sche Uni-Buchhandlung Giessen, Nachdruck Course notes *"Merkblätter zur Parasitenbekämpfung"*	No	No
Institute of Pharmacology and Toxicology Prof. Dr. E. Petzinger	Blackboard, overhead-projector, slide-projector, beamer	1. Frey HH, Löscher W: LB der Pharmakologie und Toxikologie für die	Copies of all acetate sheets scripts prepared by thesis	in parts; AVO im SS 2002, *"Wahlpflichtvorlesungen"*	No

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
		Veterinärmedizin, Enke Verlag, 2. Aufl., 2002. 2. Löscher W, Ungemach FR, Kroker R: Grundlagen der Pharmakotherapie bei Haus- und Nutztieren, Blackwell Wissenschaft Parey, 4. Aufl., 1999. 3. Kühnert M: Veterinärmedizinische Toxikologie. Gustav Fischer Verlag, 1. Aufl., 1991. ***Humanmedizinische Lehrbücher*** 4. Forth W, Hentschler D, Rummel W: Allgemeine und Spezielle Pharmakologie und Toxikologie, Urban u. Fischer, 2001. 5. Mutschler E: Arzneimittelwirkungen - LB der Pharmakologie und Toxikologie, Wiss. Verlagsges., 2001.	students of the institute and the students organisation		
Clinic for Birds, Reptiles, Amphibia and Fish Prof. Dr. E.F. Kaleta	Blackboard, overhead-projector, slide-projector, laser-beamer, multimedia films, television + presentation of patients	1. Siegmann O, Hrsg.: Kompendium der Geflügelkrankheiten. 2. Kaleta EF, Krautwald-Junghanns ME, Hrsg.: Kompendium der Ziervogelkrankheiten. 3. Grabisch/Zwart, Hrsg.: Heimtierkrankheiten. 4. Köhler G: Krankheiten der Amphibien und Fische.	Scripts produced and available by the students organistion under supervision of Prof. Kaleta	yes under http://www.vetstudy.de/	yes under http://www.vetstudy.de/

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
Veterinary Surgical Clinic Prof. Dr. E.J. Schimke Small Animal Surgery Prof. Dr. L.-F. Litzke Equine Surgery	Blackboard, overhead projector, slide-projector, video tape, beamer, presentation of patients.	1. Dietz/Huskamp (1999) Handbuch Pferdepraxis, 2. Aufl., Enke Verlag Stuttgart 2. Auer (1999) Equine Surgery, W. B. Saunders Company. 3. Stashak (1989) Adams' Lahmheit bei Pferden, Verlag M. & M. Schaper·Alsfeld-Hannover	No	Disease report hompage Litzke http://www.uni-giessen.de/fb18/pfc/frame.htm	Yes
Clinic for Internal Medicine Prof. Dr. H.H. Sasse (Horses)	Beamer, overhead-projector, slide-projector presentation of patients	1. Colahan et al. Ed.: Equine Medicine and Surgery. 2. Dietz und Huskamp Ed.: Handbuch Pferdepraxis, 3. Huskamp Ed.: Praxis-orientierte Anatomie. 4. Wintzer Ed.: Krank-heiten des Pferdes. 5. Fellmer et al. Ed.: Tierärztliches Haftungsrecht.	Scripts produced and available by the students organisation: *Innere Krankheiten der Pferde:* *I. Krankheiten des Atmungsapparates* *II. Kolik beim Pferd*	http://www.uni-giessen.de/fb18/mvk/studenten/htm	No
Prof. Dr. E.-G. Grünbaum (Small Animals)	Beamer, overhead-projector, slide-projector, blackboard, multimedia, presentation of patients	1. Christoph, H.-J., Freudiger, U., Grünbaum, E.-G., Klinik der Hundekrankheiten. 2. Kraft, W., Dürr, U.M., Klinische Labordiagnostik der Tiermedizin, 1999. 3. Kraft, W., Hirschberger, J., Kleintierkrankheiten:	Slides as handouts	No	Yes

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
		Innere Medizin (Bd. 1), 2000. 4. Ettinger, S.J., Feldman, E.C., Textbook of Veterinary Internal Medicine, 2. Vols. 5. Niemand, H., Suter, P.F., Praktikum der Hundeklinik, 2001.			
Clinic for Ruminants and Pigs Prof. Dr. K. Doll (Ruminants)	Overhead-projector, slide-projector, soon beamer + video tapes, presentation of patients	1. Rosenberger, G.: Die klinische Untersuchung des Rindes. Blackwell, 1990. ISBN 38 26 32 65 20. 2. Alternativ zu 1): Baumgartner, W.: Klinische Propädeutik der inneren Krankheiten und Hautkrankheiten der Haus- und Heimtiere. Blackwell, Berlin 1999, ISBN 3-8263-3238-5. 3. Dirksen, G., H.-D. Gründer, M. Stöber: Innere Medizin und Chirurgie des Rindes. Parey 2002, ISBN 3-8263-3181-8. 4. De Kruif, A.: Tierärztliche Bestandsbetreuung beim Milchrind. Enke, Stuttgart, 1998. ISBN 3-432-29221-X.	Acetate sheets of the lectures since SS 2002 available as CD-ROM..	Yes http://www.uni-giessen.de/kws/index1.htm	Yes http://www.uni-giessen.de/kws/index1.htm .
Prof. Dr. G. Reiner (Pigs)	Beamer, blackboard, multimedia films	1. Wendt: Lehrbuch der Schweinekrankheiten Waldmann, Paul Parey 2001.	yes, http://www.uni-giessen.de/~gi1462/schwein bzw. /vorlesung	http://www.uni-giessen.de/~gi1462/schwein	in preparation

Institution / Professur	1. Representation of the Teaching Material	2. Standard Veterinary Textbooks	3. Scripts and Course Notes	4. Internet-Presentation of Scripts	5. Standardised Questions for Examinations
		2. Straw et al: Diseases of Swine, Blackwell Science, 2000.		http://www.uni-giessen.de/~gi1462/vorlesung	
Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals Prof. Dr.Dr.h.c. H. Bostedt Prof. Dr.Dr. h.c. B.Hoffmann	Educational films, overhead-projector, slide-projector, beamer, presentation of patients	1. Hospes, Seeh: Sonographie und Endoskopie an der Zitze des Rindes 2. Baier, Schaetz: Tierärztliche Geburtshilfe 3. Richter, Götze: Tiergeburtshilfe 4. Bostedt: Fruchtbarkeitsmanage-ment beim Rind 5. Walser, Bostedt: Neugeborenen- und Säuglingskunde der Tiere 6. Busch, Zerobin: Fruchtbarkeitskontrolle bei Groß- und Kleintieren 7. Busch, Löhle, Peter: Künstliche Besamung bei Nutztieren. 8. Busch, Holzmann: Veterinärmedizinische Adrologie. 9. Döcke: Veterinärmedizinische Endokrinologie. 10. Intervet: Kompendium der Fortpflanzung bei Tieren. 11. Hoffmann: Andrologie	Scripts available from the students organisation. Own scripts from Prof. Bostedt handout of scripts	No	No

CHAPTER 6 FACILITIES AND EQUIPMENT

1 FACTUAL INFORMATION

6.1: Premises in general

The institutes and clinics comprising the faculty are indicated in Table 2.1.
As can be seen from the enclosed map, the main campus houses the following institutes:

- Institute of Veterinary Anatomy, Histology and Embryology (Frankfurter Str. 98)
- Institute of Veterinary Physiology (Frankfurter Str. 100)
- Institute of Biochemistry and Endocrinology (Frankfurter Str. 100)
- Institute of Veterinary Pathology (Frankfurter Str. 96)
- Institute of Veterinary Food Science (Frankfurter Str. 92)
- Veterinary Surgical Clinic (Frankfurter Str. 108)
- Clinic for Internal Medicine of Small Animals and Horses (Frankfurter Str. 126)
- Clinic for Ruminants and Pigs (Frankfurter Str. 110 and 112)
- Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals (Frankfurter Str. 106)

The following institutes are in immediate proximity to the main campus and only separated by the Frankfurter Strasse.

- Institute of Virology (Frankfurter Str. 107)
- Institute of Pharmacology and Toxicology (Frankfurter Str. 107)
- Institute of Hygiene and Infectious Diseases of Animals (Frankfurter Str. 85 – 89)
- Clinic for Birds, Reptiles, Amphibia and Fish (Frankfurter Str. 91)

As part of the Institute of Veterinary Physiology the Unit of Biomathematics and Data Processing is located on Frankfurter Str. 95.
Also, in close proximity (distance of about 800 m) is the Institute of Parasitology (Rudolf-Buchheim-Str. 2).

Within walking distance (15 to 20 min.) the station Schwarzacker is located, where animals are held for teaching purposes and where rectal examinations and transfer of semen are taught.
Similarly the institutes located at Heinrich-Buff-Ring (Chemistry, Physics, Animal Nutrition) are within walking distance (about 15 min.).
Public transportation or other means of transportation are necessary to reach the Institute of Botany, Senckenbergstr. 3 and the “Obere Hardthof”, Institute for Animal Breeding and Domestic Animal Genetics, where practical instructions are given in assessing of animals and animal husbandry.

Due to space reasons also the Professorship of Milk Science as part of the Institute of Veterinary Food Science was moved to the location Ludwigstrasse 21.

Irrespectively of the somewhat dispersed location of some institutes the faculty attempts to concentrate teaching on the main campus and in the lecture halls along the Frankfurter Strasse. Thus, in general, only to attend lectures and practical courses in chemistry, physics, botany, zoology and animal nutrition students have to move from the main campus.

6.2: Premises Used for Clinics and Hospitalisation

This information is given in table 6.2.1.

Table 6.2.1 Places available for clinics and hospitalisation

number of hospitalisation places for cattle	58	(30[3] + 28[4])
number of hospitalisation places for horses	55	(22[1] + 19[4] + 14[2])
number of hospitalisation places for small ruminants	12	(4[3] + 8[4])
number of hospitalisation places for pigs	16	(4[4] + 12[3])
number of hospitalisation places for dogs	147	(14[4] + 60[1] + 73[2])
number of hospitalisation places for cats	86	(10[4] + 54[1] + 22[2])
number of hospitalisation places for birds	20[5]	
number of hospitalisation places for reptiles, amphibians	5[5]	
number of animals that can be accommodated in isolation facilities;		
small animals	46	(24[4] + 6[1] + 16[2])
farm animals and horses	51	(2[1] + 6[2]+6[3]+ 39[4])

[1] Veterinary Surgical Clinic
[2] Clinic for Internal Medicine of Small Animals and Horses
[3] Clinic for Ruminants and Pigs
[4] Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals
[5] Clinic for Birds, Reptiles, Amphibia and Fish

6.3: Premises for Animals

The number of places available for rearing of animals and maintaining normal animals for teaching purposes is listed in table 6.3.1. In respect to the unit “Oberer Hardthof” we refer to section 7.2.

Table 6.3.1 places available for rearing and maintaining normal animals for teaching purposes.

horses	up to 10 (3[1] + 2[2] + 5[4])
swine	up to 54 (4[4] + 50[3])
dogs	up to 8[4] (in 2 cannels)
cows	up to 10[4]
sheep, goats	up to 20[4]

[1] Veterinary Surgical Clinic
[2] Clinic for Internal Medicine of Small Animals and Horses
[3] Clinic for Ruminants and Pigs
[4] Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals (station “Schwarzacker”)

6.4: Premises used for Theoretical, Practical and Supervised Teaching

This information is summarized in tables 6.4.1, 6.4.2 und 6.4.3.

Table 6.4.1: Premises for lecturing

A Number of lecture halls		**12**
B Number of places per lecture hall		
Room no.	institution	places
no. 1	Veterinary Surgical Clinic	146
no. 2	Clinic for Ruminants and Pigs	88
no. 3	Institute of Hygiene and Infectious Diseases	100
no. 4	Institute of Veterinary Anatomy	198
no. 5	Institute of Veterinary Physiology	203
no. 6	Institute of Veterinary Food Science	90
no. 7 – 10	Clinic for Obstetrics, Gynaecology and Andrology	390 (132, 168, 90)
no. 11	Institute of Veterinary Pathology	84
no. 12	Institute of Pharmacology and Toxicology	23
Total number of places		**1322**

Table 6.4.2: Premises for supervised group work

Number of rooms that can be used for group work		**18**
Room no.	institution	places
no. 1, 2	Clinic for Internal Medicine	45(25, 20)
no. 3	Clinic for Birds, Reptiles, Amphibia and Fish	4
no. 4	Institute of Veterinary Anatomy	75
no. 5, 6	Institute of Parasitology	35
no. 7, 8	Institute of Veterinary Physiology	40(30, 10)
no. 9	Clinic for Ruminants and Pigs	16
no. 10	Institute of Hygiene and Infectious Diseases	15
no. 11, 12	Unit of Biomathematics and Data Processing	11(6, 5)
no. 13	Institute of Veterinary Food Science	20
no. 14, 15	Clinic for Obstetrics, Gynaecology and Andrology	16(16)
no. 16, 17	Veterinary Surgical Clinic	80(50, 30)
no. 18	Institute of Veterinary Pathology	28
Total number of places		**385**

Table 6.4.3: Premises for practical work

Number of laboratories for practical work for students		**15**
Room no.	institution	places
no. 1, 2	Institute of Veterinary Anatomy	360 (240, 120)
no. 3, 4	Institute of Parasitology	63
no. 5, 6	Institute of Veterinary Food Science	68 (60, 8)
no. 7	Institute of Biochemistry and Endocrinology	66
no. 8	Institute of Veterinary Physiology	55
no. 9	Institute of Hygiene and Infectious Diseases	70
no. 10 – 12	Clinic for Obstetrics, Gynaecology and Andrology	100 (50, 25, 25)
no. 13	Veterinary Surgical Clinic	60
no. 14	Institute of Veterinary Pathology	63
no. 15	Institute of Pharmacology and Toxicology	20
Total number of places		**925**

6.5 Support Services

6.5.1: Diagnostic Laboratories and Clinical Support Service

The following institutes provide diagnostic services to the faculty and the general public:

- Institute of Veterinary Anatomy, Histology and Embryology: Analysis of testicular biopsies (human, animal)
- Institute of Veterinary Pathology: Tumour 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: Parasitological diagnostics (human, animal)
- Clinic for Birds, Reptiles, Amphibia and Fish: Virological diagnostic
- Clinic for Internal Medicine of Small Animals and Horses: Haematology, clinical chemistry
- Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals: Clinical chemistry, semen evaluation, endocrine parameters

Samples are delivered by messenger or regular mail and results are mailed and billed directly to the clients.

6.5.2: Central Clinical Support Services

There is no central clinical service, there is, however, interclinical cooperation. Each clinic organises its own service to the necessary extent, for special problems the specialised team will be consulted. Special x-ray and/or ultrasonographical examinations are carried out by the Clinic of Veterinary Surgery. Particular haematological or cytological questions as well as cardiological problems are referred to the Clinic for Internal Medicine of Small Animals and Horses. Large animal general anaesthesia (horses) is in cooperation with the professorship for horse-surgery.

The structural development of the faculty intends to establish a separate service unit for diagnostic imaging and a separate clinical service unit for haematology and clinical chemistry. These units will be established as soon as the positions of the C4-professorships “Small Animal Surgery” and “Small Animal Internal Medicine” have been filled. The unit for diagnostic imaging will be responsible for CT and MRI, instruments have to be installed with the filling of the two professorships mentioned above.

Thus also in the future a “bedside” analysis as well as a non-specialized diagnostic imaging (ultrasonography and x-ray) will remain in each clinic, especially for emergency cases outside the regular working hours.

6.6: Slaughterhouse Facilities

A private EU-slaughterhouse for cattle, pigs, sheep and horses (Schlachthofstrasse 2, see map enclosed) is about 2 km away from the main campus. Access for the faculty is regulated by a contract between the university and the operator of the slaughter house. Examinations (all year round), instruction and practicals in meat hygiene (summer semester) are performed there.

6.7: Foodstuff Processing Unit

The Institute of Veterinary Food Science, Frankfurter Str. 92, houses a unit with the basic equipment needed to produce, process and store meat products. The unit is run by a butcher licensed for training.

The institute cooperates with the following foodstuff producing companies:

- Färber (Giessen), Arnold (Wetzlar), Schäfer (Biebertal): Cutting and dressing of carcasses respectively meat.
- University hospital: Kitchen section

- Guild of butchers, Giessen: Manufacturing of meat products.
- Governmental Veterinary Authorities and Governmental Veterinary Laboratories, Giessen: Assessment of food safety.

6.8: Waste Management

6.8.1: Chemical Waste

There are strict guidelines concerning the disposal of chemical waste. Disposal of waste is centrally organised by the university administration (Dezernat B; Law, Central Duties, Safety). Liquid and solid waste have to be collected separately on a laboratory level in containers provided by the central administration. Removal of waste is on call.

6.8.2: Radioactive Waste

Disposal of radioactive waste is strictly regulated and controlled on a state level by submitting the required protocols at the end of each year to the respective ministry through the president of the university, represented by the chief officer responsible for the protection against radiation. The trash is collected in containers provided and removed on call. The properly labelled waste is then further handled by the central administration.

6.8.3: Waste of Normal Litter

A separation of paper, glass and other waste is made, the city of Giessen provides containers for central collection and further processing.

6.8.4: Organic Waste

Large animal manure is collected centrally in a designated area on the campus. From there it enters the normal chain of manure disposal.

Litter from cats and experimental animal is collected in a separate container and disposed with normal litter.

6.8.5: Cadavers

The Institute of Pathology provides a room for centrally collecting cadavers. A separation is to be made between small animals and large animals. There is a

weekly removal and according to the present legislation it is assured that cadavers do not enter the food chain.

6.8.6: Radioactive Waste Following Use in Diagnostics

The isotopes used are iodine^{131} and technetium^{99}. The respective half-life is 8 days and 1 day due to the short half-life. Treated animals as well as feces and material used for treatment have to be stored until no extra radioactivity can be detected anymore.

2 COMMENTS

Structural reorganization of the Faculty of Veterinary Medicine is almost completed on the personal level, completion in respect to construction and reconstruction of buildings is far behind.

Thus only the Clinic for Obstetrics, Gynaecology and Andrology for Large and Small Animals was enlarged and renovated in the past years, resulting in a building complex providing excellent facilities for treatment and housing of patients.

Also the Clinic for Pigs and Ruminants (Internal Medicine and Surgery) is located in its final premises and recent progress has been achieved by providing space for isolation of animals.

Different to these two clinics the formation of the Clinic for Small Animals (Internal Medicine and Surgery) and the Clinic for Horses (Internal Medicine and Surgery) is still at its beginning. Particularly in respect to small animals this clinic must replace the present Clinic for Internal Medicine of Small Animals and Horses within a reasonable length of time. In the past winter semester (2002/2003) the faculty council passed the concept on the development of the Clinic for Small Animals (Internal Medicine, Surgery) and Horses (Internal Medicine, Surgery). This concept also includes the building of a new lecture hall with special rooms for the student body.

The issue is now at the level of the Hessian Ministry for Science and Arts and there is very little the faculty can do to speed up the process.

The faculty certainly suffers from a shortage in lecture halls, in particular seminar rooms. This shortage may be overcome after having finished the extensions of the Institutes of Veterinary Anatomy and Veterinary Pathology. For safety reasons the Institute of Veterinary Anatomy will get a new air-conditioned building for conserved

cadavers and maceration with about 300 square meters. This building will also contain four new seminar rooms, completion is anticipated in the year 2005.

The faculty suffers from the lack of own premises to house and breed animals for teaching purposes. The farm “Oberer Hardthof” belongs to the Institute of Animal Breeding and Genetics of Domestic Animals which is part of the Faculty for Agricultural and Nutrition Sciences, Home Economics and Environmental Management. As indicated in chapter 2 a move of this institute to our faculty would certainly be a benefit for veterinary education.

The “Station Schwarzacker” only can be called a “scandal”. Due to the proximity to prospective urban quarters the university has denied any further investments in renovation and maintenance of the buildings. Plans to move this unit to the “Obere Hardthof” so far have only been superficially pursued.

3 SUGGESTIONS

No suggestions are made in respect to the developmental concept of the faculty. However, we are asking for support to execute this concept, particularly in establishing the Clinic for Small Animals (Internal Medicine and Surgery) and Horses (Internal Medicine and Surgery).

We are also asking for support to either renovate the “Station Schwarzacker” or to replace it with a new unit at the “Oberer Hardthof”.

CHAPTER 7 ANIMALS AND TEACHING MATERIAL OF ANIMAL ORIGIN

1 FACTUAL INFORMATION

7.1: Basic Subjects

Anatomy

Materials that are used in practical anatomy training, and how these are obtained and stored

Materials used in a year are:

- 2 horses (one for situs demonstration, one for muscle preparation), about 20 front legs, 20 hind legs and 20 heads,
- 1 cattle,
- about 20 small ruminants
- about 30 dogs and 2 cats
- about 40 chicken

Animals and specimens are stored in formalin (3%)-tanks[1)]. The Preparation-(Demonstration) room is air-conditioned with recently installed most modern tables preventing contamination of the air by the preservative.

[1)] Reconstruction is under the way, the new way of storage will be in disinfectants.

Pathology

Table 7.1:Number of necropsies over the past 3 years

Species		Number of necropsies		
Farm / large Animals		year 2001	year 2000	year 1999
	Cattle	320	429	378
	Equines	243	258	237
	Small ruminants	96	144	96
	Pigs	217	327	186
	Poultry***	2522	2760	2787
	Other animals*	201	372	242
Small/pets	Dogs	409	425	452
	Cats	370	360	402
	Other pets**	147	195	190

* Zoo and wild animals, mostly
**Rabbits and guinea pigs, mostly
*** Necropsies performed at the Clinic for Birds, Reptiles, Amphibia and Fish

Nature and extent of additional sources of material for the teaching of necropsies and pathological anatomy, including slaughterhouse material.

Additional sources are:

- Zoo and wild animals
- slaughterhouse material is used every week for teaching purposes
- biopsies sent for diagnosis are used for teaching purposes

Nature of any other animal use in teaching other basic subjects.

There is one cow with a rumen fistula to study digestion in ruminants at the Institute of Veterinary Physiology

7.2: Animal Production

Availability of production animals for the practical teaching of students

Teaching is at the Station "*Oberer Hardthof* ", Institute of Animal Breeding and Genetics of Domestic Animals. There is access to:

- 41 dairy cows
- 5 suckling cows,
- 10 beef cattle,
- 95 breeding sows,
- 6 to 8 breeding boars,
- 480 fattening pigs,
- 1076 sheep,
- 970 poultry (fowl, turkey, duck, goose, pigeon),
- 12 rabbits

7.3: Food Hygiene

Availability of animals and products of animal origin for the practical teaching of students in food hygiene, inspection and technology.

- **food hygiene** (at the institute, room for practical teaching): teaching is in groups of 15 students; during the winter semester, every group has to examine `meat` respectively `minced meat`, `raw sausages`, `cooked sausages`, `fish`, `eggs` and typical products of `canned food`.

- **meat inspection** (at the slaughterhouse and the room for practical teaching): teaching is in groups of 10 students; during the summer semester each group has to inspect the carcasses and organs of cattle, pigs and sheep, including sampling for bacteriological examinations and tests for toxins and chemicals.

- **technology** (at the foodstuff processing unit and the lecture room of the institute):
4 times per week with 60 students per group during the winter semester; subject is the cutting of carcasses of cattle and pigs, followed by the production of raw and cooked sausages.

7.4: Consultations

Number of weeks, in the course of the year, during which the clinics are open:

The clinics are open 52 weeks (year round)

Number of consultation days each week:

5 days per week, mostly in the morning; emergency service: 365 days, 24 hours.

Consultation hours:

Depending on the clinic and type of customer

4-8 hours per day, i.e. from 8:00 - 12:00 and in the afternoon and evening

Table 7.4: Number of animals received for consultation in the past 3 years

Species		Number of animals		
		year 2001	year 2000	year 1999
Farm / large Animals	cattle	31	80	135
	equines	1384 329 (black smith)	1,249 301 (black smith)	1,328 425 (black smith)
	small ruminants	3	3	-----
	pigs	-	-	-
	other farm animals	-	-	-
small/pets	dogs and cats (cats ca. 20%)	10,081	9,794	10,277
	other pets*	2,367	3,016	3,532

*birds, reptiles, amphibians

7.5: Hospitalisation

The number of patients hospitalised is given in table 7.5.

Table 7.5:Patients hospitalised in the clinics in the past 3 years

Species		Number of animals		
		year 2001	year 2000	year 1999
Farm / large animals	cattle	1,407	1,298	1,279
	equines	950	894	907
	small ruminants	176	186	141
	pigs	239	284	133
	other farm animals*	3	5	4
small/pets	dogs and cats (cats ca. 20%)	2,812	2,892	2,990
	other pets**	644	736	719

*lamas, camels

**birds, reptiles, amphibians, rabbits, guinea pigs mostly

7.6: Vehicles for Animal Transport

Number and nature of the establishment vehicles that can be used to bring sick animals to the clinics.

The Veterinary Faculty owns 2 specialised trucks for large animal transportation (incl. horses)

Charge for this service is as follows:

- Horses: 1 € / km,
- Farm animals: no charge

Comment: Most farmers and horse owners have their own transportation vehicle.

7.7: Emergency Service

The following emergency services are available

Emergency service is provided over 24 hours per day on 365 days per year; the following manpower is provided:

- Clinic for Internal medicine, horses: 1 student in-house, 1 veterinarian on call
- Clinic for Internal medicine, small animals: 1 veterinarian in-house; specialist on call
- Clinic for Obstetrics, Gynaecology and Andrology: 1 veterinarian in-house; specialist on call
- Veterinary Surgical Clinic, small animals: veterinarian in-house; specialist on call
- Veterinary Surgical Clinic, horses: 1 student in-house, 1 veterinarian on call
- Clinic for Ruminants and Pigs: 1 veterinarian on call
- Clinic for Birds, Reptiles, Amphibia and Fish: 1 veterinarian on call

7.8 Mobile Clinic

Number of hours of operation per week

The Mobile Clinic is run by the Ambulatory Service of the Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals. It operates year round, time investment is approx. 70 hours per week.

To run this service 2 vans (VW) each seating 5 students are available.

Special species specific mobile services are offered by the Clinic for Ruminants and Pigs (Calf and Cattle Health Service, Swine Health Service) and the Clinic for Birds, Reptiles, Amphibia and Fish (Poultry Health Service)(see Appendix 5.1 - 5.4).

To run the mobile service of the Clinic for Ruminants and Pigs two cars (VW Golf, Opel Kadett) are available, the seating capacity is 3 students per car.
The Poultry Health Service is equipped with a VW-Van seating 5 students.
These services are available on call during working hours.

The approximate number of sick animals seen by these services in a year is as follows:

- Clinic for Obstetrics, Gynaecology and Andrology: (See Appendix 5.2)
  Ambulatory Service: Approximately 10,200 treatments per year
  Breeding Consultation Service (ZKD): Approximately 2,000 examinations per year (herd health).
  Thus, based on approximately 3,000 farm visits each student is actively involved in about 4 treatments per visit.

- Clinic for Birds, Reptiles, Amphibia and Fish (see Appendix 5.4, chapter 5): In respect to poultry average size of the visited flock is about 25,000 animals. The accompanying 5 students are exposed to the whole flock.
  There are about 120 farm-visits during each semester, thus each student has the possibility to at least once participate in such a visit.

- Clinic for Ruminants and Pigs: with an average herd size of 125 head of cattle and 400 pigs, approximately 5,000 cattle and 16,000 pigs are seen, (See Appendix 5.1 and 5.3, Chapter 5) during 40 visits per year.
  During a farm visit the accompanying 3 students are exposed to the whole herd. Each student in the respective clinical semester must enrol for at least one of these units.

As indicated above, visits to the farms take place with up to five students; apart from individual animal treatment they can experience practical foundations of herd health management. As is statet in chapter 5 this training is compulsory as part of the subject “Herd Health Management and Ambulatory Works“ (§ *35* TAppO).

These services provided by the faculty are part of the Hessian Farm Animal Health Service System with funds received through the Animal Epidemic Fund (see chapter 5).

7.9 Other Information

Additional outside sources of material for clinical training purposes, such as animal charities, animals awaiting slaughter, are as follows:

- Rectal examinations can be trained in cattle awaiting slaughter at the local slaughter house.
- In order to improve training of students, arrangements have been made with animal charity organisations that charges for castrations of dogs, cats and other pet animals will only cover the cost for material. Hence there is a regular flow of these types of animals.

Level of clinical service as offered by the establishment (in small companion animals, equine and production animals) compared with outside practices in terms of facilities, hours of service, equipment, expertise, responsiveness etc.

Small companion animals: Clinical service for small companion animals is offered by the Clinic for Internal medicine (Small Animals), Clinic for Obstetrics, Gynaecology and Andrology, and the Veterinary Surgical Clinic (Small Animals). The hours of service are comparable with privately owned clinics. The expertise is provided by nationally and internationally recognised specialists. However, in respect to the imposed clinical duties, other responsibilities and the teaching load, the number of staff is limited, in particular when compared to the number of students to be trained.
The standard of facilities and equipment is very high; compared to outside practices the following additional equipment is present:

Medical imaging:

- Together with high standard x-ray equipment (in dentistry digital imaging) in 3 clinics, a fluoroscopy unit in the surgery clinic with the possibility of simple tomography is provided. In the Clinic for Internal Medicine a unique 2-dimensional

fluoroscopy catheter laboratory to perform interventional catheter- techniques (balloon dilatation and coil implantation) with cinema quality video documentation is installed.

- Beside basic equipment for ultrasonography in all 3 clinics the most modern ultrasonography machines Logi G9 and Toshiba Powervision 8000 with more than 5 flexible transducers per machine are available in the Veterinary Surgery Clinic; a Toshiba Powervision 6000 to perform Doppler- and echocardiography with flexible transducers and a special transoesophageal probe and a Sonocare 9900 (Kretz) is installed in the Clinic for Obstetrics, Gynaecology and Andrology.
- Several rigid and flexible instruments for all kind of endoscopies incl. laparoscopy are generally available.
- For scintigraphy in small animals a Gamma Camera has been recently installed in the Clinic for Internal Medicine, which also serves as the first and only national centre for radioiodine treatment in feline hyperthyroidism.
- Special electrocardiogram units (PC-ECG and a Holter ECG from Nihon Koden),
- equipment for invasive and non-invasive blood pressure measurement

Laboratory Diagnostics:

- All clinics are equipped with haematology analyzers and dry as well as wet chemistry (auto)-analyzers. The most modern multi species haematology system ADVIA 120 is used in the Clinic for Internal Medicine (small animals); presently in this clinical laboratory all samples from the Clinic for Internal Medicine (Small Animals and Horses) and the Clinic for Veterinary Surgery (Small Animals and Horses) are analysed. This laboratory is designed to become the central laboratory of the faculty
- Special cytology units are set up, for example to examine all kind of in-house cytology samples as well as referred samples with digital sample analysis (Leica).
- The Clinic for Obstetrics, Gynaecology and Andrology owns a highly equipped microscopy unit for analysis of semen samples as well as a system for computerised semen analysis. Special endocrine diagnostics can be applied (e. g. estradiol, canine LH etc.)
- Special clinical questions can be followed by applying full coagulation profiles including PLT function test

- Gel-electorphoresis and SDS page electrophoresis (Pharmacia), as well as PCR and
- PCR-Laboratory with sterile working bench
- flowcytometry (FACScan, BD).

Other equipment:

- Treadmill for small animals
- Equipment for inhalation anaesthesia with full monitoring (all 3 clinics)
- Blood banc (RBC concentrate and FFP)

The establishment will install CT and MRI in conjugation with appointment of the new Professors for Small Animal Surgery and Internal Medicine.

Equine medicine: Clinical service for horses is offered by the Clinic for Internal medicine (horses), the Clinic for Obstetrics, Gynaecology and Andrology, and the Clinic for Veterinary Surgery (horses). The hours of service are comparable with privately owned clinics. The expertise is given by nationally and in many respects internationally recognized specialists. However, in respect to the imposed clinical duties, other responsibilities and the teaching load, the number of staff is limited, in particular when compared to the number of students to be trained.
The standard of facilities and equipment is very high; compared to outside practices; the following additional equipment is present:

- Equipment for the diagnosis and treatment of diseases of the respiratory tract incl. endoscopy, function tests of the lung, broncho-alveolar-lavage, inhalation treatment
- Equipment for diagnosis and treatment of cardiovascular diseases
- Special boxes for horses with colic,
- Artificial insemination in horses
- Special surgery facilities (soft tissue surgery and laparoscopy)
- Minimal invasive surgery (arthroscopy, tendovaginoscopy, laparoscopy)
- High frequency surgery devices
- Orthopaedic surgery (degenerative joint diseases including arthroscopy)
- Foal inhalation and device for continuous pulmonary air pressure
- Resocialisation unit for foals and mares

- Plasma and colostrums banc
- Scintigraphy for horses
- Well equipped blacksmith with excellently trained staff.

Production animals: Clinical services for production animals are offered by the Clinic for Ruminants and Pigs and the Clinic for Obstetrics, Gynaecology and Andrology. The hours of service are comparable with privately owned clinics. The expertise is provided by nationally and internationally recognized specialists. However, in respect to the imposed clinical duties, other responsibilities and the teaching load, the number of staff is limited, in particular compared to the number of students to be trained.

The standard of facilities and equipment is very high. Compared to many outside practices the following additional equipment is present:

- Special stalls for infectious diseases,
- Equipment for laparoscopy with flexible surgery tables for heavy weight animals,
- Ultrasonography for ruminants (in-house and in mobile clinic),
- Biotechnology to collect semen and for cryopreservation of semen and artificial insemination (insemination station),
- equipment for embryo transfer,
- intensive care unit for premature neonates,
- theleresectoscopy unit,
- water bed for piglets
- 2 boxes for intensive care in cattle

Clinic for Birds, Reptiles, Amphibia and Fish:

- Specialisation on the diagnosis of infectious avian diseases with special regard to virus diseases
- Close connection to the national and international committee for disinfectants

Indications in percentage terms of the proportion of cases that are primary (i.e. first opinion), and referrals:

Clinic	**First Opinion**	**Referral**
- Clinic for Internal Medicine, horses	5 %	95 %
- Clinic for Internal Medicine, small animals	10 %	90 %
- Clinic for Obst., Gyn. and Andrology		
small animals	50 %	50 %
horses	70 %	30 %
production animals	80 %	20 %
- Clinic for Veterinary Surgery, small animals	10 %	90 %
- Clinic for Veterinary Surgery, horses	10 %	90 %
- Clinic for Ruminants and Pigs	30 %	70 %
- Clinic for Birds, Reptililes, Amphibia and Fish	50 %	50 %

Areas of clinical specialisation that are covered and the extent of the coverage:

- Clinic for Internal Medicine (horses): All aspects of Internal Medicine are covered by nationally and internationally recognised specialists
- Clinic for Internal medicine (small animals): All aspects of internal medicine (very high level in cardiology, gastroenterology, nephrology, clinical pathology haematology/cytology) are covered by nationally and internationally recognised Specialists (DIPL ECVIM-CA).
- Clinic for Obstetrics, Gynaecology and Andrology: All aspects of obstetrics, gynaecology and andrology are covered by nationally and internationally recognised specialists (DIPL.ECAR).
- Clinic for Veterinary Surgery (small animals): All aspects of surgery (very high level in orthopaedics, medical imaging, soft tissue surgery, anaesthesiology) are covered by nationally and internationally recognised specialists (DIPL ECVDI, DIPL ECVA).
- Clinic for Veterinary Surgery (horses): All aspects of surgery covered by nationally and internationally recognised specialists (orthopaedics, soft tissue surgery).
- Clinic for Ruminants and Pigs: All aspects of buiatric and swine medicine are covered by nationally and internationally recognised specialists (laparoscopy, calf-medicine, herd management, farm management).

- Clinic for Birds, Reptiles, Amphibia and Fish: All aspects of avian medicine are covered by nationally and internationally recognised specialists (particular

specialisation on viral diseases, production and application of autologous vaccines). The present coverage of reptiles, amphibia and fish is good, the situation, however, will further improve with the filling of the Professorship for Diseases in Reptiles, Amphibia and Fish.

Future changes in the postgraduate education include residency programs in different specialities, such as Internal Medicine, Surgery, Veterinary Clinical Pathology, Diagnostic Imaging, Reproduction, Anaesthesiology, an (even part time) affiliation of European Specialists (Diplomate) in fields such as Dermatology, Neurology, Clinical Behaviour, Dentistry, Ophthalmology would improve the service.

How are the fees for clinical services decided, and how do these compare with those charged by private practitioners:

The fees are calculated according the national legal regulation of fees for Veterinarians *(Gebührenordnung für Tierärzte GOT, 28.July 1999)* or according to the legal regulation of fees for the Clinics and Institutes of the Faculty of Veterinary Medicine, Justus-Liebig-University Giessen (Satzung über die Entgeltregelung für die Kliniken und Institute des FB Veterinärmedizin der JLU, 13. September 2001), provided by the Hessian Ministry of Science and Arts.

Relationship of the establishment with outside practitioners in terms of matters such as referral work, providing diagnostic or advisory services for private practitioners, practitioners participating in teaching, holiday or "seeing practice" work for students, feedback on the level of clinical training:

All referred patients are released with a written report intended for the owner and the referring veterinarian. On a daily basis all veterinarians (mostly the specialists) do advisory service on the phone for about 30 min to one hour.
There is no participation of private practitioners with a fixed number of hours of clinical training except the practical work what is regulated by the TAppO.

Relationships with outside organisations that are routinely used to provide students with training (in particular practical training) and other clinical subjects (e.g. pathology work, interaction with state veterinary work):

The Veterinary Clinics do not maintain routine relationships with outside organisations other than the Hessian Animal Health Service System (see above).

Only the Clinic for Birds, Reptiles, Amphibia and Fish co-operates regularly with the Bird Parc Loro Parque, Tenerife by making a yearly excursion for two weeks.

Similarly the pharmaceutical industry, insemination stations and other establishments are visited via excursions.

There is no participation of private practitioners in student education except for the practical work as regulated by the TAppO.

The Faculty is on its way to establish a centralised veterinary documentation software system (TDS, Optimal AS ®) to get all patient related data (i.e. owner; referring veterinarian, all aspects of the medical record, bill) easily accessible to the institutions participating in the network.

At the moment a variety of administrative systems is in use such as hand written data sheets, self made computer based data records and commercially available software especially designed for veterinarians.

The distribution is as follows:

- Clinic for Internal Medicine (horses): hand written data sheets
- Clinic for Internal Medicine (small animals): computer based data record (special software, commercially available: VIEHDOC®) with printouts and hand written records for in-house patients, digitised data record (ECG, etc.)
- Clinic for Obstetrics, Gynaecology and Andrology: Medical records hand written data sheets, billing system is computer based. Outpatient data are collected and kept via a computer based documentation system.
- Clinic for Veterinary Surgery (small animals): computer based, veterinary specialised software (commercial available: VETERA®).
- Clinic for Veterinary Surgery (horses): computer based data record (special software).
- Clinic for Ruminants and Pigs: computer based data system for recording address of owners, basic data of patients and diagnosis, hand written medical records for clinical and laboratory findings and for treatment documentation.

- Clinic for Birds, Reptiles, Amphibia and Fish: case records are kept on diskettes on chronological order, no centralisation so far

7.10: Ratios

1: In respect to animals available from clinical work:

The data is based on the year 2001

Ratio: students/production animals [1)]

$$\frac{\text{Number of students graduated in the last year}}{\text{number of production animals}} = \frac{187^{1)}}{23{,}216} = \frac{\mathbf{1^{2)}}}{\mathbf{124.1}} \quad \text{and} \quad \frac{187^{3)}}{3{,}000{,}000} = \frac{\mathbf{1^{3)}}}{\mathbf{16{,}042}}$$

$$\frac{\text{number of students graduated in the last year}}{\text{number of production animals}} = \frac{187}{1{,}859} = \frac{\mathbf{1}}{\mathbf{9.94}}$$

Ratio: students/production animals mobile clinic

$$\frac{\text{number of students graduated in the last year}}{\text{number of production animals}} = \frac{187}{1{,}346} = \frac{\mathbf{1}}{\mathbf{72}}$$

Ratio: students/companion animals

$$\frac{\text{number of students graduated in the last year}}{\text{number of production animals}} = \frac{187}{18{,}238} = \frac{\mathbf{1}}{\mathbf{97.53}}$$

Ratio: students/post-mortem examinations

$$\frac{\text{number of students graduated in the last year}}{\text{number of production animals}} = \frac{187}{4{,}525} = \frac{\mathbf{1}}{\mathbf{24.20}}$$

[1)] Ratio: students/production animals within the faculty (consultation and hospitalised patients)
[2)] cattle and pigs only
[3)] poultry

CHAPTER 8 LIBRARY AND LEARNING RESOURCES

1 FACTUAL INFORMATION

8.1: Library

The library of the university is centrally organised and funded. It splits into several branch - and subsidiary libraries.

A library commission which consists of the head of the main library, the head of the branch library for the life sciences and a member of each faculty acts on an advisory board.

8.1.1: Central Libraries

The main library building, which also provides computer access, lies in 4 km distance to the main campus of the Faculty of Veterinary Medicine.

A branch library for life sciences provides services for the faculties of veterinary medicine and medicine. It is located about 1.5 km from the campus of the veterinary faculty. This library provides an extensive collection of relevant books and journals. There is also access to computers; textbooks may be lent out. Veterinary students account for about 30% of the users of this library.

The library service has established an advanced electronic information system which provides an electronic catalogue (OPAC) and allows online access to electronic publications from any networked personal computer (http://opac.uni-giessen.de). The library in Giessen itself is networked with the other universities of the federal state of Hessia (HeBIS) as well as nation-wide.

The electronic catalogue provides information about the holdings of the whole library system of the university. For many journals online subscriptions allow viewing and downloading of articles from any networked PC (http://dbs.ub.uni-giessen.de).

Tab. 8.1: Branch library veterinary medicine and medicine (Chemikum, Heinrich-Buff-Ring)

Annual operating budget veterinary books and journals	Euro
2002	33,000
2001	33,000
2000	33,000
Number of full time employees	1
Full time equivalents to part time employees	3.5
Number of journals received every year:	80
Number of student reading places:85	
Opening hours weekdays weekends All year: 8:30 - 20:0010:00 – 15 .00 (closed on Sun)	
Number of lending to students per academic year (2002)16,450	

8.1.2: Subsidiary Libraries and with branch library for life sciences

In addition to the main library there are 16 specialised institute libraries. Purchasing and registration of books and journals, however, is supervised by the main library. The collections of the departmental libraries are listed in the electronic catalogue. The total number of books is about 47,000 and the average annual budget is 82,500 € including journal subscriptions.

These libraries are open to students and faculty during office hours (8:00 – 17:00)

Generally the institute libraries do not lend out textbooks.

8.1.3: Study Centre Organised by the Students

A collection of current textbooks is operated by the students and is located in the ”Lernzentrum“ on campus and open for in-house reading. On these premises there is also access to some computers and other study material (e. g. videos, slides).

8.2: Information Technology Services

8.2.1: Audio-Visual Services

Each institute owns a collection of videos for lectures, which is available for students

on request. In an elective course [13.1][1] the production of digital movies is taught. It is in the planning to establish a collection of digitised videos for online access. The infrastructure is provided by the centre for interactive learning (ZIL) of the university.
A small video collection (38 titles) for learning purposes is established within the Lernzentrum (see above).

8.2.2: Computer Services

94 networked computers are provided to all students of the Justus-Liebig-University by the university's computing centre, which is in 1.5 km distance to the veterinary campus. 35 networked computers are accessible in the main library building (4 km to veterinary campus).

On the veterinary campus 12 computers with internet connections are provided for students. They are operated by the Unit for Biomathematics and Data Processing (a subsidiary of the institute for physiology) and are accessible during office hours (8:00 – 16:00) on work days. Students and staff have free access, installation of own software is restricted

The capacity of the unit of Biomathematics is as follows:

Number of full time employees	3
Full time equivalents provided by part time employees (3 students)	1
Number of computers available in the service	12
< 3 years	6
> 3 years	6

The institute offers a seminar in biostatistics [5] and an elective course in computing (multimedia in physiology 1 + 2 [13.1]).

The capacity of the Hochschulrechenzentrum is as follows:

Number of full time employees	20
Full time equivalents of part time employees	3

[1] number of brackets refer to the number of a subject according to Table 4.1 in chapter 4

computers available at the universities computing centre		94
computers available at the main library		35
		total129
Years in operation	< 3 years	43
	> 3 years	86

Students have free access to PCs for their own use but only the use of installed software is permitted.

Opening hours: All year, Monday – Friday 6:00 – 21:00

2 COMMENTS AND SUGGESTIONS

Library:

Veterinary textbooks are exceedingly expensive. This does not allow all students to purchase the full set of required books. Therefore, the lending of textbooks is very popular especially during the examination season. Veterinary students account for more than 16,000 take-outs per academic year. The library service certainly suffers from the inconvenient distance to the veterinary campus. The current location had been planned as an intermediate solution and does not provide an optimal reading and learning environment. A more suitable location for the library is necessary.

The availability of online access to the catalogues of the library information system is very helpful and overcomes the distance problem to some extent. Furthermore the students have established a “micro library” on campus which allows them a quick access to textbooks. This library is supported by donations.

IT facilities:

The IT facilities on campus are not equipped for systematic e-learning. While the distance to the Computer Department (Hochschulrechenzentrum) is inconvenient, all those who want to use computers have the opportunity to do so. About 50% of the veterinary students have a private access to the internet.

CHAPTER 9 ADMISSION AND ENROLLMENT

1 FACTUAL INFORMATION

9.1: Student Numbers

This information is given in tables 9.1.1 and 9.2.2.

Table 9.1.1:Undergraduate student composition

	Students	1998/99	1999/00	2000/01	2001/02	2002/03
a.	Total number of undergraduate students - n				1.401	1.409
	%	*100*	*100*	*100*	*100*	
b.	Female students - n					
	%				*83.4*[1)]	
c.	Male students - n					
	%				*15.6*[1)]	
d.	Foreign students					
	From EU countries plus				} *6.4*[1)]	
	From Non-EU countries					
f.	1 th year students				211	
g.	2 nd year students				211	
h.	3 rd year students				207	
i.	4 th year students				239	
j.	5 th year students				205	
k.	6 th year students				200	
l.	7 th, or more year students				128	
m.	Students in not any specific year					

[1)] *exact figures not available; calculated for year 5*
Source: „Statistik der Studierenden“ of the years 1998/99 und 2002/03

Table 9.1.2:Postgraduate student composition in year 2001/02

n.	Total number of postgraduate students	212
o.	Female students	131
p.	Male students	81
q.	Nationals (German students)	191
r.	Foreign students	21
	From EU countries	15
	From non-EU countries	6
s.	1 th year students	72
t.	2 nd year students	69
u.	3 rd year students	42
v.	4 th year students	16
w.	5 th, or subsequent, year students	15

The total number of students in the establishment amounts to 1613.

9.2: Student Admission

All issues related to student admission are layed down in a Staatsvertrag (state contract) between the 16 Federal States and the Federal Government of Germany. The essence of this contract is as folows:

a) Minimum admission requirement

Hochschulzugangsberechtigung (Abitur, Matura) (total of 12/13 school years followed by the successful graduation).

b) Selection process

All students have to apply to a central agency, the Zentralstelle für die Vergabe von Studienplätzen (ZVS), in the city of Dortmund.

55% of students get admission solely on the basis of their grades (this quota contains foreign students as well), 20% get admission on a combination of grades and waiting

time, 20% get admission based on the results of an interview (Auswahlgespräch), 5% get admission on special, mostly severe social problems.

Knowledge of students in scientific disciplines

This varies considerably between students based on the Federal State they come from and on the type of higher school education they have chosen and the elective courses taken.

Number of students admitted each year

The number of students admitted each year is bound to a Numerus clausus (see Chapter 1, Comments). As is indicated in Chapter 5, the calculated teaching capacity of a faculty and the type of classes taught result in the number of students admitted. The quality of teaching facilities (space, equipment) is of **no** importance.

Number of government-funded students

This is not a matter of the faculty. Individual students may apply for support based on their income, status of parents and other earnings

Circumstances for admission of extra students

Under no circumstances extra students are admitted, however, in order to avoid law suits the faculty generally accepts an extra load of 15 – 20 students (see Chapter 5)

Changes foreseen for changes in admission

Beginning from the year 2004 the universities are intended to have the right to select up to 50% of their students according to their own criteria.

Table 9.2:Intake of veterinary students

Year	No. of students[1)] applying for admission in Gießen	Number of admitted students*		Ratio application / admittance
		„standard“ intake Studienplätze[2)]	other entry mode: none admitted	
1998/99	947	210	0	1:4,5
1999/00	862	210	0	1:4,1
2000/01	948	210	0	1:4,5
2001/02	882	210	0	1:4,2
2002/03	953	210	0	1:4,5

1) Source: TiHo PIZ
2) Official number accepted; however, depending on each year's situation some more or less students may be accepted

Table 9.3.1: Student flow

Of the students whose admission year was N-5 (number a. in Table 9.2) how many are at present (five years later) in the:

		Original cohort	Incoming students from other establishments	Total number
b.	1st year (1. Semester; WS 1999/2000)	214	---	214
c.	2nd year (3. Semester; WS 2000/2001)	182	31	213
d.	3rd year (5. Semester; WS 2001/2002)	163	12	206
e.	4th year (7. Semester; WS 2002/2003)	149	5	197
f.	5th year (8. Semester; SS 2003)	143	---	191
g.	How many have graduated	1)		
h.	How many have dropped out or asked to leave	1)		
i.	How many are not in any identifieable year	1)		

1) no detailed figures are available

Table 9.3.2: Number of students graduating annually (from undergraduate training) over the past five years

	Year	Number graduating
j.	N - 2001	187
	N - 1	205
	N – 2	181
	N – 3	199
	N – 4	196

Table 9.3.3: Average duration of studies

	Duration of attendance	Number
k. 2001	4 years	0
l.	5 years	1
m.	6 years	151
n.	7 years	21
o.	8 years and more	14
p.		0
q.		0

2 COMMENTS

In Germany the responsibility for Education and Cultural Matters is with the 16 Federal States. Consequently, a legal agreement (Staatsvertrag) was necessary to harmonise aims and targets of admission of veterinary students.

This federal system with varying educational requirements results in differing levels of skills and knowledge of students entering the university.

The university of Giessen has no means to influence and guide the number of students, the gender of students, or any pre-admission training.

Compared with other Faculties within this university, a considerably large proportion of students graduate in due time (Regelstudienzeit). This is mainly the result of the efforts made by students and the teaching staff. Yet additional efforts are required to overcome shortcomings of facilities and to alleviate the budget restrictions.

3 SUGGESTIONS

The present system for admission leaves the universities with no influence on the admission of students. Even the interviews have no significant bearing.

Since grades obtained at school do not necessarily reflect the skills and abilities of candidates, this type of pre-selection most likely does not result in the best possible students. Hence a refinement of the selection process is suggested; the possibility of an entrance examination has been discussed.

However, it is not in the interest of the faculty to limit or to reduce the number of students.

CHAPTER 10 ACADEMIC AND SUPPORT STAFF

Introductory Remarks

Due to the structure of German universities a clear distinction between teaching and research staff is not possible. Thus in the submitted Self Evaluation Report the figures listed under research staff only refer to those persons who are contracted through grant money. All other academic staff is listed under teaching staff.

The figures for support staff do not contain the staff from the central administration of the university supporting the faculty. Similarly support staff from non veterinary institutes involved in teaching has not been considered.

1 FACTUAL INFORMATION

Table 10.1: Personnel in the establishment

	Budgeted posts (FTE)[1]	**Non-budgeted posts (FTE)**	**Total (FTE)**
1. Academic staff			
a) Teaching staff	129 + 13.25[2]		142.25
b) Research staff		19.03	19.03
c) Others (please specify)			
d) Total academic staff	142.25	19.03	161.28
2. Support staff			
e) responsible for the care and treatment of animals	55.5 (including 10 apprentices)		55.5
f) responsible for the preparation of practical and clinical teaching	106.5		106.5
g) responsible for administration, general services, maintenance etc.	48		48
h) engaged in research work		8.6	8.6
i) others (please specify)			
j) Total support staff	210	8.6	218.6
3. Total staff (d + j)	352.25	27.63	379.88

[1] *Full time equivalent*

[2] *FTE of teaching staff for teaching import from other faculties of the university*

Table 10.2.1: Allocation of personnel to the various departments (present status)

Name of Department	Academic staff				Other	Support staff		
	Full prof. (C4)	Assoc. prof. (C3)	Assist. prof. (C2)	Assistant (BAT1,2,C1, A13,14,15)		Teaching/animal		Admin/ general
						Teaching	Research	
Anatomy	2	2	0	5	0	8.5		1
Physiology[1]	1	2	0	5	0	13.5	0	1.5
Biochemistry	1	1	1[2]	4	0	7.5	1	1
Pathology	1	2	0	5	0	7.5	1.5	1.5
Hygiene, Inf. Dis.	1	1	0	7	0	17.5	2	1
Virology	1	1	1[2)]	6	0	13	1	1
Parasitology	1	1	0	5	0	9,5	2	1
Pharmacology	1	1	0	4	0	6	1.6	1
Vet. Food Science	2	1	0	7	0	14.5	0.5	1.5
Clinic for Birds	1	1	0	4	0	5.5	0	1
Med. Clinic (pets & horses)	2	1	1[2)]	6.5	0	13.5	0	1.5
Clinic for Ruminants & Pigs (internal med. & surgery)	1	1	0	5	0	6.5	0.5	1.5
Vet. Surgery (pets & horses)	2	1	0	12	0	19.5	0	2.5
Clinic for Obstetrics, Gynaecology, Andrology	2	0	1[2]	10	0	16.5	1	2.5

[1] *Including the professorship for ethology and animal welfare as well as the Unit of Biomathematics and Data Processing.*

[2] *Non-permanent C2 positions float between the institutes of the faculty according to the need of qualified young scientists.*

Table 10.2.2: Allocation of personnel to the newly structured clinics

(beginning in 2003:)

Name of Department	Academic staff				Other	Support staff		
	Full prof. (C4)	Assoc. prof. (C3)	Assist. prof. (C2)	Assistant (BAT1,2,C1, A13,14,15)		Teaching/animal		Admin/ general
						Teaching	Research	
Clinic for Birds, Reptiles, Amphibia and Fish	1	1	0	4	0	5.5	0	1
Clinic for Small Animals (Internal Medicine & Surgery)	2	2	0	11.5	0	21.5	0	2
Clinic for Ruminants & Pigs (Internal Med. & Surgery)	1	1	0	5	0	6.5	0.5	1.5
Clinic for Horses (Internal Med. & Surgery)	2	0	0	8	0	11	0	1
Clinic for Obstetrics, Gynaecology and Andrology	2	0	1[1]	10	0	16.5	1	2.5

[1] *Non-permanent C2 positions float between the institutes of the faculty according to the need of qualified young scientists.*

Table 10.3: Personnel responsible for undergraduate teaching

A.	Number of budgeted and non-budgeted teaching staff involved in undergraduate teaching	142.25
B.	Number of research staff involved in undergraduate teaching	0
C:	Total number of personnel responsible for undergraduate teaching	142.25

Ratios

- Number of teaching staff/number of undergraduate teachers

142.25 / 1076[1)]= 1 / 7.56

- Number of teaching staff/number of support staff

142.25 / 210= 1 / 1.48

[1)] *number of undergraduate students on May 31, 2001, in the regular course of the study (5.5 years of study or less)*

10.1: Allocation of Staff

10.1.1: Allocation of Staff to the Establishment

Allocation of staff to the establishment is not based on an understandable procedure but rather on tradition. However, the ratio scientific staff to professors seems to be somewhat above average which gives the impression that at least some consideration has been given to the extra teaching load and duties emerging from the veterinary curriculum. According to the Hessian University Law the “Präsidium” determines allocation of staff. Whenever structural questions are touched, the senate of the University has to be heard.

10.1.2: Allocation of Staff to the Departments within the Establishment

Any decision upon staff allocation is made by the “Dekanat” (dean, vice-dean, dean for study affairs). Whenever structural questions are touched, the Committee for Structural Development and the Faculty Council (see Fig. 1.2) has to be heard. Again there is no fixed mathematical procedure. However, allocation considers teaching and clinical duties as well as research.

10.1.3: Difficulties in Recruiting or Retaining Staff

Recruiting professors is sometimes difficult, primarily due to the low number of personnel allocated to each institution. This is especially true for the clinical institutions. Sometimes it is also difficult to fill positions with qualified staff and to retain them. This mainly concerns secretarial/administrative positions and also animal care takers. The salary structure in public service is less attractive than in private industry and applications for outside jobs by employees are not uncommon.

10.1.4: Employment of Additional Staff from Service Income (e.g. from revenues of clinical or diagnostic work)

Staff can be employed from service income, persons hired are in general postgraduate students, who are also involved in clinical and other work. It is, however, much more common to employ staff from the income obtained by putting forward private invoices for clinical or diagnostic services, since in these cases the official regulations for budgeted positions do not apply, which gives more flexibility.

10.2: Regulations Governing Outside Work, Including Consultation and Private Practice, by Staff Working at the Establishment

Any outside work needs approval by the Hessian Ministry for Science and Art or the University. A private practice may not be run by faculty staff. General policy is to allow extra work for a limited number of hours outside the official working time.

10.2.1: Possibilities and Financial Provisions for the Academic Staff

a) to attend scientific meetings:

There are no specific funds to support attendance of scientific meetings. Quite often no support is required or given. Any financial support would have to be taken from the general budget of the institute provided for teaching and research. However, also income from clinical and diagnostic services may be used. In case of grants specific travel funds may be provided. In general the dean allows participation in scientific meetings as long as teaching is secured.

b) to go on a sabbatical leave:

According to the University Law a sabbatical leave is possible for professors every seventh semester. However, in order to go on sabbatical leave, the faculty has to certify that the teaching obligations will not be affected. Since teaching obligations in veterinary medicine are highly regulated (see chapter 4) it is difficult to go on sabbatical leave from a functional and “ethical” point of view (who will be doing my job?). During the past 30 years there were only about 3 sabbatical leaves.

2 COMMENTS

There is a need for additional personnel on the administrative level, particularly in institutions with clinical and diagnostic services; also the number of animal caretakers is too low. Similarly the situation with laboratory staff and scientific assistants is tight, especially in clinics with 24-hour-duties. Apart form the low number of positions it is sometimes also difficult to fill and retain them, since salaries in public service are not competitive to private industry or practice. Thus it is becoming more and more difficult to hire and retain qualified and specialised academic staff. One important factor contributing to this situation results from the fact that there are not enough tenured positions.

A possibility to make positions in public service more attractive is to allow full professors providing clinical and diagnostic services to put forward private bills. In general the scientific and technical staff participates on this income according to a given “key”.

Though the faculty would prefer to primarily appoint professors and academic staff with a veterinary degree, this turns out to be impossible in certain non clinical areas, e.g. due to the lack of applications or scientific merits. Thus in certain areas (e.g. anatomy, physiology, biochemistry, pharmacology and toxicology, parasitology), positions have been or will be filled with highly qualified non veterinarians (e.g. biologists, med. doctors).

3 SUGGESTIONS

As indicated in other sections of this SER we strongly suggest to provide more personnel to the faculty. This request primarily accounts for technical staff, since an increase of the technical staff would not affect the number of students admitted to the establishment. However, we also request a moderate increase of the scientific staff and more tenured positions, particularly in the clinical areas. Such a modest increase should “de facto” not affect the number of students admitted, since the establishment admits more students than necessary (see chapter 5.2, page 77).

CHAPTER 11 CONTINUING EDUCATION

1 FACTUAL INFORMATION

In Germany the continuing education of practitioners is performed on several levels, *in praxi* as well as in governmental institutions, universities or industries (mainly pharmaceutical).

The major institutions of continuing education in the field or Veterinary Medicine are:

1. Veterinary Faculties (Berlin, Giessen, Hannover, Leipzig, München)
2. Akademie für Tierärztliche Fortbildung (AFT) der Bundestierärztekammer (BTK, Bonn) (Academy for Continuous Veterinary Training, Federal Veterinary Chamber)
3. Deutsche Veterinärmedizinische Gesellschaft (DVG, Giessen) (German Society for Veterinary Medicine)
4. Bundesverband praktischer Tierärzte (BpT) (Federal Association of Veterinary Practitioners)
5. Akademie für Tiergesundheit (AfT; Bonn) (Academy for Animal Health)

In seminars, scientific meetings or congresses, organised by the organisations named above, teaching staff of the Faculty of Veterinary Medicine, University of Giessen, is involved to a considerable degree.

In the years 2001 and 2002 there was a large number of national and international congresses and seminars with nation-wide significance, where individuals of the teaching staff of our faculty participated as speakers or instructors.
Furthermore, members of the faculty frequently followed invitations to lectures and seminars by practitioners, who organised courses on a more local level.

The Faculty of Veterinary Medicine of the University Giessen itself organised approximately 53 seminars, scientific meetings and congresses with 2,675 participants and 672 hours of education in the years 2001 and 2002.

Outside bodies organised 16 courses at our establishment, also involving teaching staff of our faculty by giving lectures and instructions for a total of 1006 participants in

232 hours of continuous education. Many of these courses, especially those organised by the ATF, were evaluated by the participants concerning quality of presentation, practical relevance, usefulness of instructions and quality of facilities.

The Graduate Seminars as well as scientific co-operations, for example with the “Interdisciplinary research group on perinatology/neonatology”, represent a forum for continuing education on a high scientific level.

Table 11.1.1: Courses organised by the establishment in the year 2002

Nr.	Title of course	Number of participants	Number of hours
1	Continuing education for laboratory veterinarians: “Marker for neoplastic and degenerative diseases“, Bad Homburg, 2.02.02	60	4
2	“Methods of isolation and characterisation of proteins”	10	80
3	“Ethology, husbandry and preventive measurements – new trends in research” 27.11.02	100	3.5
4	“Anthrax in animals and humans – risks and prevention” 377. Frankfurter Referierabend 17.01.02	70	2
5	“Anthrax in animals and humans – risks and prevention” 6. Egestorfer Fortbildung 23.01.02	50	2
6	“Imported parasite diseases in dogs and cats", Kasseler Referierabend, 06.03.02	30	2
7	12th Symposium of the German speaking Veterinary Pharmacologists and -toxicologists	70	10
8	Basic workshop on Osteosynthesis	70	25
9	Laparoscopy - Workshop	15	15
10	“Abdominal ultrasonography”, Seminar held in Rumania, 31.05.-02-06.02	14	24
11	“Ultrasonography in small animals”, Bad Kissingen, 15./16.06	32	12
12	“Introduction in abdominal ultrasonography”, Seminar in Bern, Switzerland, 20.06.02	30	8
13	“Advanced abdominal ultrasonography”, Seminar in Bern, Switzerland, 21.06.02	25	8
14	“Abdominal ultrasonography”, Seminar in Rumania, 08.-10-11.02	14	24
15	“Laparoscopy in cattle”, Workshop	40	8
16	“Puppy-diseases”, Continuing education for veterinarians, Jevenstedt	60	8
17	“Reproductive endocrinology and reproductive disorders in the bitch”, Continuing education for veterinarians, Leipzig	60	10.5

Nr.	Title of course	Number of participants	Total number of hours of the course
18	“Embryonic death and abortion in cattle”, Forschungsinstitut für die Biologie landwirtschaftlicher Nutztiere	40	3
19	“Artificial insemination in dogs”	60	4
20	“Molecular Pathology”	4	40
21	“Hog Cholera”	32	4
22	“Training for ECVP Exam”	27	16
Total	**22**	**913**	**313**

Table 11.1.2: Courses organised by the establishment in the year 2001

Nr.	Title of course	Number of participants	Total number of hours
1	“Tumordiagnostik”, Continuing education for laboratory veterinarians, Mainz-Finthen, 22.06.01	40	6
2	“News of metabolisms”, Continuing education for veterinarians and MDs“	40	4
3	“Methods of isolation and characterisation of proteins”	8	80
4	“Advanced Lecture Course on P-type ATPases”, FEBS (Federation of the European Biochemical Societies) Weilrod-Taunus	95	3
5	“Amphibians, reptiles and exotics” 21.11.01	100	4
6	“Molecular Veterinary Medicine”, Cooperation with the graduate seminar 20.06.01	70	3
7	“Light Cycler – New Tool for Diagnostic and Research”	31	3
8	“Production and application of herdspecific and autogenous vaccines”	43	3
9	“Production and use of autogenous and herdspecific vaccines”	106	10
10	“II. International Symposium on infectious bursal disease and chicken infectious anaemia”	90	24
11	“II. International Symposium on infectious bursal disease and chicken infectious anaemia”, Rauischholzhausen	100	30
12	“Imported parasite diseases in dogs and cats”	10	5
13	“Larval Cyathostomiasis in horses”, Regionaltagung Schleswig-Holstein, 16./18.03.01	30	2
14	“Parasitoses in pigs”, Geschendorf, 22.02.01	30	2
15	“3rd Symposium about Transport across Cell Membranes”	90	15
16	“Osteosynthesis” Basic Workshop	70	25

Nr.	Title of course	Number of participants	Total number of hours of the course
17	“Farrier – conference, orthopedic shoeing”	80	7
18	“Open day for veterinarians”	140	6
19	“Abdominal ultrasonography for small animals”, Seminar in Maastricht, NL, 09./10.02.01	15	11
20	“Abdominal ultrasonography”, Seminar in Bern, Switzerland, 03.05.01	24	8
21	“Abdominal ultrasonography”, Seminar in Bern, Switzerland, 04.05.01	24	8
22	“Abdominal ultrasonography”, Seminar in Bern, Switzerland, 23.08.01	25	8
23	“Advanced abdominal ultrasonography”, Seminar in Bern, Switzerland, 24.08.01	22	8
24	“Abdominal ultrasonography”, Seminar in Rumania, 30.11.-02.12.01	15	24
25	“Abdominal ultrasonography in small animals”, Seminar in Maastricht, NL, 14./15.12.01	17	11
26	“Liver and Liverdiseases”, AG-Gastroenterology		7
27	“Case-oriented clinical laboratory diagnostics – what, when, why?”, Kassel	80	3
28	“Continuing education on cardiology”		8
29	“Physiology and Pathology of Reproduction”, 34th international congress, Giessen, 22.-23.02.2001	320	14
30	“Fertility monitoring in dog breeding”		1
31	“Training course for EVCP Exam”	47	16
Total	**31**	**1762**	**359**

Table 11.1.3: Courses organised at the site of establishment by outside bodies in the year 2002

Nr.	Title of course	Number of participants	Number of hours
1	“Rehabilitation of Birds in nurseries”, 16. Avian Forum	120	5
2	“Legislative directions for drugs and dispending”	a) 100 practitioner	10
3	“Legislative directions for drugs and dispending”	b) 12 foreign students	16
4	“Reproduction medicine in cattle – Udder diseases”, ATF-Modul 1	40	10
5	“New aspects in veterinary medicine” Oberhessische Gesellschaft für Natur- und Heilkunde	30	9
6	“Organotherapy”, ATF-courses	19	10
7	“Akupuncture II of the ear”, ATF-courses	36	10
8	“Akupuncture courses I/II, III/IV”, ATF-courses	106	40
9	“Ethological therapy”, Modul 6 to 10, ATF-courses	47	60
10	“Reproduction medicine in cattle”, Modul 1, ATF-courses	18	11
11	“Reproduction medicine in cattle”, Modul 2, ATF-courses	27	11
12	“Introduction in natural medicine”, ATF-courses	52	10
13	“Udder health and udder diseases” Innovation-Team Milk Hessen	102	8
14	“The way to a 10000 liter herd” Innovation-Team Milk Hessen	150	8
15	“Bone pathology”	47	6
16	“Conference on poultry diseases” in cooperation with TiHo Hannover	100	8
Total	**16**	**1006**	**232**

2 Comments and Suggestions

The faculty regularly provides continuing education for those seeking specialisation by obtaining the degree of a “Fachtierarzt”; in addition the faculty is on its way to provide training for becoming member of a European College.

Otherwise the faculty does not provide an “open” continuing education on a regular basis but rather participates in the continuous veterinary training offered and organised by the organisers mentioned above.

Due to the enormous teaching load the faculty sees no possibility at this moment to get otherwise organised and to offer a “wide-spectrum-programme” on a regular basis. Only in respect to diagnostic imaging and the recently passed X-Ray Order it has been suggested, to develop a programme offering regular courses. This, however, is still under discussion.

CHAPTER 12 POSTGRADUATE EDUCATION

1 FACTUAL INFORMATION

The number of students entering postgraduate education is quite high. Postgraduate education can follow the “classical” path, i. e. main emphasis is restricted towards proofing or disproving a scientific hypothesis in form of a written thesis or a more recent path which in addition to the classical path requires a specified training (lectures, seminars, practicals) within the so called **graduate seminars**. Both pathways lead to the title of a Dr. med. vet.

With the year 2003 the faculties of veterinary medicine and medicine at the Justus-Liebig-Universität Giessen have established a common PhD order. Students having entered the “more recent path” will be entitled to move into this program (see below).

Otherwise the final exam (Staatsexamen) in Veterinary Medicine and Medicine or a Diploma in biological sciences are required. There is no prerequisite in respect to a master’s degree. Hence the faculty does not offer a master-program.

Table 12.1 shows the ratio between students successfully finishing their undergraduate studies of veterinary training and those successfully finishing the additional postgraduate training.

Table 12.1: Number of students who obtain the degree a Dr. med. vet. degree:

Year	**Students successfully finishing undergraduate education**	**Number of students receiving a Dr. med. vet. degree**
1990	176	90
1991	168	91
1992	169	106
1993	223	110
1994	179	92
1995	208	125
1996	186	102
1997	176	97
1998	194	77
1999	192	86
2000	185	98
2001	197	73
Total	**2253**	**1147**

Thus, about 50 % of all students undergo a further training and obtain the degree of a Dr. med. vet.. It should once more be noted at that point that a successful end of the undergraduate studies requires passing of the Staatsexamen (state board examination). This is the necessary qualification for entering professional life. By passing this examination students have acquired the title of a Veterinary Surgeon (Animal Physician); they are not given the title of a DVM.

12.1.1: Postgraduate Education Following the Classical Path

Many students, but not all of them are either paid by the university or they receive a fellowship during this training (in most cases payment is according to a Bat IIa/2, which is about 1000 € per month). If the postgraduate work is performed in a clinic, clinical work is a central part of the training apart from the research performed. In general postgraduate education, i. e. finishing the thesis project, lasts three years.
Many of the research projects are supported by extramural funds (German Research Foundation, Federal Ministry for Research and Science, Volkswagenstiftung, European Biomed-Program, etc.).

12.1.2: Postgraduate Education Following the “More Recent Path” (graduate seminar):

This education relies on the establishment of graduate seminars (Graduiertenkolleg, GK). Graduate seminars are funded by the German Research Foundation, following submission of a multidisciplinary project proposal and a rigorous evaluation procedure. The graduate seminar Molecular Veterinary Medicine (GK 455) was established in 1998 under the responsibility of the Faculty of Veterinary Medicine, it was successfully reviewed and prolonged for another 3-year period in 2001. Maximum support is for 9 years.
In addition the faculty participates in two other graduate seminars, the Graduiertenkolleg *GK 533 Cell-Cell Interaction in Reproduction* which is jointly operated between the Faculty of Veterinary Medicine in Giessen an the Faculties of Medicine in Giessen and Marburg, and the Graduiertenkolleg GK 370 called *Nucleoproteincomplexes* which is operated by the Faculty of Biology, Chemistry and Geological Sciences, Justus-Liebig-Universität Giessen.

The training program of GK 455 Molecular Veterinary Medicine is based on the following considerations:

Molecular cell structures determine complex diseases. It is also becoming more successful in veterinary medicine to recognize and treat causes and consequences of diseases, genetic defects and incompatibilities on the molecular level of cell structures. The graduate students are advised to learn appropriate methods in molecular biology, biochemistry, genetics and pathology aiming to analyze pathophysiological processes and to understand their molecular and cellular basis. Research programs allow studies about 1) mechanisms of cell-microbial- and cell-cell-interactions, 2) principles of the development of cytopathogenic viruses, 3) structure, function, and regulation of membrane channels and their importance for pathological conditions, 4) molecular diagnosis of genetically caused organ diseases, as well as 5) the importance of para- and endocrine compounds for pathophysiological processes. Besides the methodological part of the postgraduate program the students have to prepare for the public a scientific review of pressing importance about a relevant veterinary topic. They should further organize a scientific meeting. The respective information is summarized in Table 12.2.

Table 12.2: Postgraduate research training programmes

(a) Masters Level Indicate discipline and/or department.	Duration of training	Number enrolled	
		Full time	Part time
does not apply	-	-	-
(b) Ph.D. level Degree and discipline and/or department.	Duration of training	Number enrolled	
		Full time	Part time
to be established in 2003/2004	-	-	-
c) Doctoral level: Graduate seminars Molecular Veterinary Medicine, Cell-Cell Interaction in Reproduction, Nucleoproteincomplexes Disciplines:	Duration of training	Number enrolled	
		Full time	Part time
Anatomy, Microbiology, Biochemistry, Reproduction, Internal Medicine, Parasitology, Pathology, Pharmacology, Physiology, Virology, Animal Breeding and Genetics, Biology	400 h over 3 years	20	0

In the graduate seminar GK 455 (Molecular Veterinary Medicine) 22 professors of our faculty work together; they have established new practical courses, seminars, lectures and workshops. The graduate seminars are open to students from other faculties, however, about 75 % have finished undergraduate veterinary training and are qualified veterinary surgeons. The training program takes 3 years.
The GK 455 offers 15 - 20 grants for students, and 1 - 2 postdoctoral positions. Another 3 – 5 students may enroll in the program after having obtained fellowships from other sources, e. g. the German Academic Exchange Service (DAAD).

The graduate seminar GK 533 Cell-Cell-Interaction in Reproduction was established in 1999 and renewed in 2002. 5 professors and their respective working groups from the faculty of veterinary medicine are engaged in this seminar.
Participation in the graduate seminar GK 370 Nucleoproteincomplexes is 2 professors and their working groups; this graduate seminar was established in 1997.
In addition the official diploma of having graduated to a Dr. med. vet. students get a special diploma after having passed the 3-year term of the graduate seminar.

12.2: Postgraduate Development to the Level of a “Habilitation”

After having received the degree of a Dr. med. vet. the next higher and final academic degree obtainable is the Habilitation. It requires about 6 to 9 years of qualified research, the presentation of a thesis, either as a monography or as a composition of published papers with a common specific issue. Acceptance of the thesis by the faculty is after a thorough review which is followed by an oral examination. The candidate has to submit 3 topics, one of them is chosen by the faculty council 8 days prior to the presentation. The discussion after the presentation serves as the oral examination, the whole audience may get involved. The vote of passing is restricted to the faculty council. The “right to teach” (venia legendi) is acquired with the Habilitation. It is still an important prerequisite for appointment as a professor.
In the last 5 years 15 Habilitation-procedures were successfully finished.

12.3: Professional Specialization

In addition to the scientific training, in about 30 disciplines (pre-, para- and clinical subjects) the faculty offers young scientists to obtain the “Fachtierarzt” qualification.

Professors generally have the necessary certification to transfer the required expertise to young scientists within the frame of their own disciplines.
The educational program and time-periods advised depend on the specific requirements which are given by regional veterinary bodies (Landestier-ärztekammern). Faculty professors as well as non-university colleagues are members of the various examination committees composed by the Landestierärztekammer.
Though quite a number of the academic staff is diplomate of a European college, so far only the Institute of Pathology runs an internship program. It is to be expected that all clinical institutions will develop such programs during 2003/2004 as soon as the present vacancies (6 important clinical professorships) have been refilled.

2 COMMENTS AND SUGGESTIONS

The large number of students graduating annually in receiving the degree of a Dr. med. vet. provides a solid basis for research at the faculty. These students may also act as instructors in practical classes, in the clinics they are involved in patient care. Hence it is in the interest of the faculty to maintain this high level of students undergoing postgraduate education. Thus there is a junctim between the number of ongoing research projects and the number of students enrolling in postgraduate education. It requires a tremendous effort by the faculty to acquire enough grant money to provide this basis for research. In this respect a better technical support through the university would be highly desirable, for example by providing more technical and administrative staff and support covering the costs for reinvestments. This also applies to establishing the internship and residency programs.

CHAPTER 13 RESEARCH

1 FACTUAL INFORMATION

a) The curriculum of veterinary education in Germany does not foresee the involvement of undergraduate students in research. This accounts for the fact that each student has to attend an average of 33 hours of lecturing per week.
However, the faculty is open to allow students participation in research activities during their undergraduate education.
There are two possibilities to achieve this:
According to the ordinance concerning the certification of veterinary surgeons, subchapter 3, section 57 allows an elective placement in respect to the training in the therapeutic practice of a veterinary surgeon or in an animal hospital as outlined in subchapter 2. Thus it is possible 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.
Also those students who decide to take their practical training (subchapter 2, section 54 and 56, ordinance concerning the certification of veterinary surgeons) in a university hospital have access to ongoing research projects, however, it is more or less up to the individual student to take advantage of these chances.

b) In 2002 24 students received a contract as a “studentische Hilfskraft” (student aid). Hiring is mainly done by the clinical institutions of the faculty, however, occasionally also by the para-clinical and pre-clinical institutions. In general these students are asked to provide specific services; depending on their own interest they may get or not get involved in research projects carried out by the institution.

c) As requested by the ordinance concerning the certification of veterinary surgeons the veterinary curriculum in Giessen offers a wide spectrum of elective courses. A small but distinct number of these courses is highly research orientated. Students enrolling in these courses will have an exposure in respect to developing a hypothesis, the respective literature screening and the design of an adequate experiment.

2 COMMENTS

As indicated above, the present ordinance concerning the certification of veterinary surgeons has only little intentions to involve undergraduate students in research. This conforms with the ordinance concerning entering the post-graduate education to obtain the degree of a doctor in medicinae veterinariae (Dr. med. vet.) which requires that undergraduate education has been successfully completed. Based on the years 2000, 2001 and 2002 43 percent of our students have successfully finished such a post-graduate education. This highly qualified cluster of students is the pool for recruitment of academic and scientific staff for university and non-university institutions.

3 SUGGESTIONS

Based on our present experiences no suggestions are forwarded. However, it is hoped to more selectively stimulate the interest of students in research programs due to the offering of selective, research oriented classes during undergraduate education.