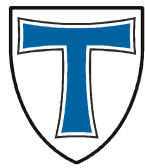


JUSTUS-LIEBIG-



UNIVERSITÄT
GIESSEN



FACULTY OF VETERINARY MEDICINE

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

Main Volume

Giessen, 6. – 10. February 2012

<u>CONTENTS</u>	Page
INTRODUCTION	5
CHAPTER 1 OBJECTIVES	6
1.1 Factual Information	6
1.2 Comments and Suggestions	7
CHAPTER 2 ORGANISATION	9
2.1 Factual Information	9
2.2 Organisation and legal background	9
2.2.1 Central level: organs of the University, election procedures, responsibilities	9
2.2.1.1 Central organs and their appointment	9
2.2.1.2 Responsibilities	11
2.2.2 Faculty level: organs, election procedures, responsibilities	15
2.2.2.1 Organs, appointments	15
2.2.2.2 Responsibilities	16
2.2.2.3 Faculty subcommittees	17
2.2.2.4 The positioning of a professor	17
2.2.3 Interaction of the Faculty with the Presidium and Central Administration	18
2.2.4 Organisation of the Faculty of Veterinary Medicine	20
2.2.5 Student Organisation	20
2.2.6 Teaching import and export; Examinations	22
2.2.7 Interaction with the Veterinary Profession and General Public	22
2.3 Comments and Suggestions	22
CHAPTER 3 FINANCES	24
3.1 Factual Information	24
3.1.1 General Information	24
3.1.1.1 Introductory remarks	24
3.1.1.2 Allocation of funds to the University	24
3.1.1.3 Allocation of funds to the Faculty	25
3.1.1.4 Allocation of funds within the Faculty	25
3.1.1.5 Mechanisms for funding major equipment and capital expenditure and maintenance	26
3.1.2 Information on extra income	26
3.1.3 Overview income (revenue) and expenditure	27
3.2 Student fees	28
3.3 Comments and Suggestions	28
CHAPTER 4 CURRICULUM	29
4.1 Factual Information	29
4.1.1 National curriculum	29
4.1.2 Implementation of the national curriculum at the Faculty of Veterinary Medicine, JLU Giessen	30
4.1.3 Degree of freedom within the national curriculum	33
4.1.4 Decisions on curriculum matters	35
4.1.5 Curriculum followed by all students	35
4.1.6 Further information on the curriculum	48
4.1.7 Obligatory extramural work	49
4.1.8. Specific information on the practical training in Food hygiene/Public health	50
4.1.9 Ratios	50
4.1.9.1 General indicators types of training	50
4.1.9.2 Special indicators of training in Food hygiene/Public health	51
4.2 Comments	51

4.3	Suggestions	52
CHAPTER 5	TEACHING AND LEARNING: QUALITY AND EVALUATION	53
5.1	Factual Information	53
5.1.1	The teaching program	53
5.1.2	The teaching environment	55
5.1.2.1	Technical aspects	55
5.1.2.2	Human resources	55
5.1.2.3	Teaching capacity	57
5.1.2.4	Other aspects	57
5.1.3	The examination system	58
5.1.4	Evaluation of teaching and learning	58
5.1.5	Student welfare	60
5.2	Comments	60
5.3	Suggestions	62
CHAPTER 6	FACILITIES AND EQUIPMENT	63
6.1	Factual Information	63
6.1.1	Premises in general	63
6.1.2	Premises used for clinics and hospitalisation	66
6.1.2.1	Regular premises for hospitalisation	66
6.1.2.2	Premises for isolation of hospitalised patients	67
6.1.3	Premises for teaching animals	68
6.1.4	Premises used for theoretical, practical and supervised teaching	68
6.1.5	Special diagnostic laboratories and Clinical Support Service	70
6.1.6	Slaughterhouse facilities	71
6.1.7	Foodstuff processing unit	71
6.1.8	Waste Management	72
6.1.8.1	Chemical waste	72
6.1.8.2	Radioactive waste	72
6.1.8.3	Radioactive waste following use in diagnostics	72
6.1.8.4	Waste management of normal litter	72
6.1.8.5	Organic waste	72
6.1.8.6	Cadavers	73
6.2	Comments	73
6.2.1	Department of Veterinary Clinical Sciences	73
6.2.2	Pathology, Anatomy, Student Facilities	74
6.2.3	Biomedical Research Centre	74
6.2.4	Premises for housing teaching animals	74
6.3	Suggestions	75
CHAPTER 7	ANIMALS AND TEACHING MATERIAL OF ANIMAL ORIGIN	76
7.1	Factual Information	76
7.1.1	Anatomy	76
7.1.2	Pathology	77
7.1.3	Animal Production	77
7.1.4	Food Hygiene/Public Health	78
7.1.5	Consultations and patient flow services	79
7.1.5.1	Consultation	79
7.1.5.2	Patient flow	79
7.1.6	Vehicles for animal transport	81
7.1.7	On-Call emergency service	81
7.1.8	On farm teaching and outside patient care	81
7.1.8.1	Ambulatory (Mobile) clinic	81
7.1.8.2	Other on-farm services and outside teaching	82
7.1.9	Other Information	83
7.1.9.1	Additional outside sources of material for	

clinical training purposes:	83
7.1.9.2 Level of service that is offered by the Department of Veterinary Clinical Sciences compared with outside practices	83
7.1.9.3 Areas of clinical specialisation that are covered and the extent of the coverage	85
7.1.9.4 Fees for clinical services	85
7.1.9.5 Relationship of the establishment with outside practitioners	85
7.1.9.6 Relationships with outside organisations	86
7.1.10 Ratios	87
7.1.11 Other species	88
7.2 Comments and Suggestions	88
CHAPTER 8 LIBRARY AND LEARNING RESOURCES	89
8.1 Factual Information	89
8.1.1 Library	89
8.2 Information Technology Services	91
8.2.1 Audio-visual service	91
8.2.2 Computer service	92
8.3 Comments	94
CHAPTER 9 STUDENT ADMISSION AND ENROLMENT	95
9.1 Undergraduate Courses	95
9.1.1 Undergraduate student numbers	95
9.1.2 Student admission	95
9.1.2.1 Minimum admission requirement	95
9.1.2.2 Selection process	96
9.1.3 Student flow	97
9.2 Comments	99
9.3 Suggestions	99
CHAPTER 10 ACADEMIC AND SUPPORT STAFF	100
10.1 Factual Information	100
10.1.1 Personnel in the establishment provided for veterinary training	100
10.1.2 Allocation of staff to the Faculty	102
10.1.3 Allocation of staff to the departments (units) within the Faculty	103
10.1.4 Recruiting or retaining of staff	103
10.1.5 Regulations governing outside work	103
10.1.6 Possibilities and financial provisions for the academic staff	104
10.2 Comments	104
10.3 Suggestions	105
CHAPTER 11 CONTINUING EDUCATION	106
11.1 Factual Information	106
11.2 Comments and Suggestions	111
CHAPTER 12 POSTGRADUATE EDUCATION	112
12.1 Factual Information	112
12.1.1 Professional track	112
12.1.2 Academic track	115
12.2 Comments	116
CHAPTER 13 RESEARCH	117
13.1 Factual Information	117
13.1.1 Research activities in the Faculty	117
13.1.2 Involvement of undergraduate students in research	117
13.2 Comments	119
13.3 Suggestions	119

Self Evaluation Report (SER)

INTRODUCTION

The origin of the Faculty of Veterinary Medicine dates back to 1777, when the first lectures in the field of veterinary medicine (animal healing) were offered by the Economic Faculty of the former “Ludwigs-Universität”, the “Ludoviciana”, the present Justus-Liebig-University 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 Faculties of Veterinary Medicine and 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 re-founded 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 of 1971, the structure 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”. With the restructuring of the former Agricultural Faculty in 1985 the Institute of Animal Breeding and Genetics of Domestic Animals was moved from the Faculty of Veterinary Medicine to the Faculty of Agricultural Sciences, Nutritional Sciences and Environmental Management. 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-University Giessen which have led to a fruitful interdisciplinary cooperation.

The Faculty was submitted to a first EAEVE-evaluation from November 29th to December 2nd, 1993 and a second evaluation from June 23rd – 28th June 2003. Both evaluations resulted in an “approval”. However, only draft reports and no final reports had been provided to the Faculty and the final decision was only communicated verbally resp. by putting the Faculty on the list of positively evaluated faculties. This situation has made it somewhat difficult to communicate the result of the evaluations to the respective authorities and it would be highly appreciated if a final report could be provided as a result of the forthcoming visit.

Prof. Dr. Dr. h. c. Martin Kramer

CHAPTER 1 OBJECTIVES

1.1 Factual Information

In the Federal Republic of Germany veterinary education is regulated by the “Verordnung zur Approbation von Tierärztinnen und Tierärzten” (TAppV) from July 27th, 2006 (Ordinance concerning the Certification of Veterinary Surgeons, see Annex I).

The objectives of veterinary education are clearly spelled out in Section 1 (1).

It contains the following requirements:

“The objective 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 and of undergoing further training and ongoing advanced training

1. The fundamental veterinary, 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 to be practised responsibly, taken special account of quality assurance.”

The theoretical frame to achieve these objectives is outlined in Section 1 (2) where it is indicated that veterinary training shall comprise an academic-theoretical component with a total of 3850 hours of compulsory and elective courses and a practical component of studies lasting for 1170 hours.

Section 2 (2) indicates that the compulsory and elective courses shall not exceed an average of 30 hours per week per student, except during the clinical training and placement in extramural practicals.

In view of this situation the Faculty considers it unnecessary and redundant to put into public an own message of objectives.

Meeting the objectives set in the Ordinance governing the Certification of Veterinary Surgeons is the utmost goal, not only of the Faculty of Veterinary Medicine at the Justus-Liebig-University Giessen, but of all veterinary establishments in Germany.

In order to secure a successful implementation of the TAppV and to control undergraduate and graduate education, the Faculty operates on the following principle:

1. Based on the philosophy of Humboldt of an inseparable unity of research and teaching the Faculty tries to hire the most qualified W3- and W2-professors for the respective discipline (see Chpt 2.2.2.4). After having been posted as a professor it is the prime responsibility of these people to adequately cover their respective subject or discipline in teaching and research in cooperation with the other teaching staff.

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 from the group of students and one member of the scientific staff. As has been experienced in the past, students participated actively in this committee, guaranteeing an active feedback system and hence allowing for corrections where necessary, e. g. in the execution of practical courses (see also Chpt 2.2.2.3).
3. To secure a straightforward student-career and based on the TAppV, the Faculty has passed Rules for Study which got into effect on January 14th, 2002 (see Annex III). These rules also exactly lay 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. This is with the responsibility of the heads of the examination office.
4. Evaluation of teaching is on a regular basis since 2003 (see Chpt 5). Teaching staff is informed about the results and asked – where necessary – to take consequences. The University offers courses in didactic/pedagogic training and less well evaluated teachers are advised to participate. If appointed on probation negative evaluation results may lead to a non renewal of the appointment.
5. Based on the Hessian University Law, mutual agreements on the development of the Faculty (Zielvereinbarung) covering a period of 5 years have to be developed and signed by the Faculty (Dean) and the President. These agreements refer to the educational goals, the development of staff and the respective budget, major investments concerning equipment and the premises, as well as the research projects executed by the Faculty. 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 five years.
6. Within the University the Faculty is in constant competition with the other faculties concerning success in student education and the acquisition of research grants. Our Faculty has position No. 1 concerning the number of students graduating within the minimum number of years (MNY) allowed to successfully complete the curriculum (90%). Within the discipline of agricultural/veterinary sciences it ranks No. 1 within Germany in respect to research funds granted by the German Research Foundation.

1.2 Comments and Suggestions

Since 1968 admission of students to the Faculty of Veterinary Medicine at the Justus-Liebig-University Giessen is regulated by a *numerus clausus* and selection of around 210 students admitted out of more than 1000 applicants is based on the grades of high school diploma (Abitur, Matura), the subjects the students have majored in and – in case of 6% of the students admitted – the type of professional career (apprenticeship) absolved so far (see Chpt 9). The effectiveness of this system was shown in an investigation comparing the success of the students assigned after an interview or assigned by their grades.

Thus the Faculty is convinced that only the top High School graduates are admitted and that they are highly motivated.

The Faculty is in a constant process to optimise the curriculum and the educational environment. However, it abstains from hectic moves but acts on a long-term strategy.

As the student/teacher ratio is an important factor concerning the educational environment the Faculty is concerned about the fact that the theoretical teaching capacity of the Faculty is the basis for admission of students (see Chpt 9).

CHAPTER 2 ORGANISATION

2.1 Factual Information

Details of the establishment

Name of the establishment: Fachbereich Veterinärmedizin
(Faculty of Veterinary Medicine, FB10)

Address: 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/fb10/>

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: Mukherjee@admin.uni-giessen.de

2.2 Organisation and legal background

Management and education at universities and colleges in the Federal State of Hesse is regulated by the Hessian University Law (Hessisches Hochschulgesetz, HHG) put into effect on January 1st, 2010 and going to be repealed on December 31st, 2014.

Section 4, §§ 31 to 49 deal with the organisation of the university. The following chapter is an attempt to briefly describe the administrative structures, based on a commented diagram.

2.2.1 Central level: organs of the university, election procedures, responsibilities

2.2.1.1 Central organs and their appointments

The university is governed by democratic principles. As is indicated in Fig. 1 there are four groups of members of the university entitled to vote for the Senate, the organ representing the members of the University:

- a) professors (W1 to W3 professor) (formerly C1 – C4)¹⁾
- b) non-professorial scientific staff (Wissenschaftliche Mitarbeiter)
- c) administrative/technical staff
- d) students (undergraduate and graduate students)

Each group may form different parties standing up for election (equivalent to political parties). The central organs of the university are:

Senate:

The term for non-students is 2 years and for students 1 year; re-election is possible.

Distribution of the seats in the Senate is as follows:

- group of professors: 9 seats
- group of students: 3 seats
- group of non-professorial scientific staff (NPSS): 3 seats
- group of the administrative/technical staff (TAS): 2 seats

The Senate is chaired by the President, who has an advisory but not a voting function.

President:

The position of a President is posted and internationally announced, applicants must have graduated from a university and demonstrated the necessary experience to head a university.

Election is for 6 years by the members of the Senate and their substitutes (see Fig. 1). Re-election is possible.

Vice President:

The vice president(s) are elected by the Senate on proposal of the President following consultation with the Hochschulrat (see below). Term is 3 years (Currently the Justus-Liebig-University Giessen has posted a First and a Second Vice President; a third one will be inaugurated in 2012).

¹⁾ Explanation: The classification of university professors has changed from the C-Nomenclature (C1-C4) to the W-Nomenclature (W1-W3), with W3 being equivalent to the former C4 (full professor). According to the W-Nomenclature W1 is equal to a junior professor with a temporal assignment only. Though a W3 professor is ranked somewhat higher than a W2-professor, there is no basic difference except for the basic salary and – in some cases – the personnel going with a professorship. On a first appointment both positions are not permanent and tenureship is only granted after a positive evaluation. Due to merits (on various level) a W2-Professor may even exceed the salary and personnel going with the professorship of a W3-professor.

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 6 years ¹⁾.

Presidium:

The President, the two Vice-Presidents and the Chancellor form the "Presidium". Decision of the "Presidium" is by majority vote, in case of a deadlock situation the vote of the President decides.

University Advisory Committee, UAC (Hochschulrat):

The UAC consists of up to 10 personages, half of them are nominated by the Ministry for Sciences and Art in consultation with the University, the other half by the Presidium in consultation with the Senate. Appointment is for 4 years by the Ministry of Science and Art.

Extended Presidium:

This body is based on § 6 of the statutes of the University. It is formed by the Deans of the 11 Faculties, the members of the Presidium, the representatives of women and disabled persons and one student representative. It meets at least once per semester.

2.2.1.2 ResponsibilitiesSenate:

The senate elects the president (§ 39) and the vice-presidents on proposal of the president (§ 40) by secret ballot.

Other responsibilities of the senate are listed in § 36. A distinction is made between three levels of competence:

a) to decide, b) to develop an opinion, c) to participate

Among other matters the senate has to decide on:

- fundamental order (statutes) of the university (Grundordnung)
- orders and matters regulating teaching, examinations and research
- criteria for granting a merit bonus for professors
- 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.

Among other matters 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
- structuring of the university into faculties (Fachbereiche)

Among other matters the senate has to participate on

- appoint of women's representative

President:

The President represents the university in all external matters. He has (e.g. appointment of professors) or may have the final decision in all personnel matters. He holds the chief responsibility for the management of the university.

Election is for 6 years by the members of the senate and their substitutes.

Vice Presidents:

At the Justus-Liebig-University Giessen the First Vice President holds the special responsibilities for teaching matters, the Second Vice President holds the special responsibility for research matters.

Chancellor:

The Chancellor heads the university administration according to the guidelines of the Presidium. He/She is responsible for the budget and executes all financial and personnel matters according to the decisions of the Presidium.

Presidium:

In respect to the "Presidium" § 37 states the following:

The "Presidium" 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 (UAC), the other organs, the faculties and the members of the University. It annually reports to the Senate.

It decides about the developmental plan of the University (Entwicklungsplan), signs the developmental plans with the 11 faculties (Zielvereinbarung) and develops the annual budget for the University from the funds provided by the Hessian Ministry of

Science and Arts and centralised income (e.g. overhead) of the University. It also decides on merit-bonus payments to the professorial staff.

Extended Presidium:

Its formation is based on the statutes of the University. It is of advisory function and serves communication within the University.

University Advisory Committee; UAC (Hochschulrat):

According to § 42 it is the obligation of the UAC to observe the development of the University, to define expectations of stakeholders on the University, to promote the practical use of latest scientific findings and scientific development. The UAC may become initiative in basic matters and may participate in budgetary matters and the positioning of professors. It has to approve the developmental plan of the university and participates in cooperation with the Senate in nominating candidates for the office of president.

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

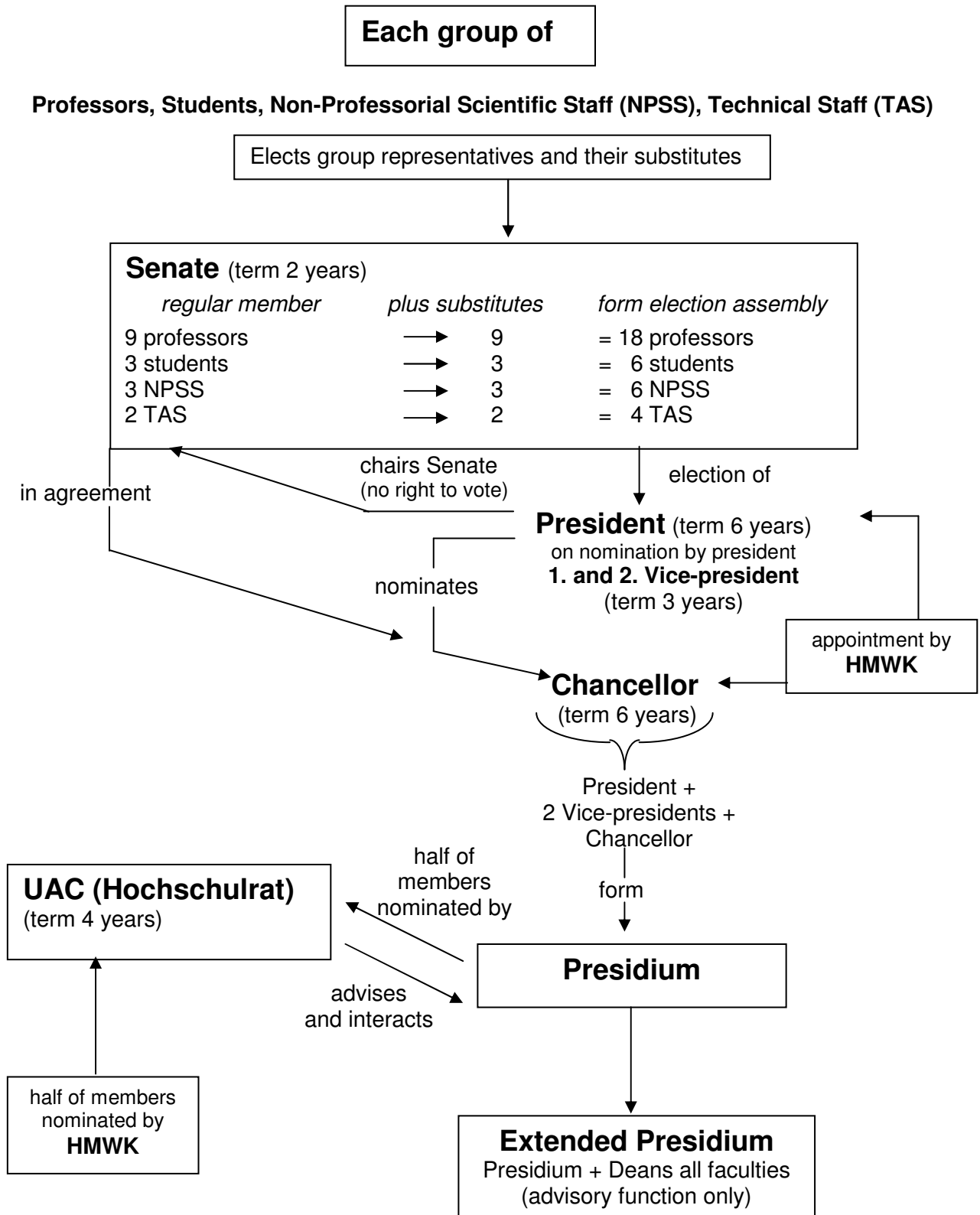


Fig. 2.1: Central organs regulating the University; election and appointment procedures, interactions; HMWK = Hessian Ministry for Science and Art

2.2.2 Faculty level: organs, election procedures, responsibilities

2.2.2.1 Organs, appointments

Faculty Council:

As is laid out above for the senate and as shown in Fig. 2.2, non-student members of the Faculty Council are elected for a 2 year term, students for a 1 year term, by the members of the Faculty on a “group basis”. Distribution of seats in the Faculty Council of the Faculty of Veterinary Medicine is as follows:

- group of professors (P): 10 seats
- group of students (S): 5 seats
- group of the non-professorial scientific staff (NPSS): 3 seats
- group of the administrative/technical staff (TAS): 1 seats

The Dean chairs the Faculty Council. He is a constitutive member of the council but has no right to vote.

Dean:

He is elected out of the group of professors by a majority vote of the Faculty Council for a 3 year period, re-election is possible. The candidate elect is subject of approval of the president. Re-election is possible.

Vice-Dean, Dean for Study Affairs:

On proposal by the Dean the Faculty Council elects the Vice-Dean. Proposal of the Dean for Study Affairs needs support of the student body. Term of office is 3 years. Re-election is possible.

Deanery (Dekanat):

The Dean, the Dean of Study Affairs and the Vice-Dean form the Deanery (Dekanat). The Deanery is assisted by a head of office.

Board (Direktorium):

It consists of all professors plus representatives of the NPSS, TAS and students (generally graduate students) of an Institute/Clinic.

Acting Director:

The Acting Director is elected for a minimum term of 2 years by the Direktorium (Board) and is responsible for running the institute/clinic, including the fulfilment of all teaching obligations. Re-election is possible.

2.2.2.2 ResponsibilitiesFaculty Council:

The Faculty Council deals with matters of fundamental importance. Similarly to the Senate it acts on the “level of decisions”, e. g. study and examination order, nominations for appointments of professors, installation or suspension of working groups and “development of an opinion” [e. g. development of the structure of the Faculty, on the memos of understanding between the Faculty and the Presidium (Zielvereinbarung), the installation and suspension of courses of study, the installation and suspension of scientific and technical units]. It is further responsible for the coordination of research projects.

Deanery (Dekanat):

The Deanery 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 Presidium (Zielvereinbarung). It decides within the plan of the structural development of the Faculty about the distribution of funds within the Faculty, based on the total budget derived from state money and allotted to the Faculty by the Presidium. It further decides about the assignment of non-professional personnel to the various institutes and units, based on the budget available.

Dean:

The Faculty is represented by the Dean. Irrespective of the presidential responsibilities the Dean make sure that the teaching staff fulfils its teaching and examination duties.

Direktorium/Acting Director:

The official function of the Direktorium (Board) is to elect the Acting Director. However, it may also serve as a platform to discuss institute/clinic-matters of general interest.

The Acting Director is responsible for running the institute/clinic and securing that all teaching obligations are fulfilled. However, individual professorships may maintain a high degree of autonomy, particularly in the clinics and clinical subdivisions. Thus depending on the arrangements made between the Deanery and the institute, the

money allotted for research and teaching may either be under the responsibility of the institute or clinic (acting director) or a single professorship.

The acting director report to the Dean, all correspondence with the President and the central organisation is through the dean's office.

2.2.2.3 Faculty subcommittees

It is within the autonomy of the University that the Faculty Council may inaugurate advisory sub-committees. They are composed of members out of the group of professors (GP), the group of non-professional Scientific staff (NPSS), the group of students (S) and in some cases the group of technical/administrative staff (TAS). The following subcommittees have been formed:

- a) Committee for Study Affairs (Studienausschuss): It is headed by the Dean for Study Affairs. The members are as follows: P (3), NPSS (1), S (3). It meets regularly during an ongoing semester. It collects all ongoing information and feedback concerning execution of the curriculum. Minor matters are settled by the Committee, more fundamental matters need approval of the Faculty Council.
- b) QSL-Commission (QSL-Kommission): The Faculty is provided with a special budget substituting for the former part of the tuition fees forwarded to the Faculty to improve study conditions. The QSL-Commission prepares the proposal on the use of this budget. It is headed by the Dean for Study Affairs. The members are as follows: P (3), NPSS (1), S (4)
- c) Committee for Structural Development (Strukturkommission): The members are as follows: P (5), NPSS (2), S (2), TAS (1)
- d) Committee of Financial Matters (Haushaltsausschuss). The members are as follows: P (5), NPSS (2), S (1), TAS(1)
- e) Committee of Price-Granting (Preisverleihungskommission). The members are as follows: P (3), NPSS (1), TAS (1)

All committees and sub-committees report to the Faculty Council.

Another committee is the Graduation committee (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 has been approved by the Hessian Ministry of Science and Art, on March 14th, 2003.

2.2.2.4 The positioning of a professor

A special procedure exists for the appointment of the professorial staff. Posting a vacancy, in general on an international level, has to be agreed on by the President. Having obtained the agreement a search committee (Berufungskommission) is ap-

pointed by the Deanery, 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. Neighbouring faculties are usually asked to nominate a member; members can also be recruited from other universities. At least one scientific member of the panel should be female.

This panel is responsible for the selection procedure and – after having come up with a list of possible candidates – the nomination of 2 external experts who are asked to develop an opinion and to rank the listed candidates. Important factors of the impact are the experiences in teaching, the specific area of research and the contribution to the scientific community. Based on an oral presentation, the interviews and the experts' opinions this committee then forwards a ranked list (proposal) to the Faculty Council; this proposal – in general – should list 3 names.

The Faculty Council must then decide on the list.

When accepted, the list together with a special appraisal (Senatsvorlage) is forwarded to the President who, following consultation with the Senate, offers the positions to one of the listed candidates.

It is an exception that in-house candidates are posted on such a list.

The negotiation 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 "Presidium".

Usually the appointment of a new professor is the chance not only to bring in new ideas and new spirits, but also to obtain extra money from central funds of the University for investments.

A first professional appointment is generally linked with a 3 year period of probation unless the candidate already holds a tenured position. However, also in other cases the appointment may be limited by time.

This procedure has great advantages but also great disadvantages, particularly in respect to the length of time, until a free position is filled again.

2.2.3 Interactions of the Faculty with the Presidium and the central Administration

Interaction of the Faculty with the "Presidium" and the central administration (see below) on a daily basis is directly on a case by case basis. In addition the Extended Presidium (Erweitertes Präsidium) acts as an assembly of the deans of the University and the Presidium dealing with common matters in respect to finances, personnel organisation and management.

The Central administration is headed by the Chancellor. Administration is structured into 4 departments plus the staff department for study and research matters, transfer of science and international relationships with its important sub-division a) the Institute for Foreign Student Affairs (Akademisches Auslandsamt) and b) the "Secretariat for Students" managing the whole enrolment procedures.

The departments are follows:

- department for legal matters, central obligations and safety and student affairs (Dept. B)
- department for personnel matters (Dept. C)
- department for financial matters (Dept. D)
- department for matters of real-estate, construction and technics (Dept. E)

Depending on the issue interaction can be on an institute/clinic basis directly with the various departments or via the President.

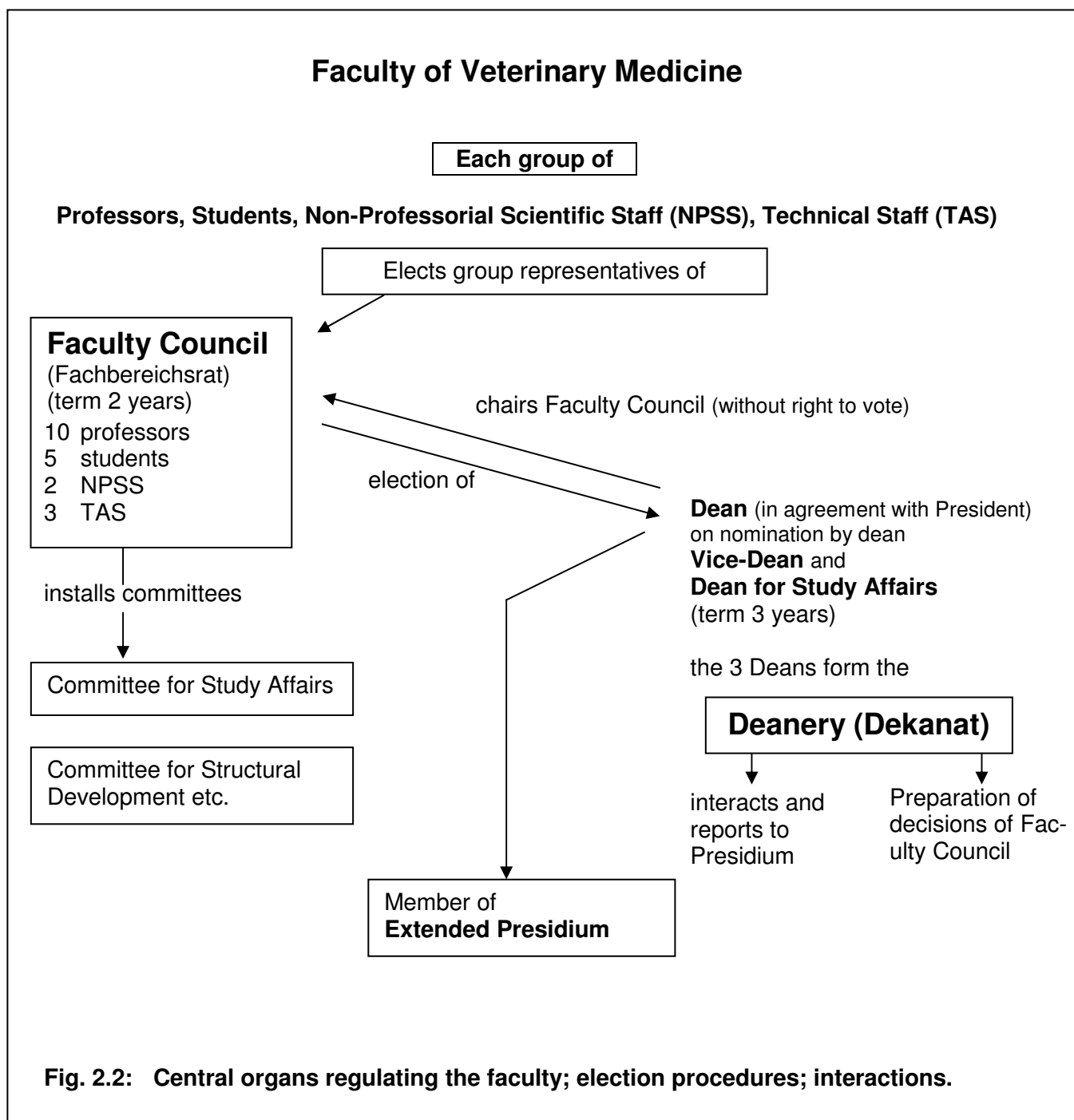


Fig. 2.2: Central organs regulating the faculty; election procedures; interactions.

2.2.4 Organisation of the Faculty of Veterinary Medicine

The Faculty of Veterinary Medicine consists of institutes and the Department of Veterinary Clinical Sciences, the office of the dean and the examination office.

Located on the premises of the Faculty is a technical support unit belonging to Department E (Real-estate, construction and technics) which is not under the control of the Faculty. 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. In doing so 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 excellence in research and teaching.

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

In order to allow for a quick and satisfactory communication between the various clinical units and those institutes which provide diagnostic services the “Tiermedizinisches Dokumentations- und Steuerungssystem (TDS)” (a central interactive patient documentation and information system) on the base of the commercial veterinary software “easy Vet” (Firma VetZ, Hannover) has been established and customised for the needs of the Faculty. Apart from alpha numeric data and information the system also records and handles images; presently 280 computers are integrated into the system. It is in work in Giessen since the year 2005. Beside the documentation and patients media data the services provided for the patients are covered and billing by the system.

This system helps to overcome some of the problems originating from the “Clinical premises” which have been built to serve the disciplines. However, a developmental plan has been established and the first priority has been given to establish a new small animal clinic.

2.2.5 Student Organisation

According to § 76 and 77 of the Hessian University Law students of a university form the “Student Body” which forms a cooperation with legal capacity. The “Student Body” is a highly diversified organisation (<http://www.asta-giessen.de>) and one of the sections formed is the “Fachschaft”, a section specific to each faculty. Members are elected yearly by the students of the Faculty. The “Fachschaft” of our Faculty consists of 9 members. They either personally or by delegation represent students on the various Faculty committees. The “Fachschaft” further provides services, e.g. by running the Veterinary Student Learning Centre (see Chpt. 8) or by offering snacks.

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

Institute of Veterinary Anatomy, -Histology and Embryology

Institute of Veterinary Physiology and Biochemistry

Institute of Veterinary Pathology

Institute of Veterinary Food Science

Institute of Hygiene and Infectious Diseases of Animals

Institute of Virology

Institute of Parasitology

Institute of Pharmacology and Toxicology

Unit for Biomathematics and Data Processing

Department of Veterinary Clinical Sciences

Clinic for Small Animals (Internal Medicine and Surgery)

Clinic for Horses (Internal Medicine and Surgery)

Clinic for Ruminants and Pigs (Internal Medicine and Surgery)

Clinic for Obstetrics, Gynaecology and Andrology of Large and Small animals with an Ambulatory Service

Clinic for Birds, Reptiles, Amphibia and Fish

Unit for Animal Welfare and Ethology

Unit for Clinical Anatomy and Experimental Surgery

Construction of the new clinic has started in 2010. The building will house small animal internal medicine and surgery with a centralised clinical laboratory and diagnostic imaging unit and the Clinic for Birds, Reptiles, Amphibia and Fish. The premises should be ready for use in 2014.

Following this the Clinic for Horses and a centralised lecture hall building, also providing other services to students, will be built.

All constructions will be on the present campus, space for construction will be obtained by taking down various buildings.

2.2.6 Teaching import and export; Examinations

As is obvious from the institutions listed in Table 2.1, some teaching has to be imported from other faculties to cover the curriculum as outlined in the “TAppV” and as reflected in Chpt 4. Thus, teaching import is from the institutes of the “Faculty of Biology and Chemistry”, and the Institutes of Animal Breeding and Genetics and of Animal Nutrition and Nutritional Physiology of the “Faculty of Agricultural Sciences, Nutritional Sciences and Environmental Management” (see Tab. Chpt 4).

Likewise, the Faculty of Veterinary Medicine exports teaching to the Faculty of Agricultural Sciences, Nutritional Sciences and Environmental Management.

2.2.7 Interaction with the Veterinary Profession and General Public

The TAppV, on which the curriculum is based on, is under the responsibility of the Federal Ministry for Nutrition, Agriculture and Consumer Protection. The TAppV is developed in close cooperation with the profession and their representatives from the practitioners, public service veterinarians and representatives from the faculties and industry.

On the other side there is no direct involvement of the veterinary profession and the general public in the running of the establishment. Indirect involvement of the general public may be seen by the implementation of the University Advisory Committee. Indirect involvement of the veterinary profession also results from the fact that the Faculty of Veterinary Medicine is represented 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 Chpt 5).

Interaction with the general public is secured by organising “open days” and participation of the Faculty in public events, like “Science Days” in Giessen etc. The Faculty has also been and still is a well liked object for various TV-series.

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.

2.3 Comments and Suggestions

Within the frame work of constitutive regulations and other directions the Faculty of Veterinary Medicine has tried to operate as much independently as possible. It has implemented a straight-forward strategy during the past 10 to 15 years, which – among others – led to the re-structuring of the Faculty. From an organisational point of view the goal has been reached, however, there is still a deficit in provision of the necessary buildings and re-constructions (see also Chpt 6). We are calling for support to speed up these ongoing processes.

The Faculty lacks an experimental farm.

The Institute of Animal Breeding and Genetics was part of the Faculty of Veterinary Medicine until 1985, when it was allocated to the Faculty of Agricultural Sciences, Nutritional Sciences and Environmental Management. In 2002 the Institute and the Faculty concluded, that a remerging would be beneficial for both, also in respect to teaching.

However, this proposal was not adopted by the Faculty of Agricultural Sciences, Nutritional Sciences and Environmental Management and the Presidium.

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

CHAPTER 3 FINANCES

3.1 Factual Information

3.1.1 General information

3.1.1.1 Introductory remarks

Due to the structure of German universities a clear distinction between support of teaching and research is not possible. Thus, the figures listed in the submitted SER under Research (Tab. 3.1) only refer to the money acquired as grant money. The clinical support is completely dependant on the income of the Faculty generated by the services provided. The figures listed under Teaching support (Tab. 3.2) are spendings from the funds provided to the Faculty for research and teaching according to the “factor-supported distribution of funds” within the University. The estimated expenditure for salaries also accounts for staff of other faculties of the Justus-Liebig-University Giessen providing teaching for the Faculty of Veterinary Medicine; this estimate was done on the basis of the figures calculated by the central financial administration of the University.

In general the current financial model meets the Faculty’s needs.

3.1.1.2 Allocation of funds to the University

Regular funding: With the beginning of 2003 the Hessian Ministry for Science and Arts distributes 80% of the funds available for all university-type institutions according to the student number within the regular study schedule, weighed by a factor for “norm student costs per year”.

According to the discipline clusters [I (low) – X (high)] are formed. Veterinary medicine forms the second highest cluster (IX) next to medicine (X).

The remaining 20 % are distributed according to “scientific success”. Success is based on the amount and type of grants acquired the number of dissertations, and other factors. The various factors have a specific weight.

This budget is for all salaries, for support of research and teaching and for general maintenance.

Extrafunding:

- The University is provided with extra funds specifically to improve the teaching situation (Qualitätssicherung Lehre (QSL); see also Chpt 10.1.2). These funds substitute for the tuition fees which were charged by the University in 2007/2008. The sum forwarded to the Faculty amounted up to about 560,000 € in 2010 and to about 405,000 € in 2011.
- The University participates on the program for reinvestments HEUREKA and the ECONOMY STIMULATION Program 2 which allows the spending of 540 Mio € per year until 2020 for all educational institutions in Hesse; reconstruction of the Clinic for Small Animals and the Clinic for Birds, Reptiles, Amphibia and Fish is under this program.

3.1.1.3 Allocation of funds to the Faculty

The allocation of funds is determined by the Presidium. It decides on the budget for personnel which is split into the part “professorial employees”, which is managed by the central university administration and the part “other employees” which is managed by the Faculty.

The Presidium also decides on the percentage of the budget provided by the state government to be retained for administrative/maintenance matters and the library (to University administered outside the Faculty; see Table 3.1).

The part of the budget intended for support of teaching and research is allocated as follows:

The University runs a “factor-supported distribution of fund-system” (indikatorgestützte Mittelverteilung). 85% of the funds are allocated according to the teaching load of a faculty with main factors being the number of students within the minimum number of years (MNY, see Chpt 9) 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 are discipline and women-specific multiplication (weighting) factors used in combination with these indicators, which – in respect to discipline - is lowest (1) for fine arts and humanities and highest (3.5) for natural sciences (physics, chemistry, biology). The factor for veterinary medicine has been reduced by the University from 3.5 to 3.0 in order to maintain a politically intended balance between the different faculties.

3.1.1.4 Allocation of funds within the Faculty

The decision for the allocation of funds within the Faculty is made by the Deanery (Dekanat).

A factor-supported system for the distribution of funds allocated for the support of teaching and research is used which closely resembles the University funding distribution system. Main factors are:

- number of scientific staff
- amount of teaching (“Curricularanteil”) and amount of teaching/formal teaching obligation according to number and types of position within each institution
- number of dissertations and habilitations
- income from outside sources (factor grant money: 3; factor clinical income: 1).

The Deanery (Dekanat) decides on the budget allocated for “other employees” and hence on the filling of positions becoming vacant or to be shifted.

3.1.1.5 Mechanisms for funding major equipment and capital expenditure and maintenance

There is no regular mechanism for funding of major equipment and its replacement. These activities usually take place when a newly appointed professor negotiates the endowment of his professorship with the University (see Chpt 2.2.2.4). Otherwise, either money earned by the faculties' own service activities, grant money, or positively decided applications to the University and/or the Ministry have to be available.

For capital expenditure applications have to be submitted to the University. If a positive decision is made by the Presidium, 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.

Some of the income generated by the institutions of the Faculty by service activities and centralized by the Faculty can be 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 Deanery makes the final decision.

Smaller repair activities are available on application by the different, partly specialized workshops of the university, one of which is located in the Faculty of Veterinary Medicine. Decisions about these activities are taken by the head of the workshop on application by staff of the Faculty. Since 2010 there is also a central, Faculty managed workshop.

Building maintenance can be provided on application through the University. The decision is taken by the central administration. If larger amounts of money are needed, the University applies to the State Ministry for financial support (see Chpt 3.1.1.2; Extrafunding).

There is a constant survey of all University buildings by the technical survey organization (TÜV) to secure safety standards.

3.1.2 Information on extra income

Clinical or diagnostic work: 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. 2% to 10% of this income are "centralised" and put under the authority of the Dean to cover general matters of the Faculty.

In the Department of Veterinary Clinical Sciences a substantial part of this income is used to finance non budgeted teaching/research staff positions (see Interns, Residents, Postgraduate students, Chpt 10).

From the income gained from invoices billed privately from professors authorised to put forward private bills 30% are retained as "facility and staff using costs" by the University. This money amounting up to about 800,000 € per year is used for project support within the whole University so that part of it may flow back to projects in the Faculty. The remaining 70% are to the disposal of the professor issuing the bill. However, part of this private income is also used to hire extra staff (non budgeted positions, Chpt 10, Tab. 10.1).

Research grants: As shown in table 3.1, between 2.1 and 2.6 Mio € are acquired annually by the Faculty via grants. In general an overhead of 10 % is retained by the University. Grants are provided on the condition that the University/Faculty provides all basic equipment and infrastructure to perform the study designed. In some cases when this is not met the university has to give additional allowance.

Some money to support research originates from three endowment funds donated to the Faculty.

3.1.3 Overview income (revenue) and expenditure

Tables 3.1 and 3.2 give an overview on the income and expenditure of the Faculty.

Table 3.1 Income/Revenue (in €)

Year	State (government)		Income generated by the Faculty		Total
	To university administered outside the Faculty ¹	Direct to Faculty ²	Income from services provided	Grants (Research)	
2010	7,912,188	14,691,925	4,576,643	2,443,554	29,624,310 ²
2009	11,033,484	15,382,850	4,615,638	2,153,674	33,185,646 ²
2008	9,592,741	14,916,483	4,420,738	2,624,195	31,554,157 ²

¹ Includes "professorial salaries", funds retained for administration, library, maintenance etc.

² Includes "non professorial salaries", funds resulting from the "factor-supported distribution of fund system", funds for improvement of teaching quality.

Table 3.2 Expenditure (in €)

Year	Pay	Non Pay				Total ⁶
	Salaries	Teaching support	Research support	Clinical support	Other ¹⁾	
2010	19,088,205 ²	905,703 ³	983,649 ⁴	2,548,669 ⁴	576,653 ⁵	24,102,879
2009	19,061,809 ²	972,949 ³	312,952 ⁴	2,405,263 ⁴	1,301,115 ⁵	24,053,088
2008	18,332,310 ²	756,818 ³	1,059,707 ⁴	2,516,352 ⁴	1,335,959 ⁵	24,001,146

¹ Please specify: see ⁵

² All personnel independent of the source of money (University main budget, additional finances for improvement of teaching, research grants, income generated by clinical services, foundations specifically oriented to the Faculty of Veterinary Medicine)

³ This money also includes the amount of money for research given by the university to the Faculty (the university does not differentiate between money for teaching and money for research).

⁴ This money includes only the material expenses provided by grants; the salaries from grant paid persons are included in the figures of the first column "Pay/Salaries" of Table 3.2.

⁵ This money includes all investments (mainly into clinical, laboratory and administrative equipment)

⁶ Not included is expenditure for central administration, maintenance, library etc.

3.2 Student fees

Students pay no tuition but registration fees (240.69 € per semester/per student).

Decisions on the fees are made after negotiations between the University and the different bodies involved. They add up as follows:

- 101.30 € for a local transportation ticket
- 8.50 € for the student representation body at the university
- 80.89 € for the student support office (“Studentenwerk”, mainly organizing Mensa and dorms)
- 50.- € for the central administration (“Verwaltungskostenbeitrag”)

These fees include an „accident insurance“ for accidents occurring during official study activities.

Students have to take care for their own health insurance.

3.3 Comments and Suggestions

As is indicated in section 10.2 there is a need for additional personnel on the technical level and number one priority in respect to additional funding would be the employment of such personnel, many of the financial administrative tasks have been transferred from the central administration of the university to the Deanery of the Faculty during the last years, without, however, providing any extra personnel. Therefore, the increase in Faculty administration reduces the ability of the Faculty to employ veterinary and support staff.

As one of the 11 faculties of the Justus-Liebig-University Giessen the Faculty is bound to the principle of subsidiary. However, it feels that the degree of autonomy and flexibility available to the Faculty is rather high as a result of management of the University by the Presidium. There are no short comings in respect to other faculties and it is in agreement with the whole University that the state government must further add to budgeted for university and university like institutions in Hesse.

CHAPTER 4 CURRICULUM

4.1 Factual Information

4.1.1 National curriculum

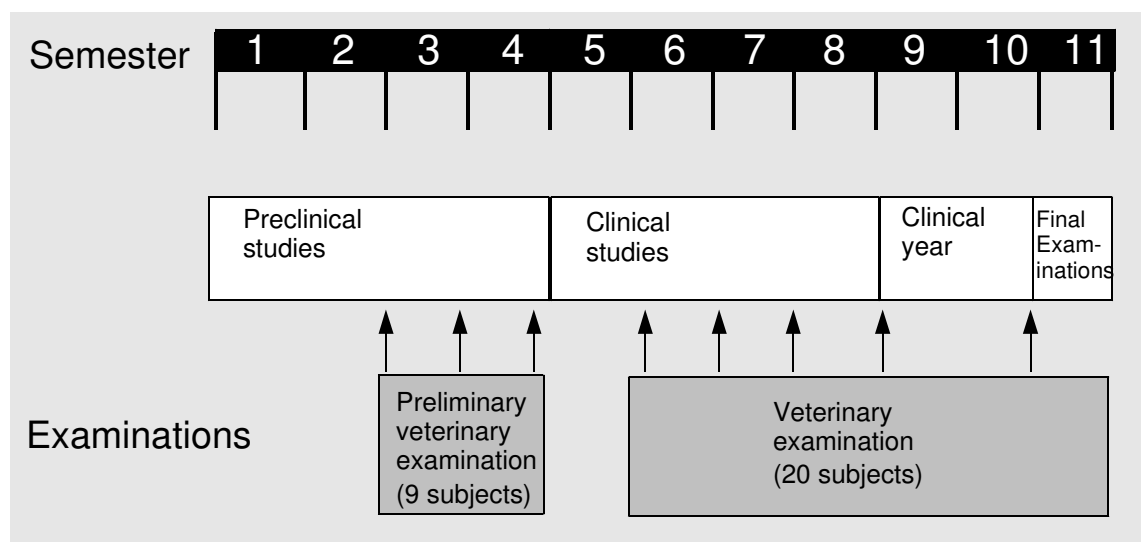
As indicated in chapter 1, veterinary training is regulated by a national law, the so-called “Verordnung zur Approbation von Tierärztinnen und Tierärzten” (Ordinance concerning the Certification of Veterinary Surgeons; TAppV from 27.07.2006; see Annex I; <http://www.uni-giessen.de/cms/fbz/fb10/studium-und-prufungen/Gesetze/TAppV.pdf/view>).

The national curriculum as defined in § 1 TAppV consists of 3850 hours of obligatory and elective courses at a university, 70 h practical training in agriculture at an acknowledged farm (in most cases the University farm), 1100 h obligatory extramural work (which in part can be done at the University), and two state examinations (Preliminary Veterinary Examination and Veterinary Examination).

The duration of the study including the time for the final examination is 5½ years.

All subjects listed in Directive 2005/36/EC Annex V.4 and in the document “Evaluation of Veterinary Training in Europe, Principles and Process of Evaluation 2007 (EVTE-PP)” are basically covered. However, the titles of the lectures posted do not always match the titles of the topics listed in Annex V.4 and in the EVTE-PP. This becomes evident when comparing the “Subjects taught” in Table 4.1 and the subjects listed in Table 4.2. In order to clarify this situation, footnotes have been added to Table 4.3, which clearly indicate where the EU-listed subjects not showing up in the national curriculum are taught.

Figure 4.1: Organisation of the national curriculum as realised in Giessen



4.1.2 Implementation of the national curriculum at the Faculty of Veterinary Medicine, JLU Giessen

Organisation of the curriculum is depicted in Fig. 4.1. Placement of the examinations makes use of the degrees of freedom within the TAppV. Within the preclinical part of the curriculum (1st and 2nd year), several state examinations take place:

- End of the 2nd semester: Physics [1], Chemistry [2], Zoology [3], Botany [4].
- End of the 3rd semester: Anatomy [7], Histology [8.1] and Embryology [8.2].
- End of 4th semester: Physiology [12.1], Biochemistry [12.2], Animal Breeding and Genetics [13]).

The sequence of examinations taken in the clinical part of the curriculum (after the second year) is as follows:

- End of the 5th semester: Clinical Propaedeutics [14], Bacteriology and Mycology [21.1] and Virology [21.2].
- End of 6th semester: Animal Husbandry [10.1] and Animal Hygiene [10.2], Animal Nutrition [17.1], Parasitology [21.3], Clinical Pharmacology, Drug and Anaesthesia Law [20.1], Prescription and Drug Preparation Theory, Assessing Risk [20.2].
- End of 7th semester: General and Clinical Radiology [11]. Animal Welfare [15.1] and Ethology [15.2].
- End of 8th semester: Pharmacology and Toxicology [20.1], Milk Science [25.2], Control of Animal Epidemics and Epidemiology [21.5], Forensic Veterinary Medicine, Veterinary Professional Law [18], partial exam using multiple choice questions (MCQ). Reproductive Medicine including Obstetrics and Udder Diseases [24.2].
- Partial exams (MCQ) Internal Medicine including Laboratory Diagnostics and Dietetics [24.1] and Surgery including Anaesthesiology, Ophthalmic Diseases, Dentistry [24.3] are scheduled at the end of the 6th, 7th and 8th semester.
- During the 9th and 10th semester a clinical rotation takes place, within this clinical rotation the following examinations have to be passed: partial exam Internal Medicine including Laboratory Diagnostics and Dietetics [24.1], partial exam Reproductive Medicine including Obstetrics and Udder Diseases [24.2], partial exam Surgery and Anaesthesiology, Ophthalmic Diseases, Dentistry [24.3].
- During the 11th semester: General Pathology and Special Pathological Anatomy and Histology including autopsies [23], Food Science, Meat and Poultry Hygiene [25.1], Poultry Diseases [19], partial exam Internal Medicine including Laboratory Diagnostics and Dietetics [24.1], partial exam Reproductive Medicine including Obstetrics and Udder Diseases [24.2], partial exam Surgery and Anaesthesiology, Ophthalmic Diseases, Dentistry [24.3].

The distribution of teaching hours for the individual subjects in Giessen and the deviations from the national curriculum are given in Table 4.1.

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

Subject	Hours according to National Curriculum	Realization in Giessen	Hours in Giessen ^{*Hours}
1. Physics [1]	56	46 h lecture, 10 h practical work	56
2. Chemistry [2]	126	56 h lecture, 35 h practical work, 35 h seminar	126
3. Zoology [3]	70	56 h lecture	56
4. Botany [4]	70	28 h lecture, 28 h practical work	56
5. Biometry [5]	28	28 h seminar	28
6. Theory of Profession including Medical Terminology [6.1], History of Veterinary Medicine [6.2], Professional Science [6.3]	42	14 h lecture in [6.2] and [6.3], 28 h practical work [6.1]	42
7. Anatomy [7]	224	84 h lecture, 140 h practical work	224
8. Histology [8.1] and Embryology [8.2]	98	84 h practical work [8.1], 14 h seminar [8.2]	98
9. Agricultural Theory [9]	28	28 h lecture	28
10. Animal Husbandry [10.1] and Animal Hygiene [10.2]	56	28 h lecture [10.1], 28 h lecture [10.2]	56
11. General and Clinical Radiology [11]	42	45 h lecture	45
12. Physiology [12.1] and Biochemistry [12.2]	280	84 h lecture [12.1], 35 h practical work [12.1], 21 h seminar [12.1], 84 h lecture [12.2], 35 h practical work [12.2], 21 h seminar [12.2]	280
13. Animal Breeding and Genetics [13]	84	56 h lecture, 28 h practical work	84
14. Clinical Propaedeutics [14]	98	28 h lecture, 56 h clinical work	84
15. Animal welfare [15.1] and Ethology [15.2]	84	56 h lecture [15.1], 28 h lecture [15.2]	84
16. Laboratory Animal Science [16]	14	14 h lecture	14
17. Animal Nutrition [17.1] and Nutritional Science [17.2]	98	28 h lecture [17.1], 28 h practical work [17.1], 14 h lecture [17.2], 28 h practical work [17.2]	98
18. Forensic Veterinary Medicine, Veterinary Professional Law [18]	28	28 h lecture	28
19. Poultry Diseases [19]	28	28 h lecture	28

Subject	Hours according to National Curriculum	Realization in Giessen	Hours in Giessen ^{*Hours}
20. Pharmacology and Toxicology including Clinical Pharmacology, Drug and Anaesthesia Law [20.1], Prescription and Drug Preparation Theory, Assessing Risk [20.2]	126	84 h lecture [20.1], 14 h lecture [20.2], 28 h practical work [20.2]	126
21. Bacteriology and Mycology [21.1], Virology [21.2], Parasitology [21.3], Immunology [21.4], Control of Animal Epidemics and Epidemiology [21.5]	266	126 h lecture [21.1], [21.2], [21.3], [21.4], 84 h practical work [21.1], [21.2], [21.3], [21.4], 42 h lecture [21.5]	252
22. Diseases in Reptiles, Amphibia, Fish and Honey Bees [22]	28	28 h lecture	28
23. General Pathology and Special Pathological Anatomy and Histology including Autopsies [23]	182	84 h lecture, 28 h seminar, 98 h practical work	210
24. Internal Medicine including Laboratory Diagnostics and Dietetics [24.1], Reproductive Medicine including Obstetrics and Udder Diseases [24.2], Surgery and Anaesthesiology, Ophthalmic Diseases and Dentistry [24.3], Hoof and Claw Diseases, Livestock Management and Ambulatory Care [24.4]	420	141 h lecture [24.1], 72 h lecture [24.2], 141 h lecture [24.3], 24 h lecture [24.4], 7 h seminar [24.1]	385
25. Food Science, including Food Hygiene, Technology and Quality Assurance, Food Toxicology, Residue Evaluation, Food Law and Inspection of Foods, Meat and Poultry Hygiene including Technology and Quality Assurance [25.1] and Milk Science including Technology and Quality Assurance, Microbiology of Milk and Milk Inspections [25.2]	252	140 h lecture [25.1], 56 h practical work [25.1], 28 h lecture [25.2], 14 h practical work [25.2]	238
26. Clinical Education in Avian Diseases, Diseases in Reptiles, Amphibia, Fish and Honey Bees [26.1], Internal Medicine [26.2], Reproduction [26.3], Surgery, Anaesthetics, Diseases of eyes and teeth, Diseases of hoofs and claws [26.4], Stock Care and Out-Patient [26.5]	518	84 h lecture, 94 h self-directed learning 660 h practical work	838
27. Interdisciplinary Subject [27]	196	84 h lecture, 84 h seminar	168
28. Exercise in Agriculture, Animal Breeding and Animal Husbandry [28]	70	70 h practical work	70
29. Practical Training in a Veterinary Practice or Veterinary Hospital 1 st stage [29.1], and 2 nd stage [29.2]	850	150 h practical work [29.1], 700 h practical work [29.2]	850

Subject	Hours according to National Curriculum	Realization in Giessen	Hours in Giessen ^{*Hours}
30. Practical Training in Hygiene Control and Control of Foodstuffs [30.1] and in the Inspection of Animals for Slaughter and Meat [30.2]	175	75 h practical work [30.1], 100 h practical work [30.2]	175
31. Practical Extramural Training in the Public Veterinary Service [31]	75	75 h practical work	75
32. Elective courses [32]	308	308 h (mostly seminars)	308
Sum	5020		5238^{*Total}

^{*Hours} According to the Ordinance concerning the Certification of Veterinary Surgeons (§ 3 TAppV), the universities are allowed to modify the number of hours for individual subjects in the range of $\pm 20\%$ provided that the total number of hours is kept about constant.

^{*Total} The total sum of hours exceeds that of the national curriculum due to a strengthening of the teaching in clinical subjects in our faculty. Furthermore, in this table 94 h of self-directed learning in the clinical year (fifth year) are included, which are not recognized as a teaching form in the national Ordinance concerning the Certification of Veterinary Surgeons (§ 2 (1) TAppV) which only lists lectures, seminars, clinical demonstrations, practical work and clinical training.

4.1.3 Degree of freedom within the national curriculum

According to the national regulation (§ 3 TAppV), 20 % of the scientific-theoretical studies at the University (3850 hours of obligatory and elective courses) can be shifted from one subject to another provided that the total number of hours is kept about constant. The actual shifts made in the curriculum can be seen in Table 4.1 (Hours according to National Curriculum vs. Hours in Giessen).

The clinical part of the studies starting after the completion of preliminary veterinary examination (i.e. after the 4th semester) was reorganised in the year 2007. The main changes consisted in an organ-based teaching in the 5th to 8th semester. Block teaching requires the participation of teachers from various disciplines and a good organisation and coordination among the teachers. The fifth year is now reserved for a rotation of all students among all clinics and selected diagnostic institutes as well as for the larger part of the obligatory extramural work. The final examinations take place in the 11th semester.

The organ blocks taught in the 3rd and 4th year are:

- General medical aspects (1 week, 3rd year)
- Diseases of the locomotor system (6 weeks, 3rd year)
- Diseases of the skin and exocrine glands (3 weeks, 3rd year)
- Anaesthesiology (1 week, 3rd year)
- Diseases of pets and exotic animals (1 week, 4th year)
- Diseases of the respiratory system (4 weeks, 4th year)
- Diseases of the cardiovascular system (3 weeks, 4th year)
- Diseases of the lympho-reticular system (3 weeks, 3rd year)

- Diseases of the gastrointestinal system (7 weeks, 4th year)
- Diseases of endocrine organs (1 week, 4th year)
- Diseases of the urogenital tract (3 weeks, 4th year)
- Reproduction (7 weeks, 4th year)
- Livestock management (2 weeks, 4th year)

Not organised in organ blocks is the teaching in Animal Hygiene [10.2], Clinical Propaedeutics [14], Animal Welfare [15.1], Animal Nutrition [17.1], Nutritional Science [17.2], Prescription and Drug Preparation Theory, Assessing Risk [20.2], Bacteriology and Mycology [21.1], Virology [21.2], Parasitology [21.3], Control of Animal Epidemics and Epidemiology [21.5], Food Science and Meat Hygiene [25.1], Milk Science [25.2].

The fifth year is reserved for a rotation of all students through all clinics and selected diagnostic institutes as well as for the larger part of the obligatory extramural work.

It is constituted of the following blocks:

- Clinic for Horses (internal medicine, surgery): 4 weeks
- Clinic for Small Animals (internal medicine, surgery): 8 weeks
- Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals with an Ambulatory Service: 4 weeks
- Clinic for Ruminants: 2 weeks
- Clinic for Pigs: 2 weeks
- Clinic for Birds, Reptiles, Amphibia and Fish: 2 weeks
- Microbiology (either Institute of Hygiene and Infectious Diseases of Animals or Institute of Virology): 1 week
- Pathology (Institute of Veterinary Pathology): 1 week
- Practical Training in a Veterinary Practice or Veterinary Hospital 2nd stage [29.2] (700 h): 16 weeks
- Practical Training in Hygiene Control and Control of Foodstuffs [30.1] (75 h): 2 weeks
- Practical Training in the Inspection of Animals for Slaughter and Meat [30.2] (100 h): 3 weeks
- Practical extramural training in the public veterinary service [31] (75 h): 2 weeks

In October 2009, the first students entered this clinical year. This reorganisation of the veterinary curriculum ("Giessen model") was followed by most other German veterinary faculties.

4.1.4 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 Rules for Study and Examination (“Studien- und Prüfungsordnung“) including a model curriculum (<http://www.uni-giessen.de/cms/fbz/fb10/studium-und-pruefungen/Gesetze/studien-und-pruefungsordnung/>).

Within the faculty, the curriculum is prepared by the Committee for Study Affairs (“Studienausschuss“; see Chapter 2.2.2.3). 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.

The curriculum for each semester is published in the internet (<http://www.uni-giessen.de/cms/fbz/fb10/studium-und-pruefungen/studium/curriculum>). All students of one year are distributed to one of four groups (group A to D). The distribution of all groups to individual courses is performed centrally by the dean’s office (bureau for coordination of studies; “Studienkoordination“).

Organisation of courses (e.g. inscription in courses or evaluation of courses) and distribution of teaching material for download is offered via internet (Stud.IP; <http://www.uni-giessen.de/cms/studium/studinfo/studip>). Also the organisation of all examinations is based on a computer program (FlewNow; <http://www.pruefungsamt.vetmed.uni-giessen.de/wps/fb10/home/pruefungsamt/>). For example, the institutes send the results of tests to the bureau for examinations (“Prüfungsamt“); the students can check their records for completeness. Furthermore, the size of the groups (i.e. ratio students : teacher) for each course is published in the internet (http://www.uni-giessen.de/cms/fbz/fb10/studium-und-pruefungen/cnw_jlu_intern).

Further information on the topic covered by the various subjects can be found in the Annex IV and in the ECTS brochure of our Faculty.

4.1.5 Curriculum followed by all students

The distribution of hours and type of teaching forms across the curriculum (excluding obligatory extramural work, which is described in Table 4.6) is shown in Table 4.2.

Table 4.2 General table of curriculum hours taken by all students.

This table is a synopsis of Tables 4.3 (EU-listed subjects) and 4.5 (non EU-listed subjects). Obligatory extramural courses, which in part can also be taken at the university (see Table 4.6 for details), are not included.

Year	Hours of training							Total
	Theoretical training			Supervised clinical training			Other	
	Lectures (A)	Seminars (B)	Self-directed learning (C)	Laboratory and desk-based work (D)	Non-clinical animal work (E)	Clinical work (F)		
First	340	105	0	101	84	0		630 ^{*year1}
Second	378	42	0	116	94	0		630
Third	530	42	0	112	0	56		740 ^{*year3}
Fourth	733	77	0	70	70	0		950
Fifth	0	5	94	33	14	664		810 ^{*year5}
Sixth	This half year (semester 11) is reserved for the final examinations							
Total	1981	271	94	432	262	720		3760^{*Total}

^{*year1} In addition to the hours listed here, students have to participate in the Exercise in Agriculture, Animal Breeding and Animal Husbandry [28] (70 h extramural, but virtually all students pass these exercises on the university-owned experimental and teaching farm "Oberer Hardthof").

^{*year3} In addition to the hours listed here, students have to participate in the Practical Training in a Veterinary Practice or Veterinary Hospital 1st stage [29.1] (150 h extramural).

^{*year5} In contrast to the years one to four, this year is not divided into two semesters (separated by a lecture-free interval), but covers the complete year so that the actual number of teaching hours is higher than the mean teaching hours in the years one to four. The reason for this higher work load is that in addition to the hours listed here, students have to participate in the Practical Training in a Veterinary Practice or Veterinary Hospital, 2nd stage [29.2] (700 h extramural), Practical Training in Hygiene Control and Control of Foodstuffs [30.1] (75 h extramural), Practical Training in the Inspection of Animals for Slaughter and Meat [30.2] (100 h extramural), and Practical Training in the Public Veterinary Service [31] (75 h extramural).

^{*Total} Together with the minimum number of elective courses (308 h) and of obligatory extramural training (1170 h), the sum of obligatory intra- and extramural courses (5238 h) exceeds slightly 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 4.3 Curriculum hours in the EU-listed subjects taken by each student.

Subject	Theoretical training			Supervised practical training			Other (G)	Total
	Lectures	Seminars	Self-directed learning	Laboratory and desk-based work	Non-clinical animal work	Clinical work		
	(A)	(B)	(C)	(D)	(E)	(F)		
1. Basic Subjects								
a) Physics	46	0	0	10	0	0	0	56
b) Chemistry	56	35	0	35	0	0	0	126
c) Animal biology	56	0	0	0	0	0	0	56
d) Plant biology	28	0	0	28	0	0	0	56
e) Biomathematics	0	28	0	0	0	0	0	28
1-Total number of hours	186	63	0	73	0	0	0	322
2. Basic Sciences								
a) Anatomy ^{*2a} (including histology and embryology)	112	14	0	56	140	0	0	322
b) Physiology ^{*2b}	80	21	0	25	10	0	0	136
c) Biochemistry, cellular and molecular biology ^{*2c}	80	21	0	35	0	0	0	136
d) Genetics (including molecular genetics) ^{*2d}	56	0	0	0	28	0	0	84
e) Pharmacology and pharmacy ^{*2e}	42	0	0	28	0	0	0	70
f) Toxicology (including environmental pollution) ^{*2f}	14	0	0	0	0	0	0	14
g) Microbiology (including virology, bacteriology and mycology) ^{*2g}	80	0	0	53	0	0	0	133
h) Immunology ^{*2h}	18	10	0	3	0	0	0	31
i) Epidemiology (including scientific and technical information and documentation methods) ^{*2i}	28	0	0	0	0	0	0	28
j) Professional ethics ^{*2j}	14	0	0	0	0	0	0	14
2-Total number of hours	524	66	0	200	178	0	0	968
3. Clinical Sciences								
a) Obstetrics ^{*3a}	50	7	0	0	0	40	0	97
b) Pathology (including pathological anatomy) ^{*3b}	84	28	0	28	42	14	0	196
c) Parasitology ^{*3c}	40	0	0	28	0	0	0	68
d) Clinical medicine and surgery (including anaesthetics) ^{*3d}	328	72	84	0	0	475	0	959
e) Clinical lectures on various domestic animals, poultry and other animal species ^{*3e}	56	0	10	0	0	45	0	111
f) Field veterinary medicine (ambulatory clinics) ^{*3f}	57	0	0	0	0	50	0	107
g) Preventive medicine ^{*3g}	10	0	0	0	0	2	0	12
h) Diagnostic imaging (including radiology) ^{*3h}	51	0	0	0	0	3	0	54
i) Reproduction and reproductive disorders ^{*3i}	69	7	0	5	0	35	0	116
j) Veterinary state medicine and public health ^{*3j}	14	0	0	0	0	0	0	14

Subject	Theoretical training			Supervised practical training			Other (G)	Total
	Lectures	Seminars	Self-directed learning	Laboratory and desk-based work	Non-clinical animal work	Clinical work		
	(A)	(B)	(C)	(D)	(E)	(F)		
k) Veterinary legislation and forensic medicine ^{3k}	30	0	0	0	0	0	0	30
l) Therapeutics ^{3l}	57	0	0	0	0	0	0	57
m) Propaedeutics (including laboratory diagnostic methods) ^{3m}	32	0	0	0	0	56	0	88
3-Total number of hours	878	114	94	61	42	720	0	1909
4. Animal Production								
a) Animal production ^{4a}	7	0	0	0	0	0	0	7
b) Animal nutrition ^{4b}	43	0	0	56	0	0	0	99
c) Agronomy ^{4c}	14	0	0	0	0	0	0	14
d) Rural economics ^{4d}	14	0	0	0	0	0	0	14
e) Animal husbandry ^{4e}	21	0	0	0	0	0	0	21
f) Veterinary hygiene ^{4f}	28	0	0	0	0	0	0	28
g) Animal ethology and protection ^{4g}	84	0	0	0	0	0	0	84
4-Total number of hours	211	0	0	56	0	0	0	267
5. Food Hygiene /Public Health								
a) Inspection, control of animal foodstuffs or foodstuffs of animal origin and the respective feedstuff production unit ^{5a}	36	0	0	42	0	0	0	78
b) Food hygiene and technology ^{5b}	95	0	0	0	0	0	0	95
c) Food science including legislation ^{5c}	37	0	0	0	0	0	0	37
d) Practical work (including practical work in places where slaughtering and processing of foodstuffs take place) ^{5d}	0	0	0	0	28	0	0	28
5-Total number of hours	168	0	0	42	28	0	0	238
6. Professional Knowledge								
a) Practice management ^{6a}	0	0	0	0	0	0	0	0
b) Veterinary certification and report writing ^{6b}	0	0	0	0	14	0	0	14
c) Career planning and opportunities ^{6c}	0	0	0	0	0	0	0	0
6-Total number of hours	0	0	0	0	14	0	0	14
TOTAL NUMBERS	1967	243	94	432	262	720	0	3718

^{2a} To the EU-listed subject Anatomy (incl. histology and embryology) contribute the following subjects from the national curriculum: Anatomy [7] with 84 h lecture and 140 h practical work, Histology [8.1] with 84 h practical work, and Embryology [8.2] with 14 h seminar.

^{2b} The EU-listed subject Physiology is part of the subject Physiology [12.1] from the national curriculum with 84 h lecture (80 h for physiology, 4 h for immunology), 35 h practical work, and 21 h seminar.

^{2c} The EU-listed subject Biochemistry, cellular and molecular biology is part of the subject Biochemistry [12.2] from the national curriculum with 84 h lecture (80 h for biochemistry and molecular biology, 4 h for Immunology), 21 h practical work, and 35 h supervised work.

^{2d} The EU-listed subject Genetics (including molecular genetics) is covered by the subject Animal Breeding and Genetics [13] from the national curriculum with 56 h lecture and 28 h practical work.

^{2e} The EU-listed subject Pharmacology and Pharmacy is part of the subjects Pharmacology and Toxicology including Clinical Pharmacology, Drug and Anaesthesia Law [20.1] from the national curriculum with 84 h lecture (from which 28 h are used for pharmacology, 14 h are used for toxicology, 42 are used for therapeutics) and Prescription and Drug Preparation Theory, Assessing Risk [20.2] with 14 h lecture, 28 h laboratory work).

^{2f} The EU-listed subject Toxicology is part of the subjects Pharmacology and Toxicology including Clinical Pharmacology, Drug and Anaesthesia Law [20.1] from the national curriculum with 84 h lecture (from which 28 h are used for pharmacology, 14 h are used for toxicology, 42 are used for therapeutics).

^{2g} The EU-listed subject Microbiology is composed of the following subjects from the national curriculum: Bacteriology and Mycology [21.1] with 42 h lecture (from which 2 h are used for immunology), Virology [21.2] with 42 h lecture (from which 2 h are used for immunology); both subjects have a common practical work with 28 h total teaching time (25 h for microbiology, 3 h for immunology). Both subjects participate in the clinical year, where the students either spend 28 h in Bacteriology and Mycology [21.1] or in Virology [21.2].

^{2h} The EU-listed subject Immunology is part of the following subjects from the national curriculum: Physiology [12.1] (84 h lecture with 80 h for physiology, 4 h for immunology, 35 h practical work, and 21 h seminar), Biochemistry [12.2] (84 h lecture with 80 h for biochemistry and molecular biology, 4 h for immunology, 35 h practical work, and 21 h seminar), Bacteriology and Mycology [21.1] with 42 h lecture (from which 2 h are used for immunology), Virology [21.2] with 42 h lecture (from which 2 h are used for immunology); both subjects have a common practical work with 28 h total teaching time (25 h for microbiology, 3 h for immunology) and participate in the clinical year, where the students either spend 28 h in Bacteriology and Mycology [21.1] or in Virology [21.2]), and Parasitology [21.3] from the national curriculum with 42 h lecture (2 h for immunology, 40 h for parasitology) and 28 h practical work, and Interdisciplinary Subject [27] with 84 h lecture (4 h for immunology, 52 h for clinical medicine and surgery, 14 h for obstetrics, 14 h for reproduction and reproductive disorders) and 84 h seminar (10 h for immunology, 60 h for clinical medicine and surgery, 7 h for obstetrics, 7 h for reproduction and reproductive disorders).

²ⁱ The EU-listed subject Epidemiology is covered by the following subjects from the national curriculum: Control of Animal Epidemics and Epidemiology [21.5] with 42 h lecture (28 h for epidemiology, 14 h for veterinary state medicine and public health).

^{2j} The EU-listed subject Professional ethics is part of the subject Theory of Profession [6] including Terminology [6.1], History of Veterinary Medicine [6.2], Professional knowledge [6.3] from the national curriculum with 14 h lecture (for ethics and history of veterinary medicine) and 28 h seminar (for terminology).

^{3a} The EU-listed subject Obstetrics is part of the following subject from the national curriculum: Reproductive Medicine including Obstetrics and Udder Diseases [24.2] with 72 h lecture (36 h for obstetrics, 36 h for reproduction and reproductive disorders), Clinical Education Reproduction [26.3] with 21 h lecture (18 h for reproduction and reproductive disorders, 2 h for veterinary legislation and forensic medicine), 5 h laboratory work (for reproduction and reproductive disorders) and 75 h clinical work (40 h for obstetrics, 35 h for reproduction and reproductive disorders), and Interdisciplinary Subject [27] with 84 h lecture (4 h for immunology, 52 h for clinical medicine and surgery, 14 h for obstetrics, 14 h for reproduction and reproductive disorders) and 84 h seminar (10 h for immunology, 60 h for clinical medicine and surgery, 7 h for obstetrics, 7 h for reproduction and reproductive disorders).

^{3b} The EU-listed subject Pathology is represented by the subject General Pathology and Special Pathological Anatomy and Histology including Autopsies [23] from the national curriculum with 84 h lecture, 28 h seminar, 28 laboratory work, 42 h non-clinical animal work, 14 clinical work (all for pathology) and 14 h non-clinical animal work (for the EU-listed subject report writing).

^{3c} The EU-listed subject Parasitology is composed of the subject Parasitology [21.3] from the national curriculum with 42 h lecture (2 h for immunology, 40 h for parasitology) and 28 h practical work.

^{3d} The EU-listed subject Clinical medicine and surgery (including anaesthetics) is composed of the following subjects from the national curriculum: Internal Medicine including Laboratory Diagnostics and Dietetics [24.1] with 141 h lectures (108 for clinical medicine and surgery, 12 h for field veterinary medicine, 5 h for preventive medicine, 3 h for diagnostic imaging, 4 h for propaedeutics, 10 h for therapeutics, 1 h for animal nutrition) and 7 h seminar (for clinical medicine and surgery), Surgery and Anaesthesiology, Ophthalmic Diseases and Dentistry [24.3] with 141 lecture (126 h lecture for clinical medicine and surgery, 5 h for preventive medicine, 5 h for diagnostic imaging, 5 h for therapeutics), Clinical Education Internal Medicine [26.2] with 21 h lecture, 5 h seminar, 51 h self-directed learning, and 235 h clinical work, Clinical education Surgery [26.4] with 21 h lecture, 33 h self-directed learning, and 240 h clinical work, Interdisciplinary Subject [27] with 84 h lecture (4 h for immunology, 52 h for clinical medicine and surgery, 14 h for obstetrics, 14 h for reproduction and reproductive disorders) and 84 h seminar (10 h for immunology, 60 h for clinical medicine and surgery, 7 h for obstetrics, 7 h for reproduction and reproductive disorders).

^{3e} The EU-listed subject Clinical lectures on various domestic animals, poultry and other animal species is composed of the following subjects from the national curriculum: Poultry Diseases [19] with 28 h lecture, Diseases in Reptiles, Amphibia, Fish and Honey Bees [22] with 28 h lecture, Clinical Education in Avian Diseases, Diseases in Reptiles, Amphibia, Fish and Honey Bees [26.1] with 10 h self-directed learning (for clinical lectures on various domestic animals, poultry and other animal species) and 60 h clinical work (45 h for clinical lectures on various domestic animals, poultry and other animal species, 10 h for field veterinary medicine, 2 h for preventive medicine, 3 h for diagnostic imaging).

^{3f} The EU-listed subject Field veterinary medicine (ambulatory clinics) is part of the following subjects from the national curriculum: Internal Medicine including Laboratory Diagnostics and Dietetics [24.1] with 141 h lectures (108 for clinical medicine and surgery, 12 h for field veterinary medicine, 5 h for preventive medicine, 3 h for diagnostic imaging, 4 h for propaedeutics, 10 h for therapeutics, 1 h for animal nutrition) and 7 h seminar (for clinical medicine and surgery), Hoof and Claw Diseases, Livestock Management and Ambulatory Care [24.4] with 24 h lecture, Clinical Education in Avian Diseases, Diseases in Reptiles, Amphibia, Fish and Honey Bees [26.1] with 10 h self-directed learning (for clinical lectures on various domestic animals, poultry and other animal species) and 60 h clinical work (45 h for clinical lectures on various domestic animals, poultry and other animal species, 10 h for field veterinary medicine, 2 h for preventive medicine, 3 h for diagnostic imaging), and Clinical Education in Stock Care and Out-Patient [26.5] 21 h lecture and 40 h clinical work.

^{3g} The EU-listed subject Preventive medicine is part of the following subjects from the national curriculum: Internal Medicine including Laboratory Diagnostics and Dietetics [24.1] with 141 h lectures (108 for clinical medicine and surgery, 12 h for field veterinary medicine, 5 h for preventive medicine, 3 h for diagnostic imaging, 4 h for propaedeutics, 10 h for therapeutics, 1 h for animal nutrition) and 7 h seminar (for clinical medicine and surgery), Surgery and Anaesthesiology, Ophthalmic Diseases and Dentistry [24.3] with 141 lecture (126 h lecture for clinical medicine and surgery, 5 h for preventive medicine, 5 h for diagnostic imaging, 5 h for therapeutics), and Clinical Education in Avian Diseases, Diseases in Reptiles, Amphibia, Fish and Honey Bees [26.1] with 10 h self-directed learning (for clinical lectures on various domestic animals, poultry and other animal species) and 60 h clinical work (45 h for clinical lectures on various domestic animals, poultry and other animal species, 10 h for field veterinary medicine, 2 h for preventive medicine, 3 h for diagnostic imaging). Furthermore, preventive medicine is an integral part of the national subject Hoof and Claw Diseases, Livestock Management and Ambulatory Care [24.4], however, it is not possible to specify the specific time allotted to preventive medicine covered by this subject.

^{3h} The EU-listed subject Diagnostic imaging (including radiology) is part of the following subjects from the national curriculum: General and Clinical Radiology [11] from the national curriculum with 45 h lecture (all for diagnostic imaging), Internal Medicine including Laboratory Diagnostics and Dietetics [24.1] with 141 h lectures (108 for clinical medicine and surgery, 12 h for field veterinary medicine, 5 h for preventive medicine, 3 h for diagnostic imaging, 4 h for propaedeutics, 10 h for therapeutics, 1 h for animal nutrition) and 7 h seminar (for clinical medicine and surgery), Surgery and Anaesthesiology, Ophthalmic Diseases and Dentistry [24.3] with 141 lecture (126 h lecture for clinical medicine and surgery, 5 h for preventive medicine, 5 h for diagnostic imaging, 5 h for therapeutics), and Clinical Education in Avian Diseases, Diseases in Reptiles, Amphibia, Fish and Honey Bees [26.1] with 10 h self-directed learning (for clinical lectures on various domestic animals, poultry and other animal species) and 60 h clinical work (45 h for clinical lectures on various domestic animals, poultry and other animal species, 10 h for field veterinary medicine, 2 h for preventive medicine, 3 h for diagnostic imaging).

³ⁱ The EU-listed subject Reproduction and reproductive disorders is part of the following subject from the national curriculum: Reproductive Medicine including Obstetrics and Udder Diseases [24.2] with 72 h lecture (36 h for obstetrics, 36 h for reproduction and reproductive disorders), Clinical Education Reproduction [26.3] with 21 h lecture (18 h for reproduction and reproductive disorders, 2 h for veterinary legislation and forensic medicine), 5 h laboratory work (for reproduction and reproductive disorders) and 75 h clinical work (40 h for obstetrics, 35 h for reproduction and reproductive disorders), and Interdisciplinary Subject [27] with 84 h lecture (4 h for immunology, 52 h for clinical medicine and surgery, 14 h for obstetrics, 14 h for reproduction and reproductive disorders) and 84 h seminar (10 h for immunology, 60 h for clinical medicine and surgery, 7 h for obstetrics, 7 h for reproduction and reproductive disorders).

^{3j} The EU-listed subject Veterinary state medicine and public health is part of the following subject from the national curriculum: Control of Animal Epidemics and Epidemiology [21.5] from the national curriculum with 42 h lecture (14 h for epidemiology, 28 h for veterinary state medicine and public health).

^{3k} The EU-listed subject Veterinary legislation and forensic medicine is part of the following subjects from the national curriculum: Forensic Veterinary Medicine/Veterinary Professional Law [18] with 28 h lecture, Clinical Education Reproduction [26.3] with 21 h lecture (18 h for reproduction and reproductive disorders, 2 h for veterinary legislation and forensic medicine), 5 h laboratory work (for reproduction and reproductive disorders) and 75 h clinical work (40 h for obstetrics, 35 h for reproduction and reproductive disorders),

^{3l} The EU-listed subject Therapeutics is part of the following subjects from the national curriculum: Pharmacology and Toxicology including Clinical Pharmacology, Drug and Anaesthesia Law [20.1] with 84 h lecture (28 h for pharmacology and pharmacy, 14 h for toxicology, 42 h for therapeutics), Internal Medicine including Laboratory Diagnostics and Dietetics [24.1] with 141 h lectures (108 for clinical medicine and surgery, 12 h for field veterinary medicine, 5 h for preventive medicine, 3 h for diagnostic imaging, 4 h for propaedeutics, 10 h for therapeutics, 1 h for animal nutrition) and 7 h seminar (for clinical medicine and surgery), Surgery and Anaesthesiology, Ophthalmic Diseases and Dentistry [24.3] with 141 lecture (126 h lecture for clinical medicine and surgery, 5 h for preventive medicine, 5 h for diagnostic imaging, 5 h for therapeutics).

^{3m} The EU-listed subject Propaedeutics (including laboratory diagnostic methods) is part of the following subjects from the national curriculum: Clinical Propaedeutics [14] with 28 h lecture and 56 h clinical work (all for propaedeutics), and Internal Medicine including Laboratory Diagnostics and Dietetics [24.1] with 141 h lectures (108 for clinical medicine and surgery, 12 h for field veterinary medicine, 5 h for preventive medicine, 3 h for diagnostic imaging, 4 h for propaedeutics, 10 h for therapeutics, 1 h for animal nutrition) and 7 h seminar (for clinical medicine and surgery).

^{4a} The EU-listed subject Animal production is part of the following subject from the national curriculum Animal husbandry [10.1] with 28 lecture (21 h for animal husbandry, 7 h for animal production).

^{4b} The EU-listed subject Animal nutrition is part of the following subjects from the national curriculum: Animal nutrition [17.1] with 28 h lecture and 28 h laboratory work, Nutritional Science [17.2] with 14 h lecture and 28 h laboratory work, and Internal Medicine including Laboratory Diagnostics and Dietetics [24.1] with 141 h lectures (108 for clinical medicine and surgery, 12 h for field veterinary medicine, 5 h for preventive medicine, 3 h for diagnostic imaging, 4 h for propaedeutics, 10 h for therapeutics, 1 h for animal nutrition) and 7 h seminar (for clinical medicine and surgery).

^{4c} The EU-listed subject Agronomy is part of the following subject from the national curriculum: Agricultural Theory [9] with 28 h lecture (14 h for agronomy, 14 h for rural economics).

^{4d} The EU-listed subject Rural economics is part of the following subject from the national curriculum: Agricultural Theory [9] with 28 h lecture (14 h for agronomy, 14 for rural economics).

^{4e} The EU-listed subject Animal husbandry is represented by the subject Animal husbandry [10.1] from the national curriculum with 28 h lecture (with 7 h for animal production and 21 h for animal husbandry).

^{4f} The EU-listed subject Veterinary hygiene is represented by the subject Animal hygiene [10.1] from the national curriculum with 28 h lecture.

^{4g} The EU-listed subject Animal ethology and protection is part of the following subjects from the national curriculum: Animal welfare [15.1] with 56 h lecture, Ethology [15.2] with 28 h lecture.

^{5a} The EU-listed subject Inspection, control of animal foodstuffs or foodstuffs of animal origin and the respective feed-stuff production unit is part of the following subjects from the national curriculum: Food Science and Meat Hygiene [25.1] and Milk Science [25.2] with together 168 h lecture (18 h for inspection/control, 113 h for food hygiene and technology, 37 h for food science), 42 h laboratory work (inspection/control), 28 h non-clinical animal work (practical work food hygiene).

^{5b} The EU-listed subject Food hygiene and technology is part of the following subjects from the national curriculum: Food Science and Meat Hygiene [25.1] and Milk Science [25.2] with together 168 h lecture (18 h for inspection/control, 113 h for food hygiene and technology, 37 h for food science), 42 h laboratory work (inspection/control), 28 h non-clinical animal work (practical work food hygiene).

^{5c} The EU-listed subject Food science including legislation is part of the following subjects from the national curriculum: Food Science and Meat Hygiene [25.1] and Milk Science [25.2] with together 168 h lecture (18 h for Inspection/control, 113 h for Food hygiene and technology, 37 h for Food science), 42 h laboratory work (Inspection/control), 28 h non-clinical animal work (Practical work food hygiene).

^{5d} The EU-listed subject Practical work (including practical work in places where slaughtering and processing of food-stuffs take place) is part of the following subjects from the national curriculum: Food Science and Meat Hygiene [25.1] and Milk Science [25.2] with together 168 h lecture (18 h for inspection/control, 113 h for food hygiene and technology, 37 h for food science), 42 h laboratory work (inspection/control), 28 h non-clinical animal work (Practical work food hygiene).

^{6a} The EU-listed subject Practice management is not part of the obligatory German curriculum. Only during the clinical year in the Clinic for pigs, about 1 h is held about this topic. However, there is an elective course (see Tab. 4.4) available. Furthermore, the German society of practitioners (Bundesverband praktizierender Tierärzte; bpt), regularly organizes a seminar concerning practice management (<http://www.tieraerzteverband.de/>), which is highly frequented by the students

^{6b} The EU-listed subject Veterinary certification and report writing is part of the subject General Pathology and Special pathological Anatomy and Histology including Autopsies [23] from the national curriculum with 84 h lecture, 28 h seminar, 28 laboratory work, 42 h non-clinical animal work, 14 clinical work and 14 h non-clinical animal work (for report writing).

^{6c} The EU-listed subject Career planning and opportunities is not part of the obligatory German curriculum. Only during the clinical year in the Clinic for pigs, about 1 h is held about this topic. However, each year, there is an information weekend organized by Vets-up (<http://www.vets-up.info/>) on the campus, which exactly covers these topics and which is highly frequented by the students.

The Faculty is proud of offering a large variety of elective courses (listed in Table 4.4), which allows in general a teaching in small groups for students interested in intensifying certain subjects. Students have to participate in at least 308 h from these elective courses.

Table 4.4 Curriculum hours in EU-listed subjects offered as electives.

Subject	Theoretical training			Supervised practical training			Other (G)	Hours to be taken by each student
	Lectures	Seminars	Self-directed learning	Laboratory and desk-based work	Non-clinical work	Clinical work		
	(A)	(B)	(C)	(D)	(E)	(F)		
1. Basic Subjects								
Biostatistical seminar [5]		14						14
Design and statistical analysis of clinical studies [5]		28						28
Introduction in applied bioinformatics 1 [12.2]		14						14
Introduction in applied bioinformatics 2 [12.2]		14						14
Physics in Physiology [1], [12.1]		28						28
Tutorial in experimental physics [1]		28						28
2. Basic Sciences								
Antibiotic resistance [20.1]		14						14
Bacterial and fungal zoonoses [21.5]		14						14
Basics in glycobiology and applications in veterinary medicine [12.2]		14						14
Biochemical backgrounds for practical veterinary medicine [12.2]		14		14				28
Biological and anatomical basics [7]		28						28
Buiatrics for preclinical students [24.1]		7				7		14
Comparative and functional anatomy of organ systems [7]		28						28
Current topics of veterinary microbiology 1 [21.1]		14						14
Current topics of veterinary microbiology 2 [21.1]		14						14
Current toxicology [20.1]		14						14
Endocrinology [12.2]		28						28
Ethology and physiology of local wild life [15.2]		14						14
Ethology and physiology of zoo and farm animals [15.2]		14						14
Exotic and rare epizootic diseases [21.5]		14						14

Subject	Theoretical training			Supervised practical training			Other (G)	Hours to be taken by each student
	Lectures	Seminars	Self-directed learning	Laboratory and desk-based work	Non-clinical work	Clinical work		
	(A)	(B)	(C)	(D)	(E)	(F)		
Experimental methods in pharmacology and pharmacogenetics [20.1]				28				28
Focus on research and development in pharmaceutical industry [20.1]		14						14
From molecule to disease - Molecular reasons for veterinary diseases [12.2]		14						14
General pharmacology and toxicology [20.1]		14						14
Introduction in animal biochemistry [12.2]		28						28
Introduction in biochemical laboratory work [12.2]				14				14
Introduction in forensic genetics [13]		14						14
Introduction in scientific work [21.3]		14						14
Methods for gene and genome analysis including their application in veterinary medicine [13]		14						14
Methods in molecular biology (including practical training) [12.2]		8	8	12				28
Molecular mechanisms of bacterial pathogenicity [21.1]		14						14
Molecular methods in context with clinical training and livestock management (laboratory practical training) [24.4]				14				14
Molecular methods in context with clinical training and livestock management (practical training) [24.4]				14				14
Molecular methods in context with clinical training and livestock management (theory) [24.4]		14						14
Molecular virology [21.2]		10		4				14
Multimedia and video seminar in physiology 1 [12.1]		28						28
Multimedia and video seminar in physiology 2 [12.1]		28						28
Pathobiochemistry 1 [12.2]		28						28
Pathobiochemistry 2 [12.2]		28						28
Pathophysiology 1 [12.1]		28						28
Pathophysiology 2 [12.1]		28						28
Practical training in molecular biology [12.2]		14		28				42

Subject	Theoretical training			Supervised practical training			Other (G)	Hours to be taken by each student
	Lectures	Seminars	Self-directed learning	Laboratory and desk-based work	Non-clinical work	Clinical work		
	(A)	(B)	(C)	(D)	(E)	(F)		
Regulation of metabolism 1 [12.2]		14						14
Regulation of metabolism 2 [12.2]		14						14
Seminar for doctorand students in biochemistry [12.2]		14						14
Tissue engineering and biomaterials [8.1]		28						28
3. Clinical Sciences								
Animal behaviour therapy 1 [15.2]		14						14
Animal behaviour therapy 2 [15.2]		14						14
Antiparasitic agents and their administration [21.3]		14						14
Aspects of modern antibacterial chemotherapy 1 [21.1]		14						14
Aspects of modern antibacterial chemotherapy 2 [21.1]		14						14
Avian immunoprophylaxis [19]		12			2			14
Basics of color genetics and associated diseases [13]		14						14
Biology and endocrinology of reproduction [24.2]		14						14
Buiatric case discussions [24.1]		14						14
Buiatric research and evidence based medicine [24.1]		14						14
Case study small animal surgery (orthopaedics, diagnostic imaging, anaesthesia, neurology) [24.3]		28						28
Cell biological and molecular biological aspects of parasitic organisms [21.3]		28						28
Clinical animal behaviour therapy and medicine (dogs and cats) [15.2]		14						14
Clinical animal behaviour therapy and medicine (horses) [15.2]		14						14
Clinical elective in small animal medicine (internal diseases) [24.1]						14		14
Clinical pathology [24.1]				14				14
Clinical sciences for preclinical students [24.1]		14						14

Subject	Theoretical training			Supervised practical training			Other (G)	Hours to be taken by each student
	Lectures	Seminars	Self-directed learning	Laboratory and desk-based work	Non-clinical work	Clinical work		
	(A)	(B)	(C)	(D)	(E)	(F)		
Colloquial small animal medicine - a journal club for students in the English language [24.1]		14						14
Diagnostics in equine internal medicine [24.1]		14						14
Diseases and husbandry of bees [22]		14						14
Diseases of amphibians and their diagnostic approach [22]		7				7		14
Diseases of reptiles and amphibians 1 [22]		14						14
Diseases of reptiles and amphibians 2 [22]		6				8		14
Diseases, ecology and genetics of wild living ruminants 1 [15.2], [24.1]		14						14
Diseases, ecology and genetics of wild living ruminants 2 [15.2], [24.1]		14						14
Aspects of conservation medicine (zoo visit included) [15.1]		9			5			14
Emerging diseases: parasitoses due to import and travel [21.3]		28						28
Equine abdominal surgery [24.3]						14		14
Equine acupuncture 1 [24.3]		14						14
Equine acupuncture 2 [24.3]		14						14
Equine diagnostic imaging [11]		14						14
Equine intensive care medicine and anaesthesia [24.3]		14						14
Equine minimal invasive techniques [24.3]		7				7		14
General pathology of embryos and inheritance [23]		14						14
Equine surgery [24.3]		14						14
Genetic pathology of small animals (dog/cat) [23]		14						14
Hormonal diagnostic in animal reproduction [24.2]				14				14
Laboratory animal science: Handling of rats and mice and common application techniques [16]					14			14
Lameness in horses [24.3]		14				14		28
News from the buiatrics [24.1]		14						14

Subject	Theoretical training			Supervised practical training			Other (G)	Hours to be taken by each student
	Lectures	Seminars	Self-directed learning	Laboratory and desk-based work	Non-clinical work	Clinical work		
	(A)	(B)	(C)	(D)	(E)	(F)		
Parasitoses caused by travel and trading [21.3]		28						28
Perioperative intensive medicine [24.3]		28						28
Physical medicine and postoperative rehabilitation for horses 1 [24.3]						14		14
Physical medicine and postoperative rehabilitation for horses 2 [24.3]						14		14
Physiotherapy for horses [24.3]		14						14
Physiotherapy for small animals [24.3]						28		28
Practical training equine surgery (Cofamatur) [24.3]						14		14
Practical training equine surgery (Famulatur) [24.3]						14		14
Practical training with wild living animals [14]					14			14
Propaedeutics: intensive course [14]		14						14
Selected topics in special pathology [23]		14						14
Selected topics of fish diseases [22]		3		1	3	7		14
Selected viral diseases [21.2]		14						14
Seminar for postgraduate students in parasitology [21.3]		14						14
Seminar in clinical cytogenetics [23]		14						14
Small animal cardiology [24.1]		14						14
Surgery on the bovine mammary gland [24.3]		4				10		14
Swine medicine in english language [24.1]		14						14
Taking care of emergency patients in reproductive medicine [26.3]		2				26		28
Therapeutic principles in equine internal medicine [24.1]		14						14
Veterinary vaccinology (bacterial and fungal infectious diseases) [21.5]		14						14
Wild living ruminants: excursion to Poland [15.2]					14			14
4. Animal Production								
Animal welfare - drawbacks and opportunities of local authorities [15.1]		28						28

Subject	Theoretical training			Supervised practical training			Other (G)	Hours to be taken by each student
	Lectures	Seminars	Self-directed learning	Laboratory and desk-based work	Non-clinical work	Clinical work		
	(A)	(B)	(C)	(D)	(E)	(F)		
Animal welfare and ethology: seminar for graduate and postgraduate (doctoral) students [15.1]		14						14
Animal welfare of poultry and exotic animals (with excursion) [19]		12				36		48
Breeding and husbandry of wild and pet animals 1 [10.1]		12			2			14
Breeding and husbandry of wild and pet animals 2 [10.1]		12			2			14
Ethology of zoo and farm animal: Practical training [15.2]					14			14
Husbandry and diagnostic methods of farmed fish [10.1]		2			4	8		14
Laboratory course in feed analysis [25.1]				42				42
Livestock management - bovine fertility [24.4]		28						28
Livestock management: swine [24.4]						28		28
Nutrition of companion and laboratory animals [17.1]				28				28
5. Food Hygiene /Public Health								
Actual problems of food hygiene [25.1]		14						14
Applied food microbiology [25.1]		14						14
Microbial toxins in food [25.2]		14						14
Selected topics of dairy science [25.2]		14						14
6. Professional Knowledge								
Dogs in human culture and history [6.2]		28						28
History of the relationship between dogs and mankind [6.2]		28						28
Professional economical knowledge [6.3]		28						28

Several non EU-listed subjects are part of the national curriculum. They are given in Table 4.5.

Table 4.5 Curriculum hours in subjects not listed in Table 4.3 to be taken by each student, including Diploma work^{*Diploma work.}

Subject	Theoretical training			Supervised practical training			Other (G)	Total
	Lectures (A)	Seminars (B)	Self-directed learning (C)	Laboratory and desk-based work (D)	Non-clinical animal work (E)	Clinical work (F)		
	Medical terminology [6.1]		28					
Laboratory animal science [14]	14						14	

^{*Diploma work} A diploma work is not part of the national curriculum.

4.1.6 Further information on the curriculum

Further information about the content of the individual subjects taught according to the national curriculum is given in the Annex IV.

4.1.7 Obligatory extramural work

Students must undertake a minimum of 1170 h extramural work which is listed in Table 4.6.

Table 4.6 Obligatory extramural work that students must undertake as part of their course

Nature of work	Minimum period		Maximum period		Year in which work is carried out
	Hours	% of total study time	Hours	% of total study time	
Exercises in Agriculture, Animal Breeding and Animal Husbandry [28] ¹⁾	70	1.4	Not defined	Not defined	1
Practical Training in a Veterinary Practice or Veterinary Hospital 1 st stage [29.1]	150	3.0	Not defined	Not defined	3 (or 4) ²⁾
Practical Training in a Veterinary Practice or Veterinary Hospital 2 nd stage [29.2]	700	13.9	Not defined	Not defined	5
Practical Training in Hygiene Control and Control of Foodstuffs [30.1]	75	1.5	Not defined	Not defined	5
Practical Training in the Inspection of Animals for Slaughter and Meat [30.2]	100	2.0	Not defined	Not defined	5
Practical Extramural Training in the Public Veterinary Service [31]	75	1.5	Not defined	Not defined	5

¹⁾ Virtually all students pass these exercises on the university-owned experimental and teaching farm "Oberer Hardthof".

²⁾ According to the Ordinance concerning the Certification of Veterinary Surgeons (§ 57 (1); TAppV), this practical training can only be performed after the successful finishing of the preliminary examination, i.e. not before the third year. It must be finished before starting practical training [29.2] during the fifth year.

The basis for this percentage calculation were the 5020 h of the national curriculum (see Table 4.1).

4.1.8 Specific information on the practical training in Food hygiene/Public health

A practical course in a slaughterhouse is an essential extramural course [30.2] of 100 h. It can only be performed in a slaughterhouse with an EU admission, a full-time veterinarian and if the slaughterhouse deals with cattle and pigs. This extramural training is self-organised by each student and can be passed at each slaughterhouse, which fulfils the above mentioned criteria.

The course meat inspection [25.1] (total teaching time: 28 h) in the 7th semester takes place in about 70 % of the hours at the slaughterhouse in Giessen, which is about two km apart from the Faculty. Group size is about 15 – 20 students per teacher. About 30 % is focussed upon practical training in laboratory (bacteriological examination, assessment of meat quality).

During teaching about food of animal origin [25.1] students learn the production and the technology of raw, cooked and boiled sausages at the own technology unit. They perform the inspection (by means of microbiology, histology, chemistry, sensory) of self-produced products as well as products from retail.

4.1.9 Ratios

4.1.9.1 General indicators types of training

The data basis for the calculation of the ratios R6 to R8 are the data presented in Table 4.2 (distribution of the obligatory intramural training over the 5 ½ years; 3760 h with EU-listed and non EU-listed subjects). Electives (minimum 308 h) and obligatory extramural training (Table 4.6; 1170 h) are not included. Consequently, here a total number of 3760 h is considered.

No	Direction	Type	Fraction	Denominator	
				Faculty	ECOVE
R 6:	LL	<u>Theoretical training</u> Supervised practical training	$\frac{2346}{1414}$	0.60	0.59
R 7:	UL	<u>Clinical Work</u> Laboratory and desk based work + non-clinical animal work	$\frac{720}{694}$	0.96	2.12
R 8 ¹⁾ :	Ra	<u>Self directed learning</u> Teaching load	$\frac{94}{3760}$	40	-

¹⁾ The Ordinance concerning the Certification of Veterinary Surgeons (§ 2 (1) TAppV) does not define self-directed learning as teaching form but only lists lectures, seminars, clinical demonstrations, practical work and clinical training. Therefore, self-directed learning is only part of the curriculum in Giessen within the clinical year, where students have to prepare the background for the clinical cases they see during their stay in a respective clinics.

4.1.9.2 Special indicators of training in Food hygiene/Public health

The data basis for the calculation of the ratios R9 and R10 are the data presented in Table 4.2 (distribution of the obligatory intramural training over the 5 ½ years; 3760 h with EU-listed and non EU-listed subjects). Electives (minimum 308 h) and obligatory extramural training (Table 4.6; 1170 h) are not included. Consequently, here a total number of 3760 h is considered

No	Direction	Type	Fraction	Denominator	
				Faculty	ECOVE
R 9:	Ra	Total no. curriculum-hours <u>Food Hygiene / Public Health</u>	$\frac{238}{3760}$	15.79	6.00– 42.26
		Total no. hours vet. Curriculum			
R 10 ¹⁾ :	Ra	Total no. curriculum hours <u>Food Hygiene / Public Health</u>	$\frac{238}{250}$	1.05	0.05 – 0.82
		Hours obligatory extramural work in Veterinary inspection			

¹⁾ Hours obligatory extramural work in veterinary inspection consist of 75 h Practical Training in Hygiene Control and Control of Foodstuffs [30.1], 100 h Practical Training in the Inspection of Animals for Slaughter and Meat [30.2], and 75 h Practical Extramural Training in the Public Veterinary Service [31].

4.2 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 students 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 have 3 from 8 positions. Intramural teaching is regularly evaluated, recently by using the software Zensus (Blubbsoft, Berlin, Germany). It allows that printed questionnaires are automatically scanned in and evaluated. In former years, also a purely electronically evaluation (via Stud.IP; <http://www.uni-giessen.de/cms/studium/studinfo/studip>) was used. However, the yield of data is higher with Zensus, so that only printed questionnaires are used now.

Extramural training can facultatively be evaluated by the students. Forms for the evaluation can be downloaded from the homepage of the office for examination (http://www.pruefungsamt.vetmed.uni-giessen.de/wps/fb10/home/Pruefungsamt/evaluation_praktika/). This form can automatically be scanned and evaluated using the program EvaSys (Electric Paper, Lüneburg, Germany). Furthermore, the national organisation of German practitioners (Bundesverband praktizierender Tierärzte) certifies veterinary practices for extramural training.

The major development in the recent past was the restructuring of clinical education into organ blocks during the 6th to 8th semester, the introduction of a clinical year during the 9th and 10th semester, and the reservation of the 11th semester for the final examinations. It is assumed that the reorganization of the clinical part of the studies (i.e. the study after the preliminary veterinary examination) will be reviewed and

refined during the next years for optimization. It has to be awaited whether block teaching might be applicable for other parts of the curriculum such as the preclinical education or not.

4.3 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 suboptimal even from our own point of view, which 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 preclinical subjects (e.g. Biochemistry [12.2] and Physiology [12.1]) about the medically relevant content of basic scientific education. A start has been done by the common elective course “Physics in Physiology“ (see Table 4.4), which is taught by a physicist and a physiologist presenting together medical applications of physics.
- The time which students spend in an individual clinic varies from clinic to clinic (see http://www.uni-giessen.de/~gi1919/infos_rotation_10_11.htm) in duration and also e.g. in the obligatory participation at night or weekend services. In general, the student time load during the clinical rotation is very high, although only 30 h of teaching are calculated per week of the clinical year in a clinical institution. A better organization of the clinical year is necessary to reduce this time load and to create more space for self-directed learning and for preparation for the final examinations in the 11th semester.

CHAPTER 5 TEACHING AND LEARNING: QUALITY AND EVALUATION

5.1 Factual Information

As indicated in chapters 1 and 4, veterinary training in Germany is regulated by the “Verordnung zur Approbation von Tierärztinnen und Tierärzten” (Ordinance concerning the Certification of Veterinary Surgeons). The national curriculum as defined in § 1 TAppV consists of 3850 hours of obligatory and elective courses at a university, 70 h practical training in agriculture, 1110 h obligatory extramural work in a veterinary practice (which in part can be carried out at the university) and Food Hygiene/Public Health. There are 2 state examinations, the Preliminary Veterinary Examination consisting of 2 stages, and a Veterinary Examination consisting of 6 examination subsets.

5.1.1 The teaching program

In addition to the objectives of veterinary education as laid down in § 1 of the TAppV (see Chpt 1.1) the educational aims of the Faculty of Veterinary Medicine in Giessen are to achieve optimal efficiency and transparency in education as well as in respect to the achievement of the “day one skills”.

To achieve transparency in education the curriculum (see Chpt 4.1) is regulated by the Rules of Study and Examination (“Studien- und Prüfungsordnung”), from 04.07.2007 with its alterations from 12.12.2007. Information concerning the curriculum and the examinations can be obtained via the website of the Faculty (<http://www.uni-giessen.de/cms/fbz/fb10>). In addition the curriculum (timetable) for each semester is also published on the internet (<http://www.uni-giessen.de/cms/fbz/fb10/studium-und-prufungen/studium/curriculum>). The Rules of Study and Examination and the timetables have been added to the SER (see Annexes II and III) or (<http://www.uni-giessen.de/cms/fbz/fb10/studium-und-prufungen/zulassung-1/informationen>).

In respect to the timetable “ad hoc” corrections can be made if necessary by the study coordination office using the sked-time table software (sked software GmbH, Siegen, Germany). Any corrections or other study related matters are published on the internet <http://www.uni-giessen.de/cms/fbz/fb10/studium-und-prufungen/studium/curriculum>

The Rules of Study and Examination implement a systematically structured curriculum consisting of lectures, seminars, practical work and clinical work (see Chpt 4.1). Due to a strict timetable timing of lecturing is highly coordinated. The Rules of Study and Examination also coordinate the subjects of teaching in general; more detailed coordination is achieved at the institute- and clinic level via interaction with the pre-clinical, paraclinical and clinical teaching staff. Any problems are handled by the Committee for Study Affairs. However, as indicated in Chapter 1.1, it is the prime responsibility of the individual professor to adequately cover his area of expertise and, as indicated in Chapter 4.3, it is anticipated to create special programs for veterinary students in the basic subjects such as physics and chemistry.

Execution of the curriculum is controlled by the Dean of Study Affairs and in particular by the Committee for Study Affairs (see Chpt 2.2.2.3).

The classification 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 lecture notes. Lecture notes produced by the students are also made available by the “Fachschaft” as part of the student organization (see Chpt 2.2.5).

For interactive computer-assisted learning (e-learning) 12 computers are available in the Institute of Physiology and Biochemistry as well as in the study centre of the Faculty. In general power point presentations, slides and table material used for teaching are made available to the students under consideration of copyright regulations via the internet platform Stud.IP. Furthermore, faculty members of different disciplines have established an E-learning platform called “vet-learn” with teaching material for pathophysiology and pathobiochemistry as well as an interactive learning program for biochemistry and instructions on laboratory animal handling and examination methods. Additionally, also implemented on this platform and also within Stud.IP there is an electronic histology atlas called “virtual microscope”, which is available for all veterinary students enrolled in Giessen (see Chpt 8.2.1).

Communication between the staff, the study coordination office and the students can also be carried out using the Stud.IP platform.

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

A thorough clinical education is assured by the availability of a large variety of patients presented in respect to both, species and disease (see Chpt 7). 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 material:

1. The Faculty of Veterinary Medicine is located between the wealthy, highly populated “*Rhein-Main-Neckar*” area and the *Ruhr* region with a high pet density and the *Vogelsberg/Wetterau* region an agricultural area with a still comparatively large cattle and horse population.
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. The clinics are open 24 hours a day, all year round with the “Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals” running a special ambulatory unit. The clinicians also undertake routine tasks such as vaccination, cleaning of ears etc. However, the majority of patients treated are suffering from highly complicated diseases and are referred to the Faculty.
4. Several clinics participate in the Animal Health Services organisation of the Bundesland Hessen (Federal State of Hesse), supported by the “*Hessische Tierseuchenkasse*” (Hessian Animal Epidemic Fund) (see Chpt 7.1.8.2).
5. Each student is integrated into the clinical work during the “clinical rotation” in the 9th and 10th semester. As already stated in Chapter 4, students get the opportunity to assist in the practical work in all clinics and some paraclinical institutes in small groups of 8 students at the most. During this rotation they also participate in night, weekend and emergency services. Students participate in the Animal Health Ser-

vice Program and are taken in small groups to farm visits for outpatient care with the ambulatory service (see Chpt 7.1.8.1).

6. The Education and Research Station of 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 (see Chpt 7.1.3).
7. Veterinary education also benefits from the fact that the Hessian government has decided to concentrate all state hygiene and food testing facilities in Giessen at the respective Hessian State Laboratory (Hessisches Landeslabor) in close proximity to the premises of the Veterinary campus.

After having finished the year of clinical rotation, students are asked to participate in an evaluation in order to give a feedback regarding the status of their practical education and their practical skills. This feedback is then used to continuously improve hands on training.

5.1.2 The teaching environment

5.1.2.1 Technical aspects

During recent years the whole Faculty was equipped with a network allowing networking and data transfer between institutes. In addition, the veterinary documentation system for clinical and paraclinical institutes (Easy Vet) was implemented in all clinics and institutes, so that it is possible to demonstrate authentic data for teaching and research and also to transfer data and diagnostic findings from one clinic to the other. For the presentation of these data digital projectors have been installed in all lecture halls and in the meantime all lecture halls have access to the internet via Wireless Lan and Eduroam, the world-wide roaming access service developed for the international research and education community. Furthermore several computer working places have been installed in various clinics and institutes and moreover a flat screen and a x-ray screen for self directed learning.

The unit for Biomathematics and Data processing provides further access to computers for self directed learning. These computers are equipped with chip card readers enabling the students to enrol for courses via the examination management system Flex Now. Additionally, the unit offers intensive assistance regarding statistics for students and doctoral students.

5.1.2.2 Human resources

Independent teaching is restricted to the professorial staff. In recent years placement of a professor also requires the demonstration of his/her didactical skills. To further develop these skills in the junior staff, the Justus-Liebig-University offers a didactical training program for the teaching staff (Hochschuldidaktisches Netzwerk) with the aim to award certificates for high-quality teaching (Zertifikat "Kompetenz für professionelle Hochschullehre")

The Faculty has not yet developed a system to reward excellence in teaching; however, on state level a respective price is given per year on nomination by the stu-

dents. Furthermore, newly nominated professors are only employed on a short term basis. After an evaluation period of 3 years this is converted into a permanent position. For the evaluation also the teaching performance is evaluated and taken into account.

The non-professorial scientific staff is involved in “controlled teaching” only, i. e. practical and clinical work. For their own training benefit and to promote their career opportunities they are, however, also requested to participate in lectures and seminars on a limited basis.

Apart from the teaching import regarding basic subjects as mentioned in Chapter 2.2.5 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 and Clinical Radiology, especially Physics of Radiation [11]
- Laboratory Animal Science [16]
- Veterinary Professional Law [18]
- Diseases in Honey Bees [22]
- Diseases in Fish [22]
- Practice Management (see (Ordinance on the teaching obligations) footnote 6a, Table 4.3)

A special problem results from the fact, that the ratio of teaching staff per student is fixed. Due to three ordinances, the “*Kapazitätsverordnung*” (maximum capacity regulation) (KapVO; Gesetz- und Verordnungsblatt für das Land Hessen vom 29.12.1975 sowie 10.01.1994)”, the „*Verordnung über den Umfang der Lehrverpflichtung des wissenschaftlichen und künstlerischen Personals an den Universitäten und Fachhochschulen des Landes Hessen 02.08.2006.*”, *GVBl. 2006 I S. 471*” (ordinance on the teaching obligations of scientific staff at Hessian Universities) and the *TAppV* (see Annex I).

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).

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 group size.

¹ The number in brackets refers to the number of subjects in the national curriculum as defined in Chapter 4, Table 4.1

Calculation of the Sub-CN-Value for individual lectures or courses is as follows:

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

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 and Examination, it varies from about 210 (lectures) to 3 (clinical work)

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

5.1.2.3 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 in Hesse is as follows:

Professors:	8 hrs per week + 1 hr tutoring
Non professorial scientific staff:	4 hrs per week
Non professorial scientific staff with specific status (tenured):	8 hrs per week.

This teaching load is reduced by 30 % for those involved in clinical, diagnostic and special administrative (e.g. Deanery) 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 10 and the suggestions given there.

In 2010 the number of students applying for 1 vacancy at the Faculty of Veterinary Medicine in Giessen was 5.2. 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 any legal procedures the Faculty generally accepts an extra load of 15 to 20 students.

5.1.2.4 Other aspects

Success in learning is also rewarded. The six best students of each year receive awards, 3 for the preclinical and 3 for the clinical examination.

With implementation of the TAppV in 2006 also a mentoring system had been installed. Professors act as mentors for groups of up to 15 students from semester 1 – 4. Experience with this system so far is good; students seeking advice know the person to be addressed; the mentors may forward any complaint or criticism. If necessary the dean of study affairs and/or the committee for study affairs will be involved.

5.1.3 The examination system

The scheme of examinations is presented in Chapter 4, Figure 4.1. As is pointed out in Chpt 5.1 the exams are state exams.

Examinations are generally held between semesters in March and April and in the summer in August and September. Examinations are oral or written exams as Multiple Choice Questions (MCQ) tests and essay questions, including practical and clinical examinations according to the TAppV. Examinations may also be taken by external examiners. Final examinations are taken during the last semester.

Within the normal curriculum students have the possibility to repeat an examination twice. If, however, the student has departed from the normal curriculum, i. e. has required a longer period of time to reach the examination, he/she is only allowed one retake. According to the Rules for Study and Examination (§ 3 (3)) students can only participate in clinical courses (i. e. after the 4th semester, see Chpt 4, Fig 4.1), if they have successfully finished the second part of the preclinical examination.

Fairness and correctness of the examinations are monitored by a commission (“Prüfungsausschuss” consisting of two parts, one for the preclinical veterinary examination and one for the veterinary examination). A student may request a different examiner if he has failed the first examination. A member of the “Prüfungsausschuss” must be present during a retake.

As was already mentioned in Chapter 2.2.6, the Examination Office (Prüfungsamt) de jure 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 enrol 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.

Certificates for the different courses are registered on the internet platform FlexNow, to which every student has access using his/her chip card which is released at the beginning of the veterinary course by the administration of the university.

5.1.4 Evaluation of teaching and learning

Evaluation of teaching is organised by the Dean of Study Affairs.

Teaching quality is frequently evaluated on a faculty level, organised by the Dean for Study Affairs and the student coordination office. For this purpose a standard questionnaire “*Fragebogen Lehrevaluation*” (see Annex V) has been developed and is positioned on the teaching platform Stud.IP or handed out to the students. Evaluation is scheduled at the end of the course or semester. The students are requested to carry out the evaluation online or on hard copy questionnaires. The evaluation results

can then be analysed by the Dean of Study Affairs in collaboration with the student coordination office using the statistical software implemented in Stud.IP or in ZENSUS.

In addition to the Dean of Study Affairs also the heads of clinics and institutions have access to the evaluation results, so that they are able to directly discuss and analyse the results with their teaching staff in regard to promote a possible and necessary improvement of lecture and seminar quality.

Stud.IP (Studienbegleitender Internetsupport von Präsenzlehre) is an open source project, developed as a management system for a variety of institutions. It combines multiple functions such as listing all present courses including the management of participants, providing additional material for lectures, giving detailed information about timetables or courses and connecting with e-learning programs. In addition to that each student and lecturer has its own profile, which can be adjusted according to personal preferences. In this way Stud.IP serves as a communication-platform and supports surveys and evaluations.

Evaluations established at the Faculty of Veterinary Medicine via Stud.IP (and recently ZENSUS) contain a variety of questions covering two main aspects: first the course itself concerning learning environment, objectives, use of different media, workload, personal success etc. and second the lecturer in person regarding the presentation style, structure, quality and comprehensibility of his or her course.

The evaluations are presented as multiple choice questions. Answers are given within the following gradation: "completely true", "partly true", "50:50/neutral", "in some aspects not true", "not at all true", "can't tell" or in the case of questions concerning workload per week – within the gradation "less than one hour", "one hour", "two hours", "three hours" and "more than three hours". Additionally students are asked to evaluate their personal learning progress within a score range of 1 (very good) to 6 (not sufficient). Besides the multiple choice questions students are given the opportunity to formulate positive or negative feedback and make suggestions for improvement.

Usually the evaluations remain online for about 3 weeks, making it possible for every student to participate in the evaluation process. After closing an evaluation, the results are presented in histograms with the mean value and the sum of all given answers (see Annex V). The comments are listed below starting with positive aspects followed by negative opinions and finally giving the suggestions for improvements. These results are forwarded to every lecturer involved in the course. Besides general questions concerning a lecture or a seminar, the questionnaire also includes questions specifically related to the lecturer.

So far results of evaluation only in very rare cases lead to official actions. Evaluation is, however, important for the tenure track assessment of temporarily employed professors.

Furthermore, consequences have been taken on an individual level to improve teaching quality. This evaluation is to be continued each year; current results are only made accessible to the heads of the departments.

As participation in the online survey is rather low (as low as 20%) presently the evaluation mode is changed to a direct evaluation procedure using a hard copy ques-

tionnaire which is distributed directly after a lecture or a seminar and collected after a time frame of about 15 minutes. The questionnaires are then scanned and evaluated using the software module ZENSUS (Blubb Soft GmbH, Berlin). Using this software module it is anticipated to achieve a feedback of at least 80%. The surveys contain the same pool of questions as the online based questionnaire. These types of evaluation are also scheduled at the end of the respective course or semester.

5.1.5 Student welfare

The newly enrolled students can gain an initial impression of university life in groups of 12 to 15 students 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 parental income, is handled by the "Studentenwerk".

Students sport and recreation is offered by the "Allgemeiner Hochschulsport" (<http://www.uni-giessen.de/ahs/>). It is open to students of all faculties. In the past few years the University has come up with great efforts to establish facilities for disabled students.

All veterinary students have access to free vaccination against rabies.

The fee charged with enrolment (255.69 €) accounts for an accident insurance. It further provides free riding on public transport within Giessen and its periphery (radius of about 100 km).

Studying with children is promoted by the University. For students with children, within the Faculty's study centre one mother-child room has been established. Child care is organised by the students themselves, financially supported by the University.

5.2 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, the clinical education has very much improved since the introduction of the "year of clinical rotation" in 2009. During that time the students spend 2-4 weeks in every clinic and selected paraclinical institution at the Faculty. Also all the extramural training has been scheduled for this period.

Students are involved in the clinical routine in small groups of 8 students at the most and the idea is that they are able to investigate patients and work out therapeutic measures side by side with the teaching staff.

However, in first evaluation results of the clinical rotation students still complain about the lack of practical skills taught in the various clinics.

They criticise the partially bad organisation in some clinics and that they sometimes just feel unneeded. Consequently they still ask for more participation in the practical work, which however, is very often not to be realised due to the routine clinical procedures and the lack of teaching personnel.

According to the experiences of the Faculty of Veterinary Medicine of the Justus-Liebig University Giessen, in this respect the following statements can be made:

- a) in agreement with the students the moving of some paraclinical and clinical subject in the period of preclinical education has been shown to be a useful move.
- b) in respect to grading by the students the curriculum and the resulting education is insufficient. 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. Education should refer to the "day one skills" as set up by the EAEVE.

The student teacher ratio based on the CN-value is found too wide and hence unsatisfactory. However, as indicated above 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 keepers and on the secretarial level (see Chpt 7). 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. The teaching within the clinical rotation needs to be optimised in that in some of the clinical departments it has to be organised more efficiently. Furthermore, the participation of students in night and weekend duties has to be better regulated.

Although due to physical reasons the Faculty can hardly accept any more students, extension of the academic staff is needed to allow the Faculty the required 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 most certain that by 2014 the construction work for the Clinic for Small Animals (Internal Medicine and Surgery) and the Clinic for Birds, Reptiles, Amphibia and Fish (see Chpt 6.2.1) will be finished and the renovation of the Clinic for Horses (Internal Medicine and Surgery) will get started then. With the filling of the position of a new professor in the Clinic for horses (internal medicine) the teaching situation in this field will also improve.

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.

5.3 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 TAppV. However, no strategy concerning fundamental changes has yet evolved.

The change from the discipline orientated clinical education to the species orientated clinical education has brought certain advantages, but with time also the limitations of this system has become apparent (see Chpt 2.2.4). So far there is unanimous agreement, not to introduce distinct tracks of specialisation within the 5 years undergraduate curriculum.

As was observed in a survey in Germany about 30 % of students entering the veterinary curriculum are undecided concerning the field they would like to enter after graduation to a veterinary surgeon. Furtheron there is a shift of interest during the educational process according to the experiences made, particularly during the clinical rounds. For example the wish to enter mixed practice (small and large animals) decreases from around 22 % in the first semester to 7.7 % in the last semester while the interest to enter food animals practice increases from 14.4 to 22.3 %. However, where students finally end up is also a question of open position, the type of position available and "post graduate experiences", e.g. as a result of graduation to a Dr. med. vet..

If specialisation would be allowed prior to graduation to a veterinary surgeon flexibility would be lost to a high degree. Thus at present specialisation must remain on the post-graduate level. To guarantee post-graduate education it is suggested to further establish the European Diplomate System in all fields of veterinary medicine also in pre-clinical subjects. The initiative to found a college of anatomy and diagnostic imaging is benevolently accompanied by the Giessen Faculty.

A proposition we are asking to be supported by the evaluation committee is to increase the support in manpower (e.g. animal keepers 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 funding.

CHAPTER 6 FACILITIES AND EQUIPMENT

6.1 Factual Information

6.1.1 Premises in general

The institutes and clinics comprising the Faculty are indicated in Table 1.1.

As can be seen from the enclosed map (Fig 6.1), the main campus houses the following institutes/clinics:

Institutes and clinics located on main campus

- Institute of Veterinary Anatomy, Histology and Embryology (Frankfurter Str. 98)
- Institute of Veterinary Physiology and Biochemistry (Frankfurter Str. 100)
- Institute of Veterinary Pathology (Frankfurter Str. 96)
- Institute of Veterinary Food Science (Frankfurter Str. 92)
- Department of Veterinary Clinical Sciences with
 - Clinic for Small Animals
(Surgery: Frankfurter Str. 108, Internal Medicine: Frankfurter Str. 126)
 - Clinic for Horses
(Surgery: Frankfurter Str. 108, Internal Medicine: 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)

Based on the situation in August 2011 the following clinics and 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, Department of Veterinary Clinical Sciences (Frankfurter Str. 93)
- Unit of Biomathematics and Data Processing (Frankfurter Str. 95)

Also, in close proximity (distance of about 800 m) is the Institute of Parasitology (Rudolf-Buchheim-Str. 2).

Within walking distance (20 to 30 min), but also reachable by public transportation, are the institutes located at the Heinrich-Buff-Ring (Chemistry, Physics, Zoology, Animal Nutrition) and the Professorship of Milk Science as part of the Institute of Veterinary Food Science (Ludwigstrasse 21).

Figure 6.1 Sitemap of Faculty



Sitemap of Faculty

- 1: Institute of Veterinary Anatomy, -Histology and Embryology,
Frankfurter Straße 98, 35392 Gießen
- 2: Institute of Veterinary Physiology and Biochemistry,
Frankfurter Straße 100, 35392 Gießen
- 3: Institute of Veterinary Pathology,
Frankfurter Straße 96, 35392 Gießen
- 4: Institute of Veterinary Food Science, Frankfurter Straße 92, 35392 Gießen,
Milk Sciences: Ludwigstraße 21, 35390 Gießen (not visible on this map)
- 5: Institute of Hygiene and Infectious Diseases of Animals,
Frankfurter Straße 85, 35392 Gießen
- 6: Institute of Virology (til February 2012),
Frankfurter Straße 107, 35392 Gießen
- 7: Institute of Parasitology (former building, not visible on this map),
Rudolf-Buchheim-Straße 2, 35392 Gießen
- 8: Institute of Pharmacology and Toxicology (til February 2012),
Frankfurter Straße 107, 35392 Gießen
- 9: Unit for Biomathematics and Data Processing,
Frankfurter Straße 95, 35392 Gießen
- 10a: Clinic for Small Animals (Internal Medicine),
Frankfurter Straße 126, 35392 Gießen
- 10b: Clinic for Small Animals (Surgery),
Frankfurter Straße 108, 35392 Gießen
- 10: Future building Clinic for Small Animals (Internal Medicine and Surgery) and
Clinic for Birds, Reptiles, Amphibia and Fish*
- 11a: Clinic for Horses (Internal Medicine),
Frankfurter Straße 126, 35392 Gießen
- 11b: Clinic for Horses (Surgery),
Frankfurter Straße 108, 35392 Gießen
- 12: Clinic for Ruminants and Pigs (Internal Medicine and Surgery),
Frankfurter Straße 110-112, 35392 Gießen
- 13: Clinic for Obstetrics, Gynaecology and Andrology of Large and Small animals with an
Ambulatory Service, Frankfurter Straße 106, 35392 Gießen
- 14: Clinic for Birds, Reptiles, Amphibia and Fish,
Frankfurter Straße 91-93, 35392 Gießen
- 15: Unit for Animal Welfare and Ethology,
Frankfurter Straße 104, 35392 Gießen
- 16: BFS (Biomedizinisches Forschungszentrum Seltersberg); Institute of Virology,
Institute of Pharmacology and Toxicology and Institute auf Parasitology (starting in
February 2012)
- 17: Office of the dean, examination office and office for study affairs,
Frankfurter Straße 94, 35392 Gießen

Public transportation or other means of transportation are necessary to reach

- a) the “Oberer Hardthof”, Institute for Animal Breeding and Genetics, where practical instructions are given in assessing of animals and animal husbandry
- b) the Institute of Botany and the botanical garden (Senckenbergstr. 3)

Irrespective 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 in chemistry, physics, botany, zoology and animal nutrition students have to move off from the main campus to attend lectures.

6.1.2 Premises used for clinics and hospitalisation

6.1.2.1 Regular premises for hospitalisation

This information is given in Table 6.1

Table 6.1 Places available for hospitalisation and animals to be accommodated

number of hospitalisation places for cattle	58	$(30^3 + 28^4)$
number of hospitalisation places for horses	61	$(37^1 + 24^4)$
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	66	$(14^4 + 52^2)$
number of hospitalisation places for cats/rabbits etc.	99	$(10^4 + 89^{2a})$
number of hospitalisation places for birds	26 ⁵	
number of hospitalisation places for reptiles, amphibia	13 ⁵	
number of hospitalisation places for fish	36 ⁵	

¹ Clinic for Horses (including isolation boxes)

² Clinic for Small Animals

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

^{a)} 73 places are adequate for cats and dogs

6.1.2.2 Premises for isolation of hospitalised patients

Factual situation

The Faculty tries to keep the risk of infections at the lowest possible level though it is aware of the fact that it will not be possible to eliminate it completely. This accounts for the risk of epidemic diseases and the risk of transfer of organisms of virological, bacteriological and parasitological origin which might be harmful for man and animals (zoonotic diseases).

Risk assessment of the Faculty also accounts for the epidemiological status of the wider area and the measures taken by the veterinary authorities. The latter aspect largely applies to the status of food animals and horses.

The Institute of Hygiene and Infectious Diseases of Animals has provided the Faculty with a general Guideline for infection prevention in animal clinics and institutes. Based on this guideline each institute and clinic has implemented its own strategy and guidelines, accounting for the specific situation. These guidelines have to be adhered to by the personnel and students, though adherence of students is sometimes difficult to control.

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

Cattle hospitalised in the Clinic for Obstetrics, Gynaecology and Andrology is kept in isolated stalls. If necessary, special precautions can be taken to increase the security parameters. On demand these boxes are available for cattle in general. A special isolation unit for highly suspected cases is with the Clinic for Ruminants and Pigs.

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

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

Retrospective assessment

In spite of the inevitable weak points of the hygiene management of the Faculty, the only problems which had occurred in the past 20 years were several outbreaks of *Salmonella* infections in cattle and horses. Due to the single box and small stall strategy of the Faculty, isolation of the infected animals was not a problem and disease management under the supervision of the veterinary authorities in general soon allowed a reopening of the specific facilities.

6.1.3 Premises for teaching animals

The number of places available for maintaining normal animals for teaching purposes is listed below. In respect to the "Oberer Hardthof" we refer to section 7.1.3.

horses	up to	$5^1 + 7^4$
swine	up to	$3^4 + 20^3$
dogs	up to	$8^4 + 21^2$
cats	up to	12^2
cows/bulls	up to	4^4
sheep, goats	up to	4^4
rabbits	up to	20^5
birds	up to	10^5
fish	up to	95^5
reptiles	up to	2^5

¹ Clinic for Horses

² Clinic for Small Animals

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

6.1.4 Premises used for theoretical, practical and supervised teaching

This information is summarised in tables 6.2, 6.3, 6.4 und 6.5 and is based on the situation in August 2011.

Table 6.2 Premises for clinical work and student training

Clinic for Horses	no. consulting rooms	4
	no. surgical suites	2
	riding area	1
	blacksmith area	1
Clinic for Small Animals	no. consulting rooms	9
	no. surgical suites	5
Clinic for Ruminants and Pigs	no. consulting rooms	2
	no. surgical suites ²	3
Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals ¹	no. consulting rooms	4
	no. surgical suites	2
Clinic for Birds, Reptiles, Amphibia and Fish	no. consulting rooms	1
	no. surgical suites	1

¹ Surgical suits for small animals. Large animal surgery is either performed in the consultation area or on freely movable surgery tables in the lecture halls/demonstration rooms

² Facilities for cattle surgery

Table 6.3 Premises for lecturing; location, number and seats

position	location	no. of rooms	places/room
1.)	Clinic for Small Animals	1	145
2.)	Clinic for Ruminants and Pigs	1	88
3.)	Clinic for Obstetrics, Gynaecology and Andrology	3	132, 150, 90
4.)	Institute of Veterinary Anatomy	2	198, 80
5.)	Institute of Veterinary Physiology and Bio-chemistry	1	203
6.)	Institute of Veterinary Food Science	1	90 ¹
7.)	Institute of Veterinary Pathology	1	84
8.)	Institute of Hygiene and Infectious Diseases	1	116
9.)	Clinic for Birds, Reptiles, Amphibia and Fish	1	20
Total number of lecture halls		12	

¹ An extended restoration and complete modification of the lecture hall is on the agenda of university

Table 6.4 Premises for supervised group work; location, number rooms and seats

position	location	no. of rooms	places/room
1.)	Clinic for Small Animals	4	5, 5, 20, 80
2.)	Clinic for Horses	2	4, 25
3.)	Clinic for Ruminants and Pigs	2	18, 16
4.)	Clinic for Obstetrics, Gynaecology and Andrology	2 ²	18, 18
5.)	Clinic for Birds, Reptiles, Amphibia and Fish	2	up to 10
6.)	Institute of Veterinary Anatomy	5 ²	about 25 seats each
7.)	Institute of Veterinary Food Science	3	20, 20, 10
8.)	Institute of Veterinary Pathology	1	28
9.)	Institute of Hygiene and Infectious Diseases	2	6
10.)	Unit of Biomathematics and Data Processing	2	5, 8
11.)	Institute of Pharmacology and Toxicology ¹	1	up to 25
12.)	Institute of Parasitology ¹	1	12
Total number of rooms that can be used for group work		27	

¹ Department library,

² Included is Department library

Table 6.5 Premises for practical work; location, number rooms and seats

posi- tion	location	no. of rooms	places/room
1.)	Clinic for Horses	1	25
2.)	Clinic for Ruminants and Pigs	1	6
3.)	Clinic for Obstetrics, Gynaecology and An- drology	1	50
4.)	Clinic for Birds, Reptiles, Amphibia and Fish	1	10
5.)	Institute of Veterinary Anatomy	2	240, 120
6.)	Institute of Veterinary Physiology and Bio- chemistry	5	55, 15, 15, 15, 15
7.)	Institute of Veterinary Food Science	2	60, 8
8.)	Institute of Veterinary Pathology	2	100, 8
9.)	Institute of Hygiene and Infectious Diseases	1	60
10.)	Institute of Pharmacology and Toxicology	1	20
Total number of laboratories for practical work		17	

Please note: As outlined in Chpt 4, last year students rotate in small groups between the various clinical divisions and the Institutes of Veterinary Pathology and Hygiene and Infectious Diseases of Animals resp. Institute of Virology. During this period students have also access to the research laboratories and – if possible – are integrated in ongoing work.

6.1.5 Special diagnostic laboratories and Clinical Support Service

Diagnostic laboratories

The following institutes/clinics provide special diagnostic services to other institutes/clinics and the general public:

- Institute of Veterinary Anatomy, Histology and Embryology: Analysis of testicular biopsies (human, animal), isolation of stem cells (animal)
- Institute of Veterinary Pathology: Tumour and other biopsy diagnostics, autopsies and linked work
- Institute of Veterinary Food Science: Bacteriological and mycological diagnostics
- Institute of Hygiene and Infectious Diseases: Bacteriological and mycological diagnostics
- Institute of Virology: Virological diagnostics
- Institute of Parasitology: Parasitologic diagnostics (human, animal)
- Institute of Pharmacology and Toxicology: Analysis of mdr1 defects in dogs
- Clinic for Small Animals: Haematology, cytology, clinical chemistry, MRT, CT, high resolution US, Endoscopy

- Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals: Semen evaluation, endocrine parameters, clinical chemistry, endocrine diagnostics
- Clinic for Ruminants and Pigs: Molecular diagnostics of infectious agents and heredity disease in pigs
- Clinic for Birds, Reptiles, Amphibia and Fish: Virological, bacteriological and parasitological diagnostic in birds, reptiles, amphibia and fish

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

Central clinical support services

There is no centralised clinical service but different and in part highly specialised service units have been established (see above). Each clinic organises its own service to the necessary extent. However, for special problems the specialised service unit will be consulted. Thus special x-ray and/or ultrasonographical as well as CT and MRT examinations are carried out by the Division Clinic for Small Animals, surgery unit. Particular haematological or cytological questions are referred to the Division Clinic for Small Animals; responsibility is with the professorship for Clinical Pathophysiology and Clinical Laboratory Diagnostics.

Expertise in anaesthesia is with the Clinic for Small Animals, surgery unit, and – if found necessary – available to all clinical units.

6.1.6 Slaughterhouse facilities

A private EU-slaughterhouse for cattle, pigs, sheep and horses (Schlachthofstrasse 2) is about 2 km away from the main campus. Access of 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 (winter semester) are performed there.

There are confirmed plans by the city of Giessen and the operator of the slaughterhouse to abandon the present facilities at the end of 2013 due to the developmental plan of the city. However, the city, the operator and the University are highly interested to continue providing slaughterhouse facilities in Giessen for commercial use and for intra- and extramural training. The planning of a new construction started in 2011.

6.1.7 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:

- E. Färber GmbH Co. KG Gießen (slaughtering and butchering, Meat whole sale)
- H. Birkenstock GmbH, Hüttenberg (Cheese Dairy)
- H. Stumpf GmbH, Buseck (Meat products)
- Stegili & Schmidt GmbH, Biskirchen (Mineral water "Westerwald Quelle")

6.1.8 Waste Management

6.1.8.1 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.

6.1.8.2 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 authority through the President of the University, represented by the chief officer responsible for the protection against radiation.

6.1.8.3 Radioactive waste following use in diagnostics

The isotopes used are Jodine¹³¹ and Technetium⁹⁹. The respective half-life is 8 days and 1 day. Treated animals as well as feces and material used for treatment have to be stored until – due to the short half-life – no extra radioactivity can be detected anymore, by using a Geiger-type monitor.

6.1.8.4 Waste management of normal litter

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

Other laboratories waste and clinical waste are collected in special (red) bags and are collected centrally for incineration.

6.1.8.5 Organic waste

Large animal manure is collected centrally and piled 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.

6.1.8.6 Cadavers

The Institute of Veterinary Pathology provides a room for centrally collecting cadavers. A separation is to be made between small animals and large animals. The removal takes place routinely three times per week and if necessary on demand. According to the present legislation it is assured that cadavers do not enter the food chain.

The cadavers accumulation in the Clinic for Birds, Reptiles, Amphibia and Fish are collected separately and are removed/collected weekly.

6.2 Comments

6.2.1 Department of Veterinary Clinical Sciences

With the formation of a Department of Veterinary Clinical Sciences with 5 Clinical Subdivisions in 2007 the structural reorganisation of the Faculty of Veterinary Medicine can be considered completed. However, restructuring of the facilities is still behind.

Thus so far 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 and teaching of students.

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. However, further renovation and restoration are urgently necessary.

In 2009 the State of Hesse has approved the building of new clinical premises which will house the Clinic for Small Animals and the Clinic for Birds, Reptiles, Amphibia and Fish including central diagnostic facilities and a molecular laboratory belonging to the Professorship for Swine diseases. Construction has started in 2010 and should be completed in 2014.

When settled in the new premises, the premises presently used by the Clinic for Small Animals, Subdivision Internal Medicine, will be pulled down to provide space for a new lecture hall building and general student facilities. Concomitant with these measures the Clinic for Horses will be concentrated in the former "Surgery building horses and small animals" following reconstruction and addition of new building complexes on the location of the present lecture hall building "small animal surgery" (see sitemap of Faculty, Chpt 6).

However, though adopted as plans for the future development of our Faculty by the Hessian Ministry of Science and Art, the budget still needs approval by the Hessian Parliament.

All these reconstructions in the main campus required interim solutions in order to maintain functionality; thus a new hall to walk horses has been built as well as boxes for horses and other large animals, as well as an EU approved artificial insemination and embryo-transfer unit for horses.

6.2.2 Pathology, Anatomy, Student Facilities

Renovation of the necropsy facilities of the Institute of Pathology were finished in 2008 as was the Annex-building to Anatomy providing new facilities for maceration and storage of carcasses (300 m²).

6.2.3 Biomedical Research Centre

Following establishment of this report the Institutes of Virology, Pharmacology and Toxicology and Parasitology are moving from their previous location (Frankfurter Str. and Rudolf-Buchheimstrasse) into the new premises of the Biomedical Research Centre, Aulweg.

The Biomedical Research Centre is operated by the Faculties of Medicine and Veterinary Medicine. The additional space gained for teaching is as follows:

	Biomedical Research Centre	no. of rooms	no. seats
a)	lecture halls	2	230, 89
b)	seminar rooms	2	50, 50
c)	teaching laboratories	2	78, 66

However, due to this move the positions no. 11 and 12, Tab. 6.4, and position no. 10, Tab. 6.5, will be lost. In spite of this loss the Faculty greatly benefits from this move.

6.2.4 Premises for housing teaching animals

The “Station Schwarzacker” has been abandoned due to the proximity to the urban quarters and the fact that the University has denied any further investments in renovation and maintenance of the buildings. Consequently the demand for premises to house and breed animals for teaching purposes has increased.

Thus in addition to the places listed in Chapter 6.1.3 measures have been taken to provide facilities for teaching horses on the Education and Research Station “Oberer Hardthof”, which belongs to the Institute of Animal Breeding and Genetics which is part of the Faculty for Agricultural Sciences, Nutritional Sciences and Environmental Management.

Prof. Erhardt, who is the director of the farm and Professor for Animal Breeding and Genetics, is an associate Faculty member with all academic rights and duties. The “Oberer Hardthof” is the location where, apart from few exceptions, veterinary students pass their 70 hrs Practical Training in Agriculture, Animal Husbandry and Ani-

mal Welfare. The facilities are also used for clinical education and on request cattle and sheep can be provided as teaching animals for special courses and classes.

For quite some time the administration of our University denied the urgent need to also use the "Oberer Hardthof" as an integral teaching unit of our Faculty, allowing students to get acquainted with up to date aspects of animal housing and management. Following support of various expert commissions some renovation has now started, beginning with the swine-facilities and new facilities for horses (see Chpt 7.2).

6.3 Suggestions

No suggestions are made in respect to the developmental concept of the Faculty. However, we are asking for support to further execute this concept, particularly in establishing the premises for the Clinic for Horses (Internal Medicine and Surgery) and the renovation and remodelling of the "Oberer Hardthof", also in respect to the student premises (lecture room, dressing room, sanitary facilities).

CHAPTER 7 ANIMALS AND TEACHING MATERIAL OF ANIMAL ORIGIN

7.1 Factual Information

7.1.1 Anatomy

All animals and specimens are stored in formalin (3%)-tanks. The Preparation-(Demonstration) room is air conditioned with recently installed most modern tables equipped with a vacuum device preventing contamination of the air by the preservative. By these measures the maximum permissive values as regulated by German law are maintained.

Table 7.1 Material used in practical anatomical training

	dog		ruminant		equine		other	
	year 2010	year 2009	year 2010	year 2009	year 2010	year 2009	year 2010	year 2009
live animals								
cadavers	45	46	15	14	2	2	30	30
specimen	110	110	220	220	209	209	110	110
other								
eg ultrasound								
Computer assisted teaching								

One specific feature of practical anatomy training in Giessen is that small ruminants after fixation are presented as standing specimens in order to facilitate the topographic imagination of students.

During the clinical rounds last year students get a refresher course in bird anatomy using fresh cadavers; the number of cadavers was as follows: Year 2010 = 89, Year 2009 = 135.

7.1.2 Pathology

Table 7.2 Number of necropsies over the past 3 years

Species	Number of necropsies			Average
	year 2010	year 2009	year 2008	
<u>Food-producing animals:</u>				
cattle	173	197	227	} 380
small ruminants	79	83	90	
pigs	75	134	82	
other farm animals	-	-	-	
equine	186	205	200	197
poultry	224	220	274	} 306
rabbits	77	65	58	
<u>Companion animals/exotic:</u>				
dogs	290	254	293	} 504
cats	222	210	543	
birds	254	158	197	} 1019
lab-animals, zoo animals, wild animals	248	322	291	
reptiles	8	18	15	
amphibia	1	3	-	
fish	2	2	8	

In pathological instructions slaughterhouse material is additionally used every week during the semester.

In the teaching of histopathology biopsies sent in for diagnostics purposes are also used.

7.1.3 Animal Production

An important part in the teaching of Animal Production is provided by the Institute of Animal Breeding (see Chpt 2.2.5 and 2.3). The institute is running the Education and Research Farm (Station) "Oberer Hardthof".

On average the following domestic food-producing animal species (including off-springs) were available between 2008 – 2010:

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

Student education is on the premises and most students pass their 70 hrs practical training on this farm.

In addition students are taken to different private farms and studs in the region of Hessen, the Federal State Education Centres for Farm Animals (Lehr- und Versuchsanstalt für Viehhaltung Hofgut Neumühle in Münchweiler, Landesbetrieb Landwirtschaft Hessen Schloss Eichhof, Bad Hersfeld).

7.1.4 Food Hygiene/Public Health

Basic approaches to pre-slaughter assessment of food animals is provided on the Education and Research Farm "Oberer Hardthof", within the frame work of the herd-health services (see Chpt 7.1.8.2) and during clinical education.

Otherwise student-practical training in Food hygiene/Public health is as follows:

- Food hygiene; meat science: training is during the summer semester at the institute, room for practical teaching. Teaching is in 4 groups of 50 – 60 students with 3 – 6 supervisors per group (scientific and technical staff) present; every group has to examine meat respectively minced meat, raw sausages, cooked sausages, fish, eggs and typical products of canned food.
- Food hygiene; milk science: training is during the winter semester at the institute, room for practical teaching. Teaching is in 4 groups of 50 – 60 students with 6 – 8 supervisors per group (scientific and technical staff) present; every group has to examine milk and milk products for quality parameters using chemical and microbiological analyses. Parameters studied in practical training include, for example, determination of relevant bacteria, somatic cell count, drug residues, freshness parameters, cheese making properties, food labelling requirements.
- Food hygiene; technology: training is during the summer semester at the foodstuff processing unit of the institute. Teaching is in 4 groups of 50 – 60 students with 2-3 supervisors per group (scientific staff and the master butcher) present; subject is the production of raw and cooked sausages. Students observe and get the respective instructions.
- Food hygiene; meat inspection: training is during the winter semester at the (Gießen) slaughterhouse and the room for practical teaching and the lecture hall of the institute. Teaching is in 6 groups of 15 – 20 students with 1 supervisor per group; each group has to inspect the carcasses and organs of cattle and pigs, including bacteriological examinations and specific laboratory tests.

All students are submitted to 175 hrs of practical training at a slaughterhouse under the supervision of a qualified veterinarian. In addition students have to take a 75 hrs practical in a public veterinary institute under guided supervision of a veterinary officer.

7.1.5 Consultations and patient flow services

7.1.5.1 Consultation

Information concerning the working hours and the type of service offered is summarised in Table 7.3.

Table 7.3 Working hours and type of service offered by the clinics

Clinic for	No. weeks open per year	Regular consultations		Emergency
		days/week	hrs/day	
Small Animals: Surgery ¹ Int Med. ¹	52	5	8:00-16:00	24hrs/day/year
Horses: Surgery ¹ Int Med. ¹	52	5	8:00-16:00	on call: 24hrs/day/year
Ruminants and Pigs Ruminants ² Pigs ³	52	5	8:00-16:00	on call: 24hrs/day/year
Obstetrics, Gynaecology and Andrology Small Animals ² Horses, Food animals ²	52	5	8:00-16:00	24hrs/day/year
Birds, Reptiles, Amphibia and Fish ²	52	5	2-5 hrs posted; depending on day of week	on call: weekdays: until 19:00 Sat.-, Sun- and holidays 09:30-18:00

¹ In general referred cases and by appointment; ² Preferably by appointment; ³ By appointment only

7.1.5.2 Patient flow

As it is somewhat difficult to retrieve all the specific data (consultation, hospitalisation) from the Patient Documentation and Information System, some of the figures given in table 7.4a might not be absolutely correct. However, the estimated error is certainly less than 5 %. Similarly the system does not allow to selectively search for dogs, cats or other exotics and pet animals when presented at the Clinic for Small Animals and the Clinic for Obstetrics, Gynaecology and Andrology. However, the number of dogs, cats and other subsumed under companion animals in Table 7.4a can be estimated with 60 %, 35 %, and 5 %. Other animals include, for example rabbits, guinea pigs, degus, rats etc.

Table 7.4a Number of cases: a) received for consultation, and b) hospitalized in the Faculty clinics, in the past 3 years

Species	Number of cases						Average
	year 2010		year 2009		year 2008		
	a	b	a	b	a	b	
<u>Food-producing:</u>							
bovine	150	991	182	979	190	1056	} 1666
ovine, caprine	60	223	8	700	11	195	
porcine	26	56	54	57	27	27	
equine	1212	1072	1454	1263	1450	1417	2623
poultry (see Poultry Herd-Health Service)							}
rabbits							
<u>Companion animals/exotic:</u>							
canine/feline/other	8236	3843	9158	3577	8532	3701	} 12349
birds ²	1568	320	1248	nd ¹	1431	nd ¹	
other (reptiles, am- phibia, fish) ²	629	-	597	-	492	-	

¹ Data not available, ² Data Clinic for Birds, Reptiles, Amphibia and Fish

Occasionally new world camelids, camels, zebu-cattle and deer are presented at the clinics dealing with food animals and the Unit for Horse Surgery. There are about 10-20 such cases per year.

The proportion of cases that are primary and referrals is shown in Table 7.4b.

Table 7.4b Proportion of cases that are primary and referrals

Clinic	First opinion	Referral
Clinic for Small Animals	25 %	75 %
Clinic for Horses	7.5 %	92.5 %
Clinic for Ruminants and Pigs	30 %	70 %
Clinic for Obstetrics, Gynaecology and Andrology		
small animals	50 %	50 %
horses	70 %	30 %
production animals	80 %	20 %
Clinic for Birds, Reptiles, Amphibia and Fish	70 %	30 %

7.1.6 Vehicles for animal transport

The Faculty runs two specialized trucks for large animal transportation (incl. horses).

Charge for this service is as follows:

- Horses 1€/km
- Food animals free

Comment: Most farmer and horse owners have their own transportation; the use of this service has been constantly decreasing in the past years. However, this service will be maintained due to the need to transport teaching animals, e.g. from the Learning and Experimental Farm to the main campus.

7.1.7 On-Call emergency service

See Table 7.3.

7.1.8 On farm teaching and outside patient care

7.1.8.1 Ambulatory (Mobile) clinic

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

Participation of students in their clinical rounds and assigned to the Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals is obligatory. Each student participates on at least 1 tour. Service is provided to about 10 medium sized dairy farms, some beef cattle farmers and horse owners/breeders in the wider area of Giessen. Recently some larger sheep and goat units became clients. The Ambulatory Service is run like a general veterinary practice and there is usually a morning and late afternoon tour. There is a close cooperation with the veterinary authorities.

In addition the clinic has signed contracts with the Hessian Sheep- and Goat-breeder associations to provide a state wide herd – health management. Treatments resulting from these services started in 2010 and are included in Table 7.5a.

The Ambulatory Service is equipped with two VW-vans, each seating 5 students plus the veterinarian on duty, who is also the driver. There are about 3000 individual farm visits per year.

A special service linked to the Clinic for Obstetrics, Gynaecology and Andrology of Large and Small Animals is the routine late summer/early fall inspection of thoroughbred mares intended for breeding. This service covers the area of South-West Germany. On each visit about 3 students participate.

Table 7.5a Number of cases, including management and reproduction, seen by the Ambulatory (mobile) clinic in the past three years

Species	Year			Average
	2010	2009	2008	
No. individual food-producing animals seen:				} 9176
: cattle and small ruminants ¹	8783	8449	10297	
pigs	none			
other farm animals**				
No. visits/year	2453	2392	2555	2467
equine ²	579	565	371	505

** Indicate species,

¹ About ¼ small ruminants, ² Thoroughbred mares seen in the late summer/early fall inspection

7.1.8.2 Other on-farm services and outside teaching

Apart from the Ambulatory Service the Faculty provides three herd-health services which are embedded into the Hessian Animal Health Service System. They are as follows:

- Pig Herd-Health Service (car available: VW van)
- Cattle Herd-Health Service (car available: limousine)
- Breeding (cattle) Consultation Service (car available: Ambulance van)

Concerning poultry the Poultry Herd-Health Service provided by the Faculty is responsible for the State of Hessa by agreement with the respective ministry. The service is responsible for diagnosis and treatment. The car available is a Mercedes station wagon or another faculty car.

In general there are 3 – 4 last year students going on a visit. The number of herd/flock visits and – where applicable – the number of animals examined/treated on the farm, are given in Table 7.5.b.

Table 7.5b Number of herd/flock visits and of animals examined/treated at the visit

Service	No. herd/flock visits				No. examinations/treatments			
	year 2010	year 2009	year 2008	Mean	year 2010	year 2009	year 2008	Mean
Pig-Herd-Health ³	88	81	64	70	286	143	91	173
Cattle-Herd Health	9	13	12	11				
Breeding (cattle) Consultation	8	16	22	15	481	630	847	653
Poultry-Herd-Health	941 ¹ (160) ²	910 ¹ (179) ²	941 ¹ (188) ²	931 ¹ (176) ²				

¹ Number of visits, ² Number of flocks

³ These figures indicate both, visits by the Pig Herd-Health Service and visits/treatments resulting from routine herd –health management.

7.1.9 Other Information

7.1.9.1 Additional outside sources of material for clinical training purposes

- Rectal examinations and insemination techniques can be trained in cattle in a special elective course once per semester in cooperation with the Hessian Breeding and Insemination Association. Students have to travel about 50 km.
- In order to improve training of students, arrangements could be made with one animal charity organisation that charges for castrations of dogs, cats and other pet animals will only cover the cost of material. Hence there is a regular flow of these types of animals.
- Pig-blood sampling on behalf of the veterinary authorities for plague control (Aujeszky's Disease).

7.1.9.2 Level of service that is offered by the Department of Veterinary Clinical Sciences compared with outside practices

General: The hours of service are comparable with private owned clinics. All clinics provide an emergency service. The service is provided by nationally and in most specialities internationally recognised specialists and – as viewed by the Faculty – clinical services are provided on a very high level. However, in respect to the imposed clinical duties, other responsibilities and the teaching load, the number of total staff is limited, in particular when compared to the number of students to be trained. Though some of the premises need urgent renovation, the standard of facilities and equipment is very high.

The following highly sophisticated equipment and services are available for treatment/examination of patients and teaching of students.

Medical imaging:

- CT (16 slices), MRI (1.0 Tesla, small animals), digital x-ray
- digital x-ray system (Agfa DX 5) to evaluate very small structures (Clinic for Birds, Reptiles, Amphibians and Fish)
- a unique 2-dimensional fluoroscopy catheter laboratory to perform interventional catheter-techniques (balloon dilatation and coil implantation) with cinema quality video documentation (Small Animal Internal Medicine).
- ultrasonography machines Logic GE and Toshiba Powervision 8000 with more than 5 flexible transducers per machine (Small Animal Surgery), Logic Vivid 7 echocardiography for horses (Equine Internal Medicine), Logic Pro 500 and Toshiba Aplio MX with 4 flexible transducers per machine (Equine surgery)
- digital rigid and flexible video instruments for every possible endoscopy incl. laparoscopy are available
- for scintigraphy in small animals a Gamma Camera has been installed in the Clinic for Internal Medicine, which also serves as one of the two national centre for radioiodine treatment in feline hyperthyroidism
- digital holder – EEC monitoring for 10 small animal patients and software analysis.
- bone scintigraphy horses (Gamma camera, equine scanner HR, Equine surgery)
- equipment for invasive and non-invasive blood pressure measurement

Laboratory diagnostics:

- a most modern multi species haematology system ADVIA 120 and a special cytology unit with digital sample analysis (Leica; Clinic for Small Animals)
- Computer Assisted Semen Analysis and microscopy unit for analysis of semen samples as well as a system for special endocrine diagnostics (e.g. estradiol, canine LH etc.) (Clinic for Obstetrics, Gynaecology and Andrology)
- Specialisation on the diagnosis of infectious avian diseases with special regard to virus diseases

For further diagnostic services provided by Faculty see Chpt 6.1.5.

Special apparatus:

- Normal and underwater treadmill for small animals
- 24h-intensive care unit with own emergency laboratory, respirator with self produced oxygen, peritoneo-dialysis equipment, amongst others
- EU-approved artificial insemination and embryo transfer unit for horses
- intensive care unit for premature neonates
- theleresectoscopy unit

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

- Clinic for Small Animals, Surgery: All aspects of surgery (very high level in orthopaedics, diagnostic imaging, neurology, neuro- and soft tissue surgery, anaesthesiology and pain management) are covered by nationally and internationally recognised specialists (see Tab 12.1).
- Clinic for Small Animals, Internal Medicine: All aspects of internal medicine (cardiology, gastroenterology, endocrinology, nephrology, dermatology, emergency and critical care, clinical pathology haematology/cytology) are covered by nationally and internationally recognised specialists (see Tab 12.1).
- Clinic for Horses, Internal Medicine: All aspects of Internal Medicine are covered by nationally and internationally recognised specialists (see Tab 12.1)
- Clinic for Horses, Surgery: All aspects of surgery covered by nationally recognised specialists (orthopaedics, soft tissue surgery) (see Tab 12.1)
- 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) (see Tab 12.1)
- Clinic for Obstetrics, Gynaecology and Andrology: All aspects of obstetrics, gynaecology and andrology are covered by nationally and internationally recognised specialists (see Tab 12.1)
- 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). Similarly the coverage of reptiles, amphibia and fish has reached a very high level (see Tab 12.1)

The Faculty continuously attempts to further improve the situation by increasing the services and teaching provided by European College Diplomats or similarly qualified veterinarians.

7.1.9.4 Fees for clinical services

The fees are calculated according to national legal regulation of fees for Veterinarians (Gebührenordnung für Tierärzte GOT, 28.July 1999, as amended in June 2008) 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.

7.1.9.5 Relationship of the establishment with outside practitioners

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 some participation with highly specialized private practitioners who – on a case by case and time by time basis – may join the Faculty, e.g. in ophthalmology and equine minimal invasive surgery..

The common platform for the Faculties of Veterinary Medicine in Germany is the “Veterinärmedizinische Fakultätentag” (Council of German speaking Veterinary Faculties). It meets at least once per year and in general the presidents of the German Veterinary Chamber and of the practitioner’s organisation are invited as well as the Federal Ministry for Food, Agriculture and Consumer Protection. There is a constant discussion on the quality of undergraduate education and hence also on the level of clinical training. In addition within the veterinary community there is a constant and open discussion on the quality of training undergraduates, providing an additional feedback.

7.1.9.6 Relationships with outside organisations

The Faculty of Veterinary Medicine does not maintain contract based relationships with outside organisations in Germany other than the Hessian Animal Health Service System (see Chpt 7.1.8.2).

However, due to the fact that Veterinary Medicine in Germany is regulated by a federal legislation (TAppV, see Chpt 1.1) and that students have to pass a “state examination” to get licensed (Approbation) to practice veterinary medicine, the whole public veterinary system is more or less obliged to accept students for their practical training in Public Veterinary Medicine (public health).

To secure Faculty based training the University has signed a contract with the company running the local slaughterhouse.

The Clinic for Birds, Reptiles, Amphibia and Fish co-operates regularly with the Loro Parque (birds, reptiles, sea mammals, zoo animals), Tenerife. Every year about 20 students go there for practical work for 14 days. It further cooperates with the zoo in Bern, Switzerland; the director of the zoo teaches at our Faculty and organizes regular excursion to resp. practical training at the zoo; participation is optional.

The Faculty has signed contracts of cooperation with a number of foreign faculties¹. A special situation has evolved with the College of Veterinary Medicine, Knoxville, USA which accepts (without charges) 2 students from our Faculty for a 6-week clinical practical every year.

In addition students of our Faculty participate in spaying actions organised by animals welfare organisations in southern countries and North Africa. They also interact with the organisation Vétérinaires Sans Frontières, Germany.

¹ Cooperating Faculties:

- Uniwersytet Warmińsko-Mazurki w Olsztynie, Olsztyn/Polen
- College of Veterinary Medicine, University of Tennessee, Knoxville/USA
- Ecole Nationale Vétérinaire de Nantes, Nantes/Frankreich
- Uludag-Üniversitesi, Bursa/Türkei
- Universidad Nacional de San Marcos, Lima/Peru

7.1.10 Ratios

Table 7.6 Animals available for clinical training (in the clinics of the Faculty or seen through the Ambulatory Clinic) as ratio to the number of students in last full year of clinical training

No	Direction	Type	Fraction	Denominator	
				Faculty	ECOVE
R 11:	LL	no. of students <u>graduating annually</u> no. of food-producing animals seen at the Faculty	$\frac{195.6}{1666}$	8.52	2.03
R 12:	LL	no. of students <u>graduating annually</u> no. of individual food-animal consultations outside the Faculty	$\frac{195.6}{10002}$	51.13	8.94
R 13:	LL	no. of students <u>graduating annually</u> number of herd health visits	$\frac{195.6}{96}$	0.49	0.41
R 14:	LL	no. of students <u>graduating annually</u> no. of equine cases	$\frac{195.6}{2623}$	13.4	2.29
R 15:	LL	no. of students <u>graduating annually</u> no. of poultry/rabbit cases	$\frac{195.6}{1552^2}$	7.93	0.41
R 16:	LL	no. of students <u>graduating annually</u> no. of companion animals seen at Faculty	$\frac{195.6}{12349}$ $\frac{195.6}{14444^1}$	63.1 73.8¹	51.34
R 17:	LL	no. of students <u>graduating annually</u> Poultry (flocks)/rabbits (production units); seen no. visits	$\frac{195.6}{176}$ $\frac{195.6}{931}$	0.9 4.76	0.09
R 18:	LL	no. of students <u>graduating annually</u> no. necropsies food producing animals + equines	$\frac{195.6}{577}$	2.95	0.96
R 19:	LL	no. of students <u>graduating annually</u> no. necropsies poultry/rabbits	$\frac{195.6}{306}$	1.56	0.4
R 20:	LL	no. of students <u>graduating annually</u> no. necropsies companion animals	$\frac{195.6}{504}$ $\frac{195.6}{1019^1}$	2.56 5.21	1.73

UL = upper level, LL lower level, Ra = range, ¹ Including birds and exotics, ² data "birds" Table 7.4a

7.1.11 Other species

The Clinic for Birds, Reptiles, Amphibia and Fish provides some fundamental teaching on fish-diseases and food-fish production. As patients ornamental fish are presented in the clinic. In an elective course further information on food producing fish and fish farms is provided by the Hessian State Laboratory.

Diseases of bees and wildlife diseases and management are taught as electives.

7.2 Comments and Suggestions

When mirroring itself in a self-evaluation report it becomes obvious that the Faculty will never be satisfied how it operates.

Thus, the Faculty depends on its own income to provide the necessary clinical specialization. However, there is a limit to what extent clinical science teachers can be paid from the income made by the Faculty. It is not possible to teach all disciplines on a species-specific basis and in order to cope with this situation the Faculty has decided to maintain an amalgamation of species – and discipline-orientated clinics/clinical units.

According to the German system there is only a very limited number of tenured non-professorial academic staff. This system particularly affects the clinics, where academic staff after having acquired a high level of specialization and good teaching skills is usually forced to leave after a period of 5 and sometimes 10 years.

Unfortunately and as already indicated in Chapter 5 the German model for the calculation for admission of students is based on the teaching capacity deducted from the university funded teaching staff. Any increases in academic staff would lead to an increase in students admitted. As the capacity of our facilities is already exhausted, and as the student/teacher ratio will not be changed, the Faculty tries to cope with the present situation concerning academic staff.

However, in view of the enormous support necessary to run clinical departments, there is a distinct lack of support staff. The Faculty would highly appreciate to get EAEVE-support on its request to increase the number of support staff.

There is a constant restructuration of agriculture in Hestia with the effect that the number of farms making use of the services provided by the Faculty is decreasing. However, so far the patient load was not really affected.

Nevertheless the Faculty is prepared to take respective measures to secure teaching on food animals, e.g. by cooperation with big dairy farms in East-Germany.

CHAPTER 8 LIBRARY AND LEARNING RESOURCES

8.1 Factual Information

8.1.1 Library

The library of the University is organised centrally but split into several branch libraries. The main library building, which also provides computer access, lies in 4 km distance to the veterinary campus.

A branch library for the life sciences, also equipped with computer access for students, provides service for the departments of veterinary medicine, medicine, biology, chemistry, and physics and is located 1.5 km from the campus of the Faculty of Veterinary Medicine. This library provides an extensive collection of books and journals relevant for life sciences. There is access to computers and current journals. Textbooks are available to lend. 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>). A digital library (<http://dbs.ub.uni-giessen.de/digibib.php>) allows access to all electronic material licensed by the university. Access from home is possible using a virtual private network connection (VPN; <http://www.uni-giessen.de/cms/fbz/svc/hrz/svc/netz/campus/vpn/vpn>) to the servers of the university. The library in Giessen itself is networked with the other universities of the federal state of Hesse (HeBIS) as well as nationwide.

In addition to the main library there are several departmental libraries on the veterinary campus which are operated by the individual institutes. Purchasing and registration of books and journals is supervised by the main library. The collections of the departmental libraries are listed in the electronic catalogue. These subsidiary departmental libraries are open for students and Faculty, but do not loan textbooks.

The library system is organized by the head of the main library and the head of the branch library for the life sciences.

A collection of current textbooks is operated by the students organisation (Fachschaft) under the supervision of one staff member of the Faculty and is located in the "Student learning centre" ("Studentisches Lernzentrum") on the campus.

Table 8.1**Subsidiary life science library (Chemikum, Heinrich-Buff-Ring)**

Is this specific to the veterinary training establishment	no
Is this common to two or more establishments	yes

State the library's annual operating budget over the past three years:

Veterinary books and journals	year	Budget
	2010	54,195 €
	2009	48,645 €
	2008	54,195 €

Opening Hours	weekdays	weekends
All year (closed on Sunday)	8:30 – 21:00	8:30 – 21:00

Number of full length employees	4
Full time equivalents to part time employees	2.5
Number of journals received each year (84 veterinary journals are accessible via internet. In addition, there are many human medicine and zoological journals. These journals are not included in this number)	47
Number of student reading places	150
Number of loans to students per academic year (2010)	18,430

The University operates an advanced electronic information system which can be accessed from any networked computer. The electronic catalogue provides information about the holdings of the whole library system of the University. For many journals online subscriptions allow viewing and download of articles from any networked PC (<http://rzblx1.uni-regensburg.de/ezeit/>).

Subsidiary departmental libraries on campus

On the campus there are 15 subsidiary departmental libraries of various size. The total number of books is about 48,000 and the average yearly budget is 80,000 € including journal subscriptions. The majority of these libraries are open to students and faculty members during office hours (8:00 – 16:00). As indicated above, the departmental libraries do not loan textbooks to students. Quick access to more than 300 text books is offered at the student learning centre.

8.2 Information Technology Services

8.2.1 Audio-visual service

The Faculty runs an own e-learning platform termed “Vet-Learn” (<https://vet-learn.uni-giessen.de>). It is programmed using the open access language Ilias and is hosted by the servers of the computer department (Hochschulrechenzentrum) of the Justus-Liebig-University. Login is possible with the general network password/username for each student and each staff member of the university.

Main categories, under which electronic learning material is offered, are:

- Anatomy and Histology: Virtual microscope with all slides used in the course of histology.
- Clinical examinations: video clips for clinical examinations, use of microscope in the pathological department, atlas of blood cells of different animals.
- Laboratory animal science: video clips for application of drugs in mice and rats.
- Pathophysiology and Pathobiochemistry: Clinical cases of selected diseases with anamnesis, clinical examination results, diagnostics, Pathophysiology and Pathobiochemistry of the disease, and therapy.
- Veterinary Biochemistry: Selected intermediate pathways and training units.

Furthermore, a tissue data base for all members of the veterinary Faculty is hosted there to share animal tissue material in order to avoid unnecessary use of experimental animals.

The University is holder of a campus license for all digitised media from “IWF – Wissen und Medien” (<http://www.iwf.de>), which offers a great number of teaching video material. This can be downloaded from every PC at the University (<ftp://ftp.iwf.de/pub/>). In addition, these media can be linked with the software used for administration of all lectures, seminars and practical training (Stud.IP; <https://studip.uni-giessen.de/studip/>). This service is at the moment (status: October 2011) not available as “IWF – Wissen und Medien” is in insolvency; the video rights, however, shall be transferred and shall then be available again for teaching.

Each institute owns a collection of videos for lectures, which are available for students on request. In an elective course [12.1] the production of digital movies is taught. It is planned to extend the collection of digitised videos for online access. The infrastructure for video production is provided by the Center for Interactive Learning (ZIL) of the University and by the learning center in the Institute for Physiology and Biochemistry (10 PCs with video editing software/equipment).

A collection of videos for learning purposes is established within the student learning centre and is operated by the students organisation.

8.2.2 Computer service

60 networked computers are provided to students of all departments by the University's Computing Centre (Hochschulrechenzentrum, HRZ) which is in 1.5 km distance to the veterinary campus. 35 networked computers are accessible in the main library (4 km to veterinary campus), and 13 networked computers are accessible in the subsidiary life science library (1.5 km to veterinary campus).

On the veterinary campus, 12 computers with internet connections are provided for students in the Student learning centre, 13 in the division of biomathematics, and 10 in the Institute for Veterinary Physiology and Biochemistry. The computers in the student learning centre are accessible via chip card daily from 06:00 – 22:00. The others are accessible during office hours (8:00 – 16:00) on work days.

At the moment (status: May 2011) 34 WLAN access points (eduroam and in addition ugifula for older operating systems) are available at the various institutions of the Veterinary Faculty (list of the locations of all hotspots: <http://www.uni-giessen.de/cms/fbz/svc/hrz/svc/netz/campus/wlan/abdeckung/hotspotlist#Veterinärmedizin>).

Table 8.2a Veterinary student learning centre (Studentisches Lernzentrum)

Number of full time employees	1
Full time equivalents of part time employees	0
Number of computers available in the service	12
< 3 years	12
> 3 years	0

Students have free access via their student identity chip card to 12 PCs for their own use all day from 06:00 – 22:00. All PCs are equipped with an electronic device for identification and connection to the software used for administrating the examinations (FlexNow). 4 PCs are equipped in addition with a scanner. A DVD player with a large screen and a beamer (projector) are used for watching digitised videos (> 60 videos available). Printing in black and white is possible from every PC. In addition, 6 microscopes with digital cameras and PC-connection are offered. Available veterinary learning software (e.g. The distal limb, Glass horse) is installed. Installation of own software is restricted.

Further material offered for learning in the student learning centre are histological slices, pathohistological slices, slices from food hygiene, preparations of parasites, a collection of bones, and X-ray pictures together with a X-ray viewing box.

Table 8.2b Learning centre Physiology and Biochemistry (Institute for Veterinary Physiology and Biochemistry)

Number of full time employees	1*
Full time equivalents of part time employees	0
Number of computers available in the service	10
< 3 years	10
> 3 years	0

* Run by the secretary of the institute, which also fulfils other functions

Students have free access to 10 PCs on work days from 08:00 – 16:00. All PCs are equipped with video editing facilities, which are used to produce digital videos in co-operation with student groups. Installation of own software is restricted. The department offers an elective course in computing (multimedia in physiology 1 and 2 [12.1]) and an elective course in bioinformatics [12.2].

Table 8.2c Departmental computer service (Biomathematics)

Number of full time employees	2
Full time equivalents of part time employees (including 2 students)	2
Number of computers available in the service	13
< 3 years	5
> 3 years	8

Students have free access to the 13 PCs for their own use during office hours (8:00 – 16:30). Installation of own software is restricted.

The department offers a seminar in biostatistics [5] for students and for postgraduates.

Table 8.2d Computer Department (Hochschulrechenzentrum)

Number of full time employees	73
Full time equivalents of part time employees	3.5
Computers available at the universities computing centre	60
Computers available at the subsidiary life science library	13
Computers available at the main library	34
Total	107

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

8.3 Comments

Library

Veterinary textbooks are exceedingly expensive which does not allow all students to purchase the full set of required books. Therefore the loan of textbooks is very popular especially during the examination season. Veterinary students account for more than 18,000 loan operations per academic year. The library service certainly suffers from the inconvenient distance of the veterinary campus to the life science library. 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 organization has established a micro library on the campus in the student learning centre, which allows students a quick access to textbooks. This library is supported by donations.

IT facilities

The IT facilities on the campus are not equipped for systematic e-learning or electronic examinations because a room with a capacity of at least 105 PC places is missing. While the distance to the computing centre of the university is inconvenient, all those who want to use computers have the opportunity to do so. Most veterinary students have a private access to the internet. W-LAN access (eduroam and in addition ugifula for older operating systems) via hotspots is possible in many lecture halls and seminar rooms as well as in the student learning centre so that any student who wants to use his private laptop for learning can do so.

CHAPTER 9 STUDENT ADMISSION AND ENROLMENT

9.1 Undergraduate Courses

9.1.1 Undergraduate student numbers

This information is given in table 9.1

The minimum number of years (MNY) to successfully complete the curriculum is:

5.5 years

Table 9.1 Undergraduate student composition in year prior to visitation

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

9.1.2 Student admission

All issues related to student admission are laid down in a "Staatsvertrag" (state contract) between the 16 Federal States and the Federal Government of Germany. All students have to apply to a central agency, the "Stiftung für Hochschulzulassung" (<http://www.hochschulstart.de/>), in the city of Dortmund.

The course of study in veterinary medicine is subject to admission restriction. 210 students per annum are accepted in Giessen. It is determined according to teaching capacities and teaching staff in the institutes and clinics (see Chpt 5.1.2.2). According to this regulation 182 students have to be accepted. However, in order to avoid law suits concerning the identification of a still open place, the Faculty in general accepts 210 students per year. Due to the extremely high number of high school graduates trying to get into university, the number of students accepted in 2010 was 226 which is an exception. This extra number of students accepted is also based on the assumption, that their will be some drop out during the first 2 years, which however, is hardly the case.

The study programme starts in October exclusively.

9.1.2.1 Minimum admission requirement

The course of study in veterinary medicine requires a higher education entrance qualification (i.e. "Allgemeine Hochschulreife", "fachbezogener Hochschulzugang" total of 12/13 school years followed by the successful graduation) or a certificate accepted as equal. Certificates acquired outside the Federal Republic of Germany need to be accepted by the appropriate authority.

9.1.2.2 Selection process

20% 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,

10 % of the remaining 60 % (that is 6 % of all places available in Giessen) are allocated on the basis of the grade (for the higher education entrance qualification which usually is the "Abitur") combined with the criteria "Berufsausbildung" (apprenticeship).

Only the following apprenticeships are taken into account:

- Landwirt, Tierwirt, Landwirtschaftlicher Technischer Assistent, Agrartechnischer Assistent (Fleischwirtschaft, Milchwirtschaft und Lebensmittelwirtschaft), Fischwirt, Pferdewirt, Tierpfleger, Veterinärmedizinisch technischer Assistent, Tierarzt-helfer, Tiermedizinischer Fachangestellter, Hufschmied, Fleischer.

The grade (for the higher education entrance qualification: Abitur) is multiplied by factor 0.6, the overall average grade of the certificate for the apprenticeship is multiplied by 0.4. Both values are totalled. This sum determines (compared to the sum reached by each competitor who defined Giessen as first choice in his application forms) the position in the AdH (Auswahlverfahren der Hochschulen)-ranking. Those who are top of the table (up to 6% of all places available at the Faculty of Veterinary Medicine of the JLU Giessen) will receive an admission notice.

90 % of 60 % (that is 54 % of all places available in Giessen) are allocated on the basis of the grade (for the higher education entrance qualification which usually is the "Abitur") combined with weighted school grades for special subjects.

Therefore the grade for the "Abitur" is converted into a score. The grade 1.0 matches 525 points, the grade 4.0 matches 375 points (a difference of a tenth of a grade matches 5 points).

The school grades are weighted as follows:

- The mid-year "report-points" of the subjects Biology, Chemistry and Physics of the last two years of the "High School" are totalled (each within that same subject). Then the points received for the oral and the written "Abitur"/final examination of each subject mentioned above are added. Points derived from these intensive courses are multiplied by a factor of 2.
- The sums are totalled.

The score to which the grade "Abitur" was converted to and the value derived from the procedure above are totalled.

This sum determines (compared to the sum reached by each competitor who defined Giessen as first choice in his application forms) the position in the AdH (Auswahlverfahren der Hochschulen)-ranking. Those who are top of the table (up to 54% of all places available at the Faculty of Veterinary Medicine of the JLU Giessen) will receive an admission notice. This procedure has replaced the former

interviews as – based on the student’s performance – they were found less effective (T. Prange, M. Diener: Spiegel der Forschung 21, 98 – 103, 2004).

Table 9.2 Intake of veterinary students in the past four years

year ¹	Number applying for admission	Number admitted	
		“standard” intake	other entry mode (describe)
2010	1092	209	-
2009	1094	209	-
2008	1261	210	-
2007	1101	209	-
Average	1134	212.6	-

9.1.3 Student flow

Table 9.3 Student flow and total number of undergraduate veterinary students

Number of students present after admitted in year		Number of additionally admitted students
2011	226 ¹⁾	
2010	209	
2009	207	
2008	204	
2007	206	
2006	197	
beyond 2006	72	
number undergraduate veterinary students	1321	

¹⁾ this is a exceptionally high admittance rate due to a special change in the German high school education system resulting in doubling the graduates (track 9 years, track 8 years)

Table 9.4 Number of students graduating annually over the past five years

year	Number graduating
2011	196
2010	195
2009	197
2008	205
2007	188
Average	195.6

Table 9.5 Average duration of studies (distribution of students in years)*

Duration of attendance	Number of students passing final exam	
	year 2010	year 2011
year 0 ¹	158	167
year 1	29	14
year 2	4	3
year 3	0	0
year 4	1	0
year 5	3	0
year > 5		

¹ Year matching MNY allotted to the veterinary curriculum

Total number of students in the establishment: 1610

Knowledge of students in scientific disciplines: This varies considerably between students based on the type of higher school education they have chosen and the elective courses taken.

Number of students admitted each year: (see Chpt 5.1.2.2 and 9.1.2).

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 10 – 15 students (see above).

Changes foreseen for changes in admission: At present there are no changes in the admission procedures anticipated.

9.2 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, and any pre-admission training.

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

9.3 Suggestions

The practised system for admission leaves the universities with no influence on the admission of students. Even the interviews, that had been carried out in the past, did not have significant bearing on the admitted students. All candidates for these interviews have been ranked by <http://www.hochschulstart.de/> (former ZVS) according to their grades at school and their waiting time.

Since grades obtained at school do not necessarily reflect all skills and abilities of candidates, this type of pre-selection does not result in the best possible students. Hence refinement of the selection process is suggested. However, in taking account the final exams of related apprenticeships such as veterinary technical assistants, butchers etc., there is a clear improvement of the admission system compared to the system of just incorporating the grades at school.

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

In our opinion the rate of drop-out students over many years has been at a moderate level. As observed in particular those students who have experienced severe problems to obtain admission after graduation from high school are highly motivated to accomplish their studies in due course. Many of the students have also used the time between graduation from high school and admission for gaining practical experiences or by starting a study showing some overlap with veterinary medicine, i.e. Zoology or Agriculture Sciences.

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 SER 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.

10.1 Factual Information

10.1.1 Personnel in the establishment provided for veterinary training

The respective figures are given in tables 10.1 and 10.2.

Table 10.1 Personnel in the establishment provided for veterinary training

	Budgeted posts (FTE)		Non-budgeted posts (FTE)		Total (FTE)	
	VS	NVS	VS	NVS	VS	NVS
1. Academic staff						
Teaching staff (total FTE)	118.5	22	37.5	0	156	22
Research staff (total FTE)	0	0	36.75	5.5	36.75	5.5
Others (please specify) (FTE)	0	0	3 ¹	0	3	0
Total FTE	118.5	22	77.25	5.5	195.75	27.5
Total FTE (VS + NVS)	140.5		82.75		223.25	
FTE providing last year teaching	96.75		42		138.75	
2. Support staff						
a) responsible for the care and treatment of animals	63.5		2		65.5	
b) responsible for the preparation of practical and clinical teaching	19				19	
c) responsible for administration, general services, maintenance, etc.	38		0.5		38.5	
d) engaged in research work	51.5		6.5		58	
e) others (please specify) ¹	12.75		1		13.75	
Total support staff	184.75		10		194.75	
3. Total staff	325.25		92.75		418	

¹ diagnostic work

Table 10.2 Allocation of academic (veterinary surgeon and non veterinary surgeon) teaching staff – expressed as FTE – and support staff to the various departments

Department name	Academic teaching staff										Support staff (see table 10.1)		
	Professors						Assistants		Other ¹⁾		Technical/ (b + d + e)	animal carers (a)	Admin./ (c)
	W3		W2		W1		VS	NVS	VS	NVS			
VS ²	NVS ³	VS	NVS	VS	NVS	VS					NVS	VS	NVS
Anatomy	1	1	2				10.5	1.5	0.4 ^b		11		2
Physio. & Bio-chem.		1 ^a		1		1	2	7.5	2 ^d		10.5	2.5	2
Pathology	1		1				4.5 ^a	1	1.1 ^d	1 ^b	9.9		2
Hyg. Inf. Dis.	1		1				7.5 ^a		1 ^d		10.5	1.5	2
Virology	1		1				8 ^a	3	0.4 ^b		12	1	1.5
Parasitology	1			1			2 ^a	1			6.75 ^e	1 ^e	1
Pharmacology	1			1			6	2	0.6 ^b		5	1	1
Food Hygiene	2		1				6.5 ^a		0.8 ^d		12		1.5
Bird Clinic	1		0 ^a				3.25	1	0.6 ^d		1.5	4.5 ^a	1
Small Anim. Clinic Int. Med	1		1				12 ^e		1.1 ^b	9.8 ^d	1.5	9	4.5
Small Anim. Clinic Surgery	1		0 ^a				13.3		5.5 ^b	16 ^d	2	9.25	2.5
Clinical Anat. and Experim. I Surgery			1										
Clinic for Ruminants	1						3.5		0.7 ^b	0.5 ^d	1	4.5	1
Clinic f. Pigs			1				3.0		0.5 ^b	0.5 ^d	1.5	1.5	0.5
Horse Clinic Int. Med.	1						3		3.3 ^b	1.3 ^d	0.5	3.5	0.5
Horse Clinic Surgery	1						5.5		0.9 ^b	1.3 ^d	0.5	9	1.5
Clinic for Obst., Gynecol., Androl. & Ambulance	2						8.5 ^a		1.5 ^b	1 ^d	6	12.25	2
Ethol. Anim. Welfare			0 ^a				2.5	1	0.4 ^d		1	1	1
Dean's office ^f incl. Unit for Biomath. and Data Process.								1				2.5	11.1

¹⁾ please specify; ²⁾ veterinary surgeon; ³⁾ non veterinary surgeon

^a 1 additional position open

^b employment of undergraduate students

^c 1 additional position filled understrength

^d employment of postgraduate students

^e 0.5 additional position open

^f additionally 3 housekeepers and 1 gardener, who are administered by the central university but are organized by the dean's office

Percentage of non-veterinarians in the academic staff: 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 (see above), e.g. due to a lack in the number 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). Presently 12.3% of the available FTE relate to NVS.

Table 10.3 Ratios students/staff

No	Direction	Type	Fraction	Denominator	
				Faculty	ECOVE
R 1:	UL	$\frac{\text{no. total academic FTE in veterinary training}^{3)}}{\text{no. undergraduate veterinary students}^{2}}$	$\frac{223.25}{1321}$	5.92	9.11
R 2: ¹⁾	UL	$\frac{\text{no. of total FTE at Faculty}}{\text{no. undergraduate students at Faculty}}$	_____		
R 3:	UL	$\frac{\text{no. total VS FTE in veterinary training}^{3)}}{\text{no. undergraduate veterinary students}^{2}}$	$\frac{195.75}{1321}$	6.75	11.22
R 4:	UL	$\frac{\text{no. total VS FTE in veterinary training}^{3)}}{\text{no. students graduating annually}^{4}}$	$\frac{195.75}{195.6}$	1	2.54
R 5:	Ra	$\frac{\text{no. total FTE academic staff in veterinary training}^{3)}}{\text{no. total FTE support staff in veterinary training}^{3}}$	$\frac{223.75}{194.75}$	0.87	0.58 – 2.11

¹⁾ applies only to those Faculties, which offer additional courses for non veterinary students,

²⁾ Table 9.3 ³⁾ Table 10.1; ⁴⁾ Table 9.4

10.1.2 Allocation of staff to the Faculty

Allocation of staff to the Faculty is not based on a rational procedure but rather on tradition. However, the ratio scientific staff to professors seems to be somewhat above average when compared to other faculties 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 "Presidium" (see Chpt 2.2.1.1) determines allocation of staff resp. the budget for staff. Whenever structural questions are touched, the Senate of the University has to be heard. During the winter semester 2007/2008 and the summer semester 2008 tuition fees were charged and in full passed on to the universities to be used exclusively for teaching improvement ("Qualitätssicherung Lehre"); however, for political reasons

this was stopped thereafter but compensated by the Hessian Ministry of Science and Arts by providing the same amount taken from other sources. Most of this money, as far as it is forwarded to the Faculty by the "Presidium", is used for employment of postgraduate students who substitute personnel in the teaching.

10.1.3 Allocation of staff to the departments (units) within the Faculty

Any decision upon staff allocation is made by the Deanery (see Chpt 2.2.2.1). Whenever structural questions are touched, the Committee for Structural Development and the Faculty Council have to be heard. Again there is no fixed mathematical procedure. However, allocation considers teaching and clinical duties as well as research.

10.1.4 Recruiting or retaining of staff

Budget positions: Recruiting professors (see Chpt 2.2.2.4) is sometimes difficult. This may result from the low number of highly qualified applicants and secondly – when the process of bargaining has been started (see Chpt 2.2.2.4) – from the low number of personnel allocated to an institution and the state of the facilities; this particularly accounts for the clinical institutions. Sometimes it is also difficult to fill non professorial positions with qualified staff and to retain them. Concerning veterinary surgeons one important factor contributing to this situation results from the fact that there are not enough tenured positions. Concerning secretarial/administrative positions and also animal care takers it must be recognised that the salary structure in public service is less attractive than in private industry and applications for outside jobs by employees are not uncommon. This situation has not changed over the past 10-20 years.

Employment of staff from service income: 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.

10.1.5 Regulations governing outside work

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.

10.1.6 Possibilities and financial provisions for the academic staff

Attendance of 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.

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 Chpt 4) it is difficult to go on a sabbatical leave from a functional and “ethical” point of view (who will be doing my job?). During the past 40 years there were only about 5 sabbatical leaves.

10.2 Comments

Numbers of personnel in the various categories: There is a need for additional personnel at the administrative level, particularly in institutions with clinical and diagnostic services; also the number of animal care takers is too low. Similarly the situation with laboratory staff and scientific assistants is tight, especially in clinics with 24-hour-services.

Salary levels in relation to the level of income in the private sector: The income of a freshly graduated veterinary surgeon in the private sector (veterinary practice) is quite low at the beginning. But with experience it increases by time and may surpass the salary of university assistants on temporary, time-limited positions. Scientific but non professorial staff holding the few tenured positions may be promoted up to an academic director, reaching the range of professorial payment. When running its own practice the income of a veterinarian usually is much higher than that of an employee of the university at a comparable level of expertise. This may be compensated in part by the private invoices and the resulting income put forward in the clinics and diagnostic institutions by the respective heads. However, how much of this income – from which the University deducts 30% - is used to increase the income of other members of the institution or to establish additional personnel, is solely the decision of the professor putting forward the private invoice.

Since 2005 professorial salaries are based on the W-Tarif (W-Besoldung). It consists of a basic salary and benefits from distinct accomplishments, e.g in research, teaching or administration. The basic salary ranges from 3820 € (W1) to 5280 € (W3), which just reaches the range of salaries of upper level ministerial employees.

In general salaries of university employees are more on the low than high side when compared to other public services.

10.3 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 (see Chpt 9). 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 Chpt 5).

CHAPTER 11 CONTINUING EDUCATION

11.1 Factual Information

In Germany veterinary surgeons are generally obliged to participate in continuous education. The hours to be taken per year are 20 for veterinarians with no special accreditation and 25-40 for those with special accreditation (e.g. Fachtierarzt). Consequently continuing education is highly developed and there is a plethora of courses offered.

Continuing education is offered through various channels. However, regardless of the channel all events/courses offered for continuous education must get accreditation by the Academy for Continuous Veterinary Training which includes the number of hours accredited. The major institutions providing continuing education in the field of Veterinary Medicine are:

- Veterinary Faculties (Berlin, Giessen, Hannover, Leipzig, München)
- Akademie für Tierärztliche Fortbildung (ATF) der Bundestierärztekammer (BTK, Berlin) (Academy for Continuous Veterinary Training, Federal Veterinary Chamber)
- Deutsche Veterinärmedizinische Gesellschaft (DVG, Giessen) (German Society for Veterinary Medicine)
- Bundesverband Praktizierender Tierärzte (BpT) (Federal Association of Veterinary Practitioners)
- Bundesverband Beamteter Tierärzte (Federal Association of Official Veterinarians)
- Akademie für Tiergesundheit (AfT; Bonn) (Academy for Animal Health)
- Private institutions (industry, private clinics etc.)

Apart from organising Faculty based continuing education the teaching staff of the Faculty of Veterinary Medicine is involved to a considerable degree in continuing education offered by the other organisations. These additional activities are not reflected in Table 11.1.1 – 11.2.3.

Furthermore, members of the Faculty frequently follow invitations to lectures and seminars by practitioners, industry and others, who organized courses on a more local level.

From 2008 to 2010 the Faculty of Veterinary Medicine itself had organised 165 courses/seminars with 7341 participants and 1365 hours of education. During the same time outside bodies organised 37 courses at our establishment, also involving teaching staff of our Faculty, for a total of 1462 participants in 631 hours of continuous education. Most of the courses are evaluated by the participants concerning quality of presentation, practical relevance, usefulness of instructions and quality of facilities.

Table 11.1.1 Courses organized by the establishment itself in 2010

No	Title of course/seminar	Number of participants	Total number of hours of course
1	Vet. Pharm.-Symposium: Yearly meeting of all European veterinary pharmacologists	120	24
2	Update on equine internal medicine	14	92
3	Joint seminar in cytology	15	20
4	Joint seminar in equine medicine, surgery and pathology	20	20
5	Training seminar for the board examination of the Eur. Coll. of Vet. Path. (ECVP)	10	20
6	14. International workshop and seminar on bovine laparoscopy, esp. laparoscopic reposition of displaced abomasum	42	7
7	Safety in radiology 6 courses/year	50	42
8	Ultrasonography (abdomen, orthopedic) basic 4 courses/year	100	24
9	Ultrasonography (abdomen, orthopedic) advanced 4 courses/year	80	24
10	Laparo- and thoracoscopy in dogs and cats	22	6
11	Radiologic signs of hip dysplasia 6 courses/year	240	36
12	Radiologic signs of elbow dysplasia 6 courses/year	240	36
13	Soft tissue surgery (wounds and flaps) 2 courses/year	30	24
14	Suture course 10 courses/year	400	30
15	Thorax and abdominal surgery 2 courses/year	80	16
16	Seminar Polyuria/Polydipsia	100	3
17	Seminar Epilepsy	100	3
18	Seminar a tour of the eye	100	3
19	Winter-Symposium Dermatology	180	6
20	Seminar bird haematology	30	16
21	Equine reproduction (3 courses)	87	19
22	Soc. Friends & Sponsors; actual research topics with focus on reproduction	80	2
23	Scintigraphy congress	55	7
24	Farrier meeting (vet, surgeons, farriers)	163	6
25	Training seminar for the board examination of the Eur. Coll. of Vet. Pathologists (ECVP)	10	20

Table 11.1.2 Courses organized by the establishment itself in 2009

No	Title of course/seminar	Number of participants	Total number of hours of course
1	Vet. Pharm.-Symposium: Yearly meeting of all European veterinary pharmacologists	120	24
2	Herd management and quality assurance at the producer-swine	90	9
3	13. International workshop and seminar on bovine laparoscopy, esp. laparoscopic reposition of displaced abomasum	53	7
4	Safety in radiology 6 courses/year	270	42
5	Ultrasonography-basic (abdomen, orthopedic) 4 courses/year	88	24
6	Laparo- and thoracoscopy in dogs and cats	22	6
7	Radiologic signs of hip dysplasia 6 courses/year	240	24
8	Radiologic signs of elbow dysplasia 6 courses/year	240	24
9	Soft tissue surgery 2 courses/year	30	24
10	Suture course 10 courses/year	400	30
11	Thorax and abdominal surgery 2 courses/year	80	16
12	Regurgitation (small animals)	100	3
13	Joint pain (small animals)	100	3
14	Coagulopathy (small animals)	100	3
15	Acute abdomen in dogs and cats	180	6
16	Update on equine internal medicine	14	92
17	Equine Internal Medicine Journal Club	6	23
18	Joint seminar in cytology	15	20
19	Joint seminar in equine medicine, surgery and pathology	20	20
20	Seminar on postgraduate scientists	15	20
21	Neuro colloquium	30	12
22	Preparation for horse breeding season	107	7
23	Canine reproduction	52	7
24	Canine reproduction	25	5
25	Hormonal therapy in cattle	93	6
26	Soc. Friends & Sponsors; Actual research topics with focus on tumour growth, stem cells and bird reproduction	80	3
27	Farrier meeting (vet. surgeons, farriers)	157	6

Table 11.1.3 Courses organized by the establishment itself in 2008

No	Title of course/seminar	Number of participants	Total number of hours of course
1	Vet. Pharm.-Symposium: Yearly meeting of all European veterinary pharmacologists	120	24
2	Herd management and quality assurance at the producer-swine	90	9
3	12. International workshop and seminar on bovine laparoscopy, esp. laparoscopic reposition of displaced abomasum	44	7
4	Safety in radiology 6 courses/year	270	42
5	Ultrasonography-basic (abdomen, orthopedic) 4 courses/year	88	24
6	Laparo- and thoracoscopy in dogs and cats	22	6
7	Radiologic signs of hip dysplasia 6 courses/year	240	24
8	Radiologic signs of elbow dysplasia 6 courses/year	240	24
9	Soft tissue surgery 2 courses/year	30	24
10	Suture course 10 courses/year	400	30
11	Thorax and abdominal surgery 2 courses/year	80	16
12	Arrhythmia in dogs and cats	100	3
13	Neurologic localisation	100	3
14	Cytology	100	3
15	Bird haematology (seminar)	30	16
16	Update on equine internal medicine	14	60
17	Joint seminar in cytology	15	20
18	Joint seminar in equine medicine, surgery and pathology	20	20
19	Training seminar for the board examination of the Eur. Coll. of Vet. Pathologists	10	20
20	Refreshing course pet animal practice	57	8
21	Refreshing course pet animal practice	36	5
22	Soc. Friends & Sponsors; Actual research topics with focus on MDR1-defect, behaviour therapy, paratuberculosis, genome analysis	60	3
23	Soc. Friend & Sponsors; Actual research topics with focus on diagnostic imaging, reproduction, meat hygiene, paratuberculosis	80	2

Table 11.2.1 Courses organized at the establishment by outside bodies in 2010

No	Title of course/seminar	Number of participants	Total number of hours of course
1	Basic principles of osteosynthesis	80	17
2	Surgery/Lasersurgery in Veterinary Medicine	30	20
3	Organotherapy	18	10
4	Lasertherapy	19	10
5	Phytotherapy	27	20
6	Introduction veterinary acupuncture	42	14
7	Veterinary acupuncture III/IV	26	21
8	Veterinary acupuncture basics	36	12
9	ESAVS course Endoscopy	20	30

Table 11.2.2 Courses/Seminars organized at the establishment by outside bodies in 2009

No	Title of course/seminar	Number of participants	Total number of hours of course
1	Seminar to get the authorization for the D.O.Q –Test 2.0 examination (= Dog Owners Qualification Test)	16	12
2	VI. int. Symposium on Avian Corona- and Pneumoviruses and Complicating Pathogens	90	20
3	Basic principles of osteosynthesis	80	17
4	Surgery/Lasersurgery in Veterinary Medicine	30	20
5	ESAVS – Seminar Endoscopy	20	30
6	Organotherapy	15	10
7	Behavioural therapy 1	26	21
8	Behavioural therapy 2	36	12
9	Behavioural therapy 3	20	30
10	Behavioural therapy 4	34	12
11	Phytotherapy	53	12
12	Behavioural therapy 5	21	20
13	Behavioural therapy 6	45	12
14	Behavioural therapy 7	33	12
15	Veterinary acupuncture I/II	24	12
16	Veterinary acupuncture III/IV	36	21
17	Behavioural therapy 8	36	21
18	Behavioural therapy 9	42	12
19	Behavioural therapy 10	30	12

Table 11.2.3 Courses organized at the establishment by outside bodies in 2008

No	Title of course/seminar	Number of participants	Total number of hours of course
1	Basic principles of osteosynthesis	80	17
2	Surgery/Lasersurgery in Veterinary Medicine	30	20
3	ESAVS – Seminar Endoscopy	20	30
4	Symposium on modern haematology analyses	100	6
5	Organotherapy	18	10
6	Introduction veterinary acupuncture	54	14
7	Veterinary acupuncture I/II	78	21
8	Veterinary acupuncture III/IV	78	21
9	Phytotherapy	19	20

11.2 Comments and Suggestions

Participation in veterinary continuous education is obligatory in Germany and there is a plethora of courses and seminars offered. They cover the whole field of veterinary medicine including – for example - homeopathy, which is not offered as a subject at our Faculty. However, clearly the focus of continuous education concentrates on evidence based medicine and members of the German Veterinary Faculties have a leading role.

Veterinary continuous education is offered on a “free market” with virtually no financial support from the faculties or government.

There is no situation which could not be improved but from our point of view there are no real needs to change or modify the present system of Veterinary Continuous Education.

CHAPTER 12 POSTGRADUATE EDUCATION

12.1 Factual Information

Postgraduate education is of high importance to the Faculty. It is offered on the professional and academic track and involves virtually all professorial staff and many Diplomats.

12.1.1 Professional track

Clinical speciality training organised by the Faculty focuses on the education of candidates to participate in the centralised examinations of the colleges belonging to the European Board of Veterinary Specialisation. Based on the Diplomats being members of the teaching staff and the facilities acknowledged as training facilities by the respective European college, the clinical specialty training offered is listed in Table 12.1. It further lists the number of interns and residents employed in August 2011 and the number of trainees graduated in 2008, 2009, 2010 and until August 2011.

All trainees (interns, residents) are officially employed and paid according to present standards.

All clinical units and most institutes are also involved in providing training to become a specialist according to German regulations. Examination and acknowledgement is a matter of the state veterinary chambers, and all those Faculty members who are specialists themselves with the authorization to instruct may also act as examiners.

Table 12.1 Clinical specially training

Acronym	Full Name	clinic/institute	No. Diplomats, Assoc. Member	Training program	No. Interns (Dec. 2010)	No of Residents	No. Trainees graduated		
							2008	2009	2010
ECAR	European College of Animal Reproduction	Clinic for Obstetrics, Gynaecology and Andrology	3	approved	2			1	
ECBHM	European College of Bovine Health Management	Clinic for ruminants and pigs, Clinic for Obstetrics, Gynaecology and Andrology	1	in preparation					
ECEIM	European College of Equine Internal Medicine	Clinic for Horses	2	approved	1	1		1	
ECPHM	European College of Porcine Health Management		1	in preparation					
ECPVS	European College of Poultry Veterinary Science	Clinic for Birds, Reptiles, Amphibia and Fish	1						
ECVCP	European College of Veterinary Clinical Pathology	Clinic for Small Animals	2	approved		3		2	
ECVD	European College of Veterinary Dermatology	Clinic for Small Animals	1	approved		1			
ECVDI	European College of Veterinary Diagnostic Imaging	Clinic for Small Animals	4	approved	4	4		1	
ECVIM-CA	European College of Veterinary Internal Medicine - Companion Animals	Clinic for Small Animals	3	approved (internal medicine, cardiology)	4	5	2		
ECVN	European College of Veterinary Neurology	Clinic for Small Animals	1	approved	4	1		1	

Acronym	Full Name	clinic/institute	No. Diplomats, Assoc. Member	Training program	No. Interns (Dec. 2010)	No of Residents	No. Trainees graduated		
							2008	2009	2010
ECVP	European College of Veterinary Pathologists	Inst. Vet. Pathology	3	approved		6		2	
ECVPH	European College of Veterinary Public Health	Inst. Vet. Food Science	2						
ECVS	European College of Veterinary Surgery	Clinic for Small Animals	3	approved	4	3	1		1
ECVS	European College of Veterinary Surgery	Clinic for Horses		approved ¹	1	1			
ECZM	European College of Zoological Medicine	Clinic for Birds, Reptiles, Am- phibia and Fish	1						
EVPC	European Veterinary Parasitology College	Inst. Vet. Parasitology	3	in preparation					
ACVECC	American College of Veterinary Emergency and Critical care			alternative		1			
	Diplomat of the Royal College of Veterinary Surgeons, Zoological medicine	Clinic for Birds, Reptiles, Am- phibia and Fish	1						

¹ On special agreement with the ECVS

12.1.2 Academic track

About 46% of the students enter postgraduate academic training after having graduated to a veterinary surgeon. Within the academic track the Faculty offers graduation to a Dr. med. vet., a PhD or – to non veterinarian biology graduates – a Dr. biol. anim. (see table 12.2).

Dr. med. vet: From the students entering postgraduate academic education the vast majority enters the track to become a Dr. med .vet. This is the classical “doctorate” with the completion of a scientific project leading to writing a thesis being the main objective. Each thesis is evaluated by the supervisor and another habilitated person, the thesis has to be defended via an oral presentation and examination (3 examiners). In most of the cases examination is by members of the Faculty.

Following an evaluation by the Faculty it turned out that the average duration of this program is 3 years and on average each thesis results in 1 publication. However, there is a rather high variability. As long as there is a functional supervision guaranteed by a habilitated member of the Faculty, the experimental part of the thesis may be performed at a non Faculty institution, e.g. another research institute belonging to the Max Planck Institutes or the Faculty of Medicine.

Titles of the theses accomplished between 2008 and 2010 are given in Annex VI.

There are no and will be no fixed regulations concerning payment of students in this program. However, the major percentage of students entering this program is linked to a distinct, grant money founded research project which in general foresees payment of ½ of a regular assistant position. Some students are on fellowships provided, for example, by the University and other organisations. In the clinical area many doctorate students are paid on a part time basis which allows them to also follow their research project apart from being involved in teaching and clinical services. In general it can be expected that doctorate students participate in practical and otherwise supervised undergraduate student education.

A very special situation concerns the positions of the scientific assistants. They are termed “positions for continuing education” and the incumbents should use 30% of the official work hours for their scientific development. These positions are provided for 5 years and the incumbent is expected to graduate to a Dr. med. vet. during this period. Thus professional and scientific experience is gained in parallel.

Table 12.2: Number of doctorate students (Dr. med. vet; Dr. biol. anim.) graduating in the past years

YEAR	2008	2009	2010
Number graduates			
Dr. med. vet.	74	108	82
Dr. biol. anim.	1	1	0

PhD: In 2003 the faculties of Veterinary Medicine and Human Medicine established a common PhD program. It is embedded into the International Giessen Graduate

School for the Life Sciences (GGL) and provides an interdisciplinary, concisely structured program lasting for 3 years with core courses and lectures, electives and optionals. The minimum requirements are 135 hrs in the area of basic molecular biology, cell biology and statistics as well as an additional 165 hrs of elective courses from the disciplines of Anatomy, Cell Biology, Biochemistry and Molecular Biology, Genetics and Gene Technology, Internal Medicine, Microbiology, Virology, Parasitology, Reproductive Medicine and Biology as well as animal models and Laboratory animal handling. The program starts on October 1st every year. Students with a master degree or veterinary surgeons may apply for the selection procedure which is largely based on the past study records.

Defence of the thesis and examination is by 4 examiners, one of them in general being an external one.

Students participating in the program must show that they are adequately funded.

Between 2008 and 2010 the number of veterinary surgeons graduating from this program was 7 (total 42).

The number of veterinary surgeons enrolled in December 2010 was 11 (total 82).

12.2 Comments

The Faculty is very pleased about the still rather high number of students entering postgraduate academic training. These students significantly contribute to the scientific output of the Faculty (see Chpt 13). Interestingly most of the students entering this program are not yet fixed concerning their upcoming professional career and many graduates end up in veterinary practice and public health.

There is a tendency that those students who aim at an academic career prefer to enter the PhD program. Certainly foreign students are more interested in a PhD degree than German students.

CHAPTER 13 RESEARCH

13.1 Factual Information

13.1.1 Research activities in the Faculty

The Faculty covers a wide range of research activity within veterinary medicine, as each professor is expected to establish his own research activities. They range from the study of membrane transporters over the molecular characterization of animal pathogens or food of animal origin, the pathophysiology of reproduction and the development of innovative diagnostic and therapeutic methods.

Beside of a large number of individually granted research projects (for actual list see: <http://www.uni-giessen.de/cms/fbz/fb10/forschung/Aktuelle%20Drittmittelprojekte>), members of the Faculty are involved in different interdisciplinary joint research projects. Several groups of the Faculty participate in the special research area (Sonderforschungsbereich/Transregio) SFB/TR 79 "Materials for tissue regeneration in systematically diseased bone". Centrally organized by members of our Faculty is the research group (DFG-Forschergruppe) FOR 1369 "Sulfated steroids in reproduction". Others participate in joint projects funded by the Hessian LOEWE program (Landes-Offensive zur Entwicklung wissenschaftlich-ökonomischer Exzellenz) such as "Male infertility caused by infection and inflammation" and "Non-neuronal cholinergic systems" as well as the research focus of the Justus-Liebig-University Giessen "Man, Nutrition and Environment" (Mensch, Ernährung, Umwelt). Members the faculty are involved in different sections of the International Giessen Graduate School for the Life Sciences (GGL).

These activities are reflected by an income generated through research-based funds, amounting up to about 2,450,000 € per year (2008: 2,586,322 €, 2009: 2,306,077 €; 2010: 2,470,284 €). According to the ranking list (<http://www.dfg.de>) of the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG), the Justus-Liebig-University Giessen is the leading research university (place 1) in the field of Veterinary Medicine and Agriculture.

A list of publications for the years 2008, 2009 and 2010 is added in Annex VII.

13.1.2 Involvement of undergraduate students in research

- 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 about 30 hours of classes 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 (TAppV), subchapter 3, section 90 allows an elective placement in respect to the training in the 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 57 and 59, TAppV) 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 the year 2010, 99 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 TAppV the veterinary curriculum in Giessen offers a wide spectrum of elective courses. A small but distinct number of these courses are highly research orientated.

These courses are:

- „Actual buiatric research and evidence-based medicine“ (1 h per week, offered by the Clinics for Ruminants and Pigs for students of the 5. to 8. semester).
- „Actual infectious diseases“ (1 h per week, offered by the Institute of Hygiene and Infectious Diseases of Animals for students of the 6. to 8. semester).
- „Bacterial diseases and bacterial toxins: Identification by molecular methods“ (2 h per week, offered by the Institute of Pharmacology and Toxicology for students of the 6. to 8. semester)
- „Biomaterials and tissue engineering“ (2 h per week, offered by the Institute for Veterinary Anatomy, Histology and Embryology for students of the 3. and 4. semester).
- „Cell biological aspects of parasites – News from research“ (2 h per week, offered by the Institute of Parasitology for students of the 6. to 8. semester).
- “Colloquial small animal internal medicine - a journal club for students” (1 h per week, offered by the Clinics for Small Animals for students for students of the 6. – 8 semester).
- "Development of techniques for detection of BSE risk material in food“ (4 h, offered by the Institute of Veterinary Food Science for students of the 6. to 8. semester).
- „Emerging parasitoses" (1 h per week, offered by the Institute of Parasitology for students of the 6. to 8. semester).
- „Experimental models in pharmacology and pharmacogenetics“ (2 h per week, offered by the Institute of Pharmacology and Toxicology for students of the 6. to 8. semester).
- „From the stable into the gene lab“ (2 h per week, offered by the Clinics for Ruminants and Pigs for students of the 6. to 8. semester).
- “Introduction in veterinary forensic genetics” (1 h per week, offered by the Institute of Veterinary Pathology for students of the 7. semester).
- “Selected topic of special veterinary pathology” (1 h per week, offered by the Institute of Veterinary Pathology for students of the 8. Semester)

- „Molecular parasitological training“ (2 h per week, offered by the Institute of Parasitology for students of the 6. to 8. semester).
- „Mycobacterium avium subspecies paratuberculosis (MAP) and Morbus Crohn?“ (4 h, offered by the Institute of Veterinary Food Science for students of the 6. to 8. semester).
- “Reproductive Biology and Endocrinology (1 h per week, offered by the Clinic of Obstetrics, Gynecology and Andrology of Large and Small Animals)

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.

- d) During the clinical rotation, students also pass the Institute of Veterinary Pathology, and the Institute of Virology or, alternatively, the Institute of Hygiene and Infectious Diseases of Animals. In these institutions, they can get an insight into current paraclinical veterinary research projects. The same holds true for the rotation across the individual clinical departments, in which the students get insight into current clinical research such as clinical studies or recent doctoral thesis. Students during clinical rotations participate in general in doctoral candidate seminars or journal clubs or other scientific colloquia such as e.g. the "Wednesday Slide Conference of the American Forces Institute of Pathology (AFIP)" during their stay in the Institute of Veterinary Pathology.

13.2 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.) or Ph.D., which requires that undergraduate education has been successfully completed. Between 2008 and 2010, in total 585 students finished their study of veterinary medicine successfully. During the same 3 year period, 264 students successfully finished their post-graduate education with the degree of a Dr. med. vet. and 7 students from the faculty obtained the degree of a Ph.D. So overall, about 46 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.

13.3 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 and during the rotation period.