EAEVE – Self Evaluation Report

Facoltà di Medicina Veterinaria
Università di Pisa

November 30th – December 4th, 2009

Pisa, October 12th, 2009

UNIVERSITY OF PISA
ACADEMIC YEAR 2008/2009

Resolution nr. 206
Session of 28.09.2009

MINUTES OF THE COUNCIL MEETING OF THE FACULTY OF VETERINARY MEDICINE

Agenda nr. 5 Topic: Visit of E.A.E.V.E "European Association of Establishments for Veterinary Education" for accreditation of the Faculty. Approval of the Self Evaluation Report (S.E.R.).

OBJECT

The Dean informed the Council that today's session is open to all students and all the staff of the Faculty.

After stating that the EAEVE Visiting Team for European accreditation of the Faculty will be present in Pisa from 30th November 2009 to 4th December of this same year, the Dean emphasised that the Self Evaluation Report (SER) must be sent to the Visiting Team within the first days of October. He informed the Council that he has received over 200 proposals for modification and integration of the SER, both in response to the mailing of the first draft of the SER during the month of August and also following the debate on the contents of the SER during the Faculty Council meetings held on 13th July and 14th September 2009.

The Dean further reminded all members of the Council that they have, over the past few days, received the definitive version of the SER (which is attached to the minutes), to be discussed and approved during the deliberations forming part of today's session.

The Dean informed the Council that Prof. Stefano Romagnoli, "*Liaison Officer*" of the Faculty with the Visiting Team, cannot be present at today's Council meeting. Therefore, in order to allow him nevertheless to take part in the discussion, a video conference connection has been set up.

The Dean then illustrated the main points of the SER, with particular emphasis on the "*ratios*", which clearly highlight the strengths and weaknesses of the Faculty.

This was followed by extensive and in-depth debate, in which numerous members of the professors as well as a student representative took the floor. They underlined, in particular, the actions that need to be undertaken in order to achieve a further improvement in the quality of teaching in the Faculty, and stressed that the EAEVE visit represents an important stimulus for a detailed analysis of the situation of the Faculty.

A contribution to the debate was also made by Prof. Romagnoli, who answered many questions and provided some insights on the EAEVE evaluation system and on how a Veterinary Faculty can benefit from it.

At the end of the debate, the Dean put the Self Evaluation Report to the vote.

The Council then approved by unanimous vote the Self Evaluation Report 2009 of the Faculty of Veterinary Medicine of the University of Pisa.

Read, approved and signed.

THE SECRETARY
(D. Cerri)

THE DEAN
(V. Tellarini)

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Acknowledgements. The Faculty must sincerely thank the members of the SER panel and all the teaching, technical and administrative staff and students of the Faculty, together with the University Administration, for their cooperation and assistance in providing suggestions and all the information required to prepare this Report.
Finally, the Faculty would like to thank the Rector and the Administrative Board of the University of Pisa who supported in many ways the development of the Faculty and the visit of the EAEVE Team members.

0. INTRODUCTION AND MAIN INNOVATIONS SINCE 1999

0.1. Factual information and comments

0.1.0. The 2009 Self Evaluation Report (SER)

This second Self Evaluation Report has been prepared, after ten years from the first one to allow the EAEVE committee to re-evaluate the Pisa University Faculty of Veterinary Medicine (FVMP) for conformity with the EU requirements of training of veterinarians.

This second SER has been prepared by a panel of 19 Faculty members:

1. Vittorio Tellarini, Bachelor in Agricultural Economics, Full Professor, Dean of the Faculty until 31st October, 2009;
2. Fabrizio Preziuso, BVM, Associate Professor, President of the Veterinary Medicine Degree Course;
3. Patrizia Bandecchi, BVM, Associate Professor, Vice President of the Veterinary Medicine Degree Course;
4. Fabiola Fazi, Bachelor of Arts, Director of the Faculty Library;
5. Riccardo Mannella, Bachelor in Physics, PhD, Associate Professor, Basic Sciences;
6. Elisabetta Giannessi, BVM, Associate Professor, Veterinary Anatomy;
7. Angelo Gazzano, BVM, Assistant Professor, Veterinary Physiology;
8. Lucia Casini, BVM, Assistant Professor, Animal Production,
9. Alessandra Guidi, BVM, Associate Professor, Food Hygiene;
10. Maurizio Mazzei, BVM, PhD, Assistant Professor, Microbiology, Epidemiology and Public Health;
11. Stefania Perrucci, BVM, PhD, Dipl. EVPC, Associate Professor, Parasitology;
12. Luigi Intorre, BVM, Dipl. ECVPT, Associate Professor, Pharmacology and Toxicology;
13. Carlo Cantile, BVM, Assistant Professor, Anatomical Pathology;
14. Rosalba Tognetti, BVM, PhD, Assistant Professor, Clinical Medicine;
15. Giovanni Barsotti, BVM, PhD, Assistant Professor, Veterinary Surgery;
16. Alessandra Rota, BVM, PhD, Dipl. ECAR, Assistant Professor, Veterinary Obstetrics and Reproduction;
17. Carlo D'Ascenzi, BVM, Associate Professor, Expert in Continuing Professional Development in Veterinary Public Health and Food Safety;
18. Stefania Scarselli, fourth year student of the Veterinary Medicine Degree;
19. Tommaso Vezzosi, fifth year student of the Veterinary Medicine Degree.

This panel has been coordinated by the current Dean of the Faculty, Vittorio Tellarini, who will complete his second and last term on October 31st, 2009.

All the details included in the present SER have been supplied by the staff members of the Departments and of the Faculty as well as by several Administrative Officers of the University of Pisa.

The SER fulfils the requirements as outlined by the Standard Operating Procedure adopted in 2008. The panel offered a thorough check and presented the information requested in a clear and concise form.

The current teaching of Veterinary Medicine at the FVMP is organised according to the 1999 Ministerial Decree n. 509/1999. In 2004 a new law (Ministerial Decree n. 270/2004), was approved by our Government. This new law revises the Veterinary Medicine Curriculum for the whole country. At the FVMP, the new curriculum has been activated in the 2009-2010 academic year. Therefore, the situation reported in the current SER **is based on the 509/1999 law**. Whenever useful a comparison with the new law will be provided (anyway, see paragraph 4.2.6 for a synthetic global comparison).

Since the last visit performed in March 1999, several of the suggestions made by the former

EAEVE committee have been adopted by our Faculty. This resulted in the improvement of key teaching activities and of the overall quality of our veterinary training.

The main innovations introduced by the FVMP over the last ten years can be summarised as follows:

1. Activation of the facilities at the Department of Veterinary Clinics (2000);
2. Completion of the following facilities Department of Veterinary Clinics, Veterinary Teaching Hospital (VTH) and both the small and large animal kennels, wards and stables (winter 2009);
3. Hiring of new young teaching staff;
4. Introduction of the new course structure – Degree in Veterinary Medicine;
5. Greater commitment to Continuing Professional Development;
6. Expansion and enhancement of relations with local stakeholders;
7. Planning for the complete transfer of the FVMP to the new location in San Piero a Grado.

0.1.1. Opening of the new premises of the Department of Veterinary Clinics (2000)

On 18th March 2000, just one year after the EAEVE visit, the new premises of the Department of Veterinary Clinics (building "A", pages 23-24, Annex VI) were officially inaugurated. The new premises are located near the small village of San Piero a Grado, approximately 10 km south-west of the present FVMP, and are well connected to the city of Pisa by a new tract of freeway which allows students and staff to reach the old Veterinary School, and avoid most of the city traffic. The new buildings can be reached by car from the FVMP in less than 20 minutes. The only regular bus connection available (only a few times/day) requires commuters to first take a bus to Pisa, and from there a second bus will take them to the Department of *Veterinary Clinics*. A more frequent (approximately every 20 minutes) connection between Pisa and the town of San Piero is available, but requires students to walk for about 20 minutes from San Piero to the Department of *Veterinary Clinics*. Therefore, commuting students instead of using public transportation to move between the two places often opt to use their own cars.

The new centre houses the *Surgery and Obstetrics Sections*, while the *Section of Internal Medicine* (but the internal medicine services are offered in Pisa and in San Piero) as well as the section of Pharmaco-Toxicology will remained within the old Faculty, in Viale delle Piagge (Annex VI, pages 2-18) until the end of 2009. With the completion of the departmental structures, all the sections will finally be together again at the new premises.

The construction of the new premises has allowed the Clinical Department to expand both the teaching activity (especially the practical side) and traineeship. The clinical records at the Clinical department are fully electronic with a high improvement to the access of the data collected for services, research and teaching purposes.

The additional space has allowed us to expand the range of clinical equipment available. In particular, the Department has been equipped with diagnostic imaging devices, which allowed us improve the equine embryo-transfer service for horse breeders (started in 1990), with major spin-offs for both research and teaching.

Details on the new teaching arrangements and treatment facilities of the Department of *Veterinary Clinics* are further explained in paragraph 6.1.3.

The new building complex (University of Pisa, for this first part, paid 7 million euro) represents what is in effect the first nucleus of the new Faculty of Veterinary Medicine. The construction of a second set of buildings that include the remaining half of the Clinical Department as well as new kennels and stables for the Veterinary Teaching Hospital is due to be completed by winter 2009.

0.1.2. Completion of the Department of Veterinary Clinics, Veterinary Teaching Hospital and of the small and large animal facilities (2009)

The second stage of the project of the transfer of all the FVMP to San Piero a Grado will be completed during early winter 2009, for a global cost of around 11 million euro. Currently the Department of Veterinary Clinics, where the Teaching Hospital is located, consists of a main building (about 4,000 square meters) and other buildings (about 1,500 square meters) for small and large animal hospitalisation, laboratories and other services like exam-rooms and office space (see Annex VI, pages 22 and 25-37).

Clinical activities are concentrated on the ground floor of the main building together with the pharmacology laboratories. The first floor of the main building hosts offices for teaching and administrative staff, PhD students, a small library, a meeting room and student reading rooms.

Over the last few years the opening hours of the clinic to the public have also been extended to the afternoon.

The reasons for the delay in opening the Veterinary Teaching Hospital are addressed in paragraph 6.1.1.

0.1.3. Employment of several new young teaching staff

Since the previous Self-Evaluation Report (1997-98), the FVMP has undergone a profound change of generation. Actually this fact may not be evident if one just looks at the situation of the teaching staff along the last thirteen year (see table 0.3.a): in fact, while the global number of the Faculty members[1] has slowly grown until 2006 (when it reached the highest number: 97), and quickly decreased in the last three years, the number of the Assistant Professors, the category of the youngest teaching staff, seems to be in 2009 quite the same as in 1997: 34 versus 33.

Table 0.3.a – Composition of the teaching staff of the FVMP during the last thirteen years (at the date of the EAEVE visit)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Full professors	26	25	24	27	26	25	22	22	22	24	25	25	21
Associate professors	23	26	25	23	31	34	34	33	33	34	34	34	30
Assistant professors	33	36	38	37	34	36	37	40	41	39	34	34	34
Total teaching staff	82	87	87	87	91	95	93	95	96	97	93	93	85

[1] In the Italian University, budgeted teaching staff is divided in three different levels: Professori Ordinari (Full Professors), Professori Associati (Associate Professors), Ricercatori Universitari (Assistant Professors). The main task of Assistant Professors should be to do research, although most of them end up in being fairly busy with teaching as well. Applicants for academic staff positions (both to join for the first time as well as to be promoted) must rank first in a national search process. The rules for these search processes were changed in 1998, and nowadays they are deeply changing again. For this reason – but also because the present heavy financial difficulties of the Italian University – all the search processes at the national level for Full and Associate Professors have been blocked by Ministry for the last four years, and they are due to be started again in 2010 with new rules. During the last few years only Assistant Professors have been hired by Italian Universities.

Actually, behind these figures there are very big changes. During the last twelve years the Faculty has lost 31 members (for details see tables 0.3.b-c): 27 retired and 4 moved to other Italian Veterinary Schools.

Table 0.3.b – Retirements of teaching staff of the FVMP during the last twelve years

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Retirement of Assistant professors												2	2
Retirement of Associate professors				1			1			3		4	9
Retirement of Full professors	1	2	3	2	1	2				1		4	16
Total retirements	1	2	3	3	1	2	1			4		10	27

These losses have been compensated by the employment of one Associate professor and 33 new Assistant Professors (see table 0.3.d.) This means that almost all (29 of the 34) Assistant Professors currently at the Faculty joined the academic staff since 1998 or later. Besides 3 of the remaining 5 joined after 1995 and only two entered before 1995.

Furthermore the Faculty also implemented a politics of internal advancements (see table 0.3.e). In this way 10 Associate professors and 2 Assistant professors won a competition for posts of Full professor, while 26 Assistant professors won a competition for posts of Associate professor; 4 of these Assistant professors had been employed after 1998.

Table 0.3.c – Transfers of teaching staff of the FVMP during the last twelve years

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Transfer of Assistant professors	1			1									2
Transfer of Associate professors				1									1
Transfer of Full professors						1							1
Total transfers to other Universities	1			2		1							4

Table 0.3.d – New employment of the teaching staff of the FVMP during the last twelve years

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Employment of new Assistant professors	7	2	3	9	5	1	3	1				2	33
Employment of new Associate professors									1				1
Total new employments	7	2	3	9	5	1	3	1	1	0	0	2	34

Table 0.3.e – Advancements of the teaching staff of the FVMP during the last twelve years

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Advancement to Associate professor	3		3	10	3				2	5			26
Advancement to Full professor (1)		1	6	1					2	2			12
Total advancements	3	1	9	11	3				4	7			38

(1) Ten of these advancements have been of internal Associate professors; two have been of internal Assistant professors.

All movements occurring during these last twelve years within each teaching staff category are summarised in tables 0.3.f-h.

Table 0.3.f – Movements of Full professors at the FVMP between 1997 and 2009

a. **Full professors in 1997**	**26**
b. Advancements of internal staff to Full professor (2)	12
c. Retirements of Full professors	16
d. Transfers of Full professors	1
e. **Full professors in 2009**: e = (a+b) - (c+d)	**21**

(2) See Note 1 in table 0.3.e.

Table 0.3.g – Movements of Associate professors at the FVMP between 1997 and 2009

f. **Associate professors in 1997**	**23**
g. Employment of new Associate professors	1
h. Advancements of internal staff to Associate professor	26
i. Retirements of Associate professors	9
j. Transfers of Associate professors	1
k. **Associate professors in 2009**: k = (f+g+h) - (i+j+b) + 2 (3)	**30**

(3) See Note 1 in table 0.3.e.

Table 0.3.h – Movements of Assistant professors at the FVMP between 1997 and 2009

l. **Assistant professors in 1997**	**33**
m. Employment of new Assistant professors	33
n. Retirements of Assistant professors	2
o. Transfers of Assistant professors (4)	2
p. **Assistant professors in 2009**: p = (l+m) - (n+o+h) - 2 (5)	**34**

(4) One of these two Assistant professors had been employed in 1998.
(5) See Note 1 in table 0.3.f.

The Faculty, during the last six years, invited 28 external teachers to hold 47 short teaching classes (generally 10-20 hours) within official courses (around 100 hours per academic year). A detail is provided in paragraph 4.1.4.5.

0.1.4. The new activities teaching system of the Degree Course

In compliance with the Ministerial Decrees dated 3/11/1999 and 28/11/2000, all the Italian Faculties of Veterinary Medicine had to expand the teaching activities that form part of the Degree Course. It is important to emphasise that the new system involves a compulsory period of practical traineeship (which students have to perform prior to obtaining their degree) of at least 30 University Formative Credits[2] (UFCs), equivalent to at least 750 hours, out of a total of 300 UFCs required in order to obtain a degree. It should also be noted that the first three years of this new system had been activated from the 2002-03 academic year. Furthermore, a new Ministerial Decree dated 22/10/2004 introduced additional changes in all the Italian Degree Courses. The FVMP will adopt these new rules from the 2009-10 academic.

Details of these changes are included in paragraph 4.2.6.

Over the last ten years the faculty has appointed casual external teaching staff to improve and increase the number of lessons offered to its students. The external teaching staff works under the supervision of our full time lecturers and provide support on specific topics which are pertinent to the Degree Course. Details of these additional classes are shown in paragraph 4.1.4.5.

0.1.5. Greater commitment to Continuing Professional Development

In the last eight years the FVMP has strongly expanded its commitment to Continuing Professional Development. Both the Faculty and the Departments, alongside the traditional three Specialisation Schools and the PhD Courses, have undertaken a number of initiatives, of extremely diversified duration, in the field of post-graduate education. Furthermore the activities inside the European Colleges have been expanded and training institutions for residents of a few European Colleges have been established. At the FVMP two institutions have obtained the recognition as Training Centres for European Colleges (for details see paragraph 12.1.4):

- Department of *Veterinary Clinics*: European College of *Animal Reproduction* (subspecialty *Equine*);

[2] The Ministerial Decree n. 509/1999 introduced in the Italian University system the University Formative Credits (UFCs). The UFC is the workload necessary for a full-time student (which has an average level of academic competence) to achieve the objectives of a certain syllabus. One UFC is equivalent to 25 study hours, which includes, lessons, laboratories and self study.

- Department of *Animal Pathology, Prophylaxis and Food Hygiene*: European College of *Clinical Pathology*.

At present, thirteen University Masters[3] (of at least one year duration: 60 UFCs) have been activated at the FVMP:

1. Veterinary Oncology (secondary level);
2. Equine Reproduction (secondary level);
3. Behavioural Medicine of Companion Animals (secondary level);
4. Food Safety Control and Certification in Animal Productions (secondary level);
5. Sport Physiology and Veterinary Physiotherapy (secondary level);
6. Bee Pathology and Apidology (secondary level);
7. Clinical Biochemistry and Veterinary Laboratory Medicine (secondary level);
8. Ethology of companion animals (secondary level): this course is not intended for Veterinarians only;
9. Risk Management in Animal Production Food Chains (primary level);
10. Animal Assisted Activities and Therapies: the operator with a dog (primary level);
11. Dog Training (primary level);
12. Animal Bioethics (secondary level);
13. Animal Health Care, Quality and Hygiene of Small Ruminant Productions (secondary level).

More information about the contents of these Master degrees can be found in paragraph 12.1.3.

Furthermore, several initiatives of shorter duration have been organised once or more during the last decade. Details are reported in Chapter 11.

0.1.6. Expansion and enhancement of relations with local stakeholders

Over these last eight years the FVMP has begun a programme of expansion and enhancement of its relations with third parties that operate in the field of Veterinary Medicine.

In 2002 an agreement (see Annex I) was signed with:

- the Department of Public Health of the Regional Government of Tuscany;
- the Head Office of the Experimental Zooprophylactic Institute of the Regions of Lazio and Tuscany.

The aims of this agreement are to encourage collaboration between the two bodies on the following issues:

- theoretical-practical training;
- Continuing Professional Development;
- scientific research;
- technical-organisational problem-solving;
- provision of certain specific services linked to training and research activities.

Relations with the local (provincial and regional) Veterinary Licensing Boards have also been enhanced in recent times. During this phase, relations have focused on identifying the most suitable topics of specific interest to private veterinary practitioners, to be developed as part of Continuing Professional Development courses. From this point of view it is important to note that, following a decision of the Dean, one of the rooms at the old premises of the Faculty in Pisa has been given to the Secretariat of the local Veterinary Licensing Board.

[3] The Ministerial Decree n. 509/1999, has introduced two levels of undergraduate degrees. the first level bachelor degree (Laurea) is issued at the end of a three year course whereas the second level bachelor degree (Laurea Magistrale) is issued after two further years of study. Almost all the Italian Degree Courses have both levels Only a few Degree Courses, as ruled by the European regulations (Veterinary Medicine, Medicine and Surgery, Pharmacy, Architectures) have a single cycle of five or six years. University Masters are academic courses which can be attended only after graduation, and the are of first or second level. The secondary level Masters are available only to students with a second level bachelor degree. In the University of Pisa, Masters Courses can be organised both by Faculties and Departments. At the FVMP all the Masters are organised by the individual Departments.

Furthermore, since 2001 relations with the local and regional Breeders Associations have been tightened. On the basis of a formal agreement, the Veterinary students of the FVMP can spend practical training periods both in the offices and in the laboratories of the Associations, as well as in the farms of the associated breeders.

Besides, jointly with some important regional associations and private subjects, the FVMP participated, in 2005, to the constitution of the "*Tuscan Horse Chain*": this is an association which merges together representatives of all the different types of operators in the horse chain. Between 2005 and 2009 the Dean of the FVMP has been voted by the Assembly as Vice President of the Association.

Among the social activities carried out by the FVMP there are two initiatives that deserve a special mention.

The first one regards the first course organised at the Gorgona jail complex during the last year.

Gorgona island is adjacent to Pisa's coastline and is a marine national park. The Gorgona complex is a low level security prison where low risk inmates live in a regime of partial freedom and practice different community jobs like agriculturist, farmer, cheese-monger or baker. In this small island, bovines, sheep, horses, swine, poultry and other species are present, so it has been very useful to establish a first contact with this community in order to discuss and resolve their practical problems and to help them to acquire new knowledge in these fields.

A group of about ten teachers from the FVMP, with authorisation from the local police, participated at this interesting teaching activity (organised with the support of the Regional Agency for Development and Innovation in Agriculture), spending some of their afternoons "in jail".

The second initiative regards the Farm Therapy Project for mentally disabled people. This "*Social Agriculture*" project started in 2007 as a joint venture between the University Farm (see paragraph 6.1.6), the Department of *Veterinary Clinics*, The Department of *Psychiatric and Mental Health* and the Pisa Provincial Administration. Its objective is to aid the rehabilitation and reintroduction in the workforce of these mentally disabled people by introducing them in social-therapeutic activities involving animals within a farm context. These practical and theoretical activities are conducted in the stables of the University Farm and in the grounds of the Veterinary Clinics Department. The patients (seven in 2007 and 2008) have acquired theoretical and manual skills necessary to handle horses and donkeys, and work in a dairy farm. The direct contact with these animals has been of great therapeutically importance.

A very interesting and longstanding relation and partnership exists between all the Italian Veterinary Faculties and the Veterinary Corps of the Italian Army. In the 19th Century, the Veterinary Military Centre based near the town of Grosseto, 140 km south of Pisa (a one hour and 50-minute trip) was one of the most important Italian Centre for breeding horses and mules for military purposes. At present it is the only Centre where military horses are still reared. Besides in this Centre farriery is still taught: every year a teaching course in farriery is organised and also

students of a *curriculum* of the Degree Course in *Sciences and Technologies of Animal Productions* of the FVMP stay for a week in this Centre to attend a specific course in farriery organised just for them. Over the last ten years the Centre, apart from the traditional horse breeding, has started a very important activity of training dogs to search mines and explosives. At present these animals are utilised in all the international peace-keeping missions involving the Italian Army.

Every year, in June, the Centre organises a 2-week campus, offering to a number of students of all the Italian Faculties (between 4 and 8 students per each Faculty) the chance to attend all equine activities and do some supervised equine practice in this Centre.

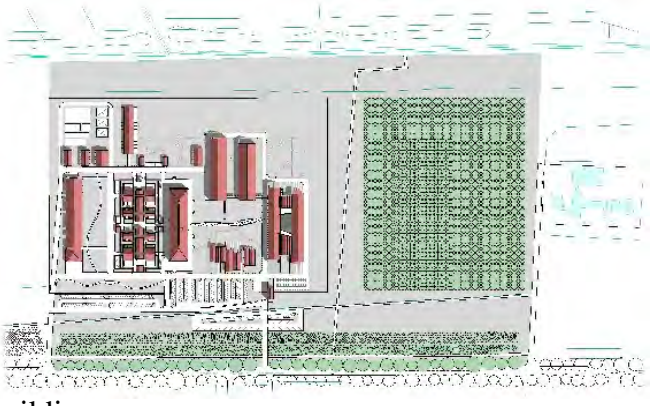
In the context of the cooperation with external subjects, and just as an example– it could be interesting to remember the recent implementation of the "*Veterinary Oncologic Registry*" (named ROVet). This Registry is organised in a cooperation among the Department of *Animal Pathology, Prophylaxis and Food Hygiene*, the Veterinary Urban Hygiene Unit of Florence of the National Health Service, the Veterinary professional Licensing Board of the Provinces of Florence and Prato, and some Tuscany practitioners. The project started in 2007 with training of practitioners; it has been promoted by the National Health Service and it is now financed by the Veterinary Licensing Board of the Provinces of Florence and Prato.

The main goal of the Registry is to gather data on animal tumours in order to evaluate epidemiological trends of tumours and to localise crucial areas which could play a role for tumours predisposing factors (pollution, presence of carcinogens, etc.).

On the other hand the Registry enables practitioners to check diagnoses on formalin fixed samples submitted, to look at the trends established by numerous cases, and encourage research colleagues to share information. Moreover, the study of tumours in veterinary medicine has an emerging importance: in fact, while some years ago the study of these diseases was focused just on veterinary medicine, veterinary research and animal welfare, nowadays it is well known that there is a link between tumours in animals and predisposing factors to tumours in humans. In fact, animals often develop tumours that are common to humans, (either same sort or same predisposing factors) in a shorter range of time. This situation is here, by mean of the Registry, exploited in order to identify risky areas for people, especially living in cities and in their proximities to better focus, sharing data with human tumour registries, on those sites with high tumour incidence.

0.1.7. Planning of the complete transfer of the FVMP to the new location in San Piero a Grado

The third stage of the project which sees the transfer of all the FVMP to San Piero a Grado requires the completion of the construction of both of the Veterinary teaching complex and the other Departmental buildings of the Faculty. The estimated global cost for this third part of the project is around 32 million euro. To partially fund this expense, the Administration of the University of Pisa has already decided to sell the buildings of the old premises of the Faculty, that are located in Viale delle Piagge in Pisa, a prestigious residential location. It is expected that the University should obtain around 12-14 million euro from the sale of these buildings.



Last year the University of Pisa tried to obtain long term financing to complete the construction of the new Faculty in San Piero. Unfortunately the attempt was unsuccessful. However, the final plans for the teaching complex have been approved both by the Faculty and the Administrative Board of the University. These include building all the necessary facilities for a modern Veterinary teaching unit: anatomy and anatomical pathology dissection rooms, labour room for management of teaching activities pertaining to large animals, small rearing facilities for animal species not available within the vicinity of the Faculty, feed production plant and processing plants. Details of the project of the new premises are shown in paragraph 6.1.12 and in Annex VI, pages 38-39.

It is expected that the management of the latter two facilities will require the involvement of subjects external to the Faculty: first and foremost, the University Farm (the *Interdepartmental Centre for Agro-Environmental Researches*) but also the Regional Natural Park of *Migliarino, San Rossore and Massaciuccoli*, since the facilities of the new Faculty of Veterinary Medicine are located within the boundaries of the territories of such Natural Park. The *San Rossore Regional Estate* as well as the local Breeders Association will also participate.

The idea is now to look again for other funds in the next few years.

0.2. Additional comments

0.2.1. Some general comments

The first part of the new premises of the Department of *Veterinary Clinics* were officially inaugurated, on 18th March 2000, just one year after the EAEVE Committee visit. The new Centre houses the Sections of Surgery and Obstetrics, while the Section of Internal Medicine as well as the Pharmaco-Toxicology one has remained within the Pisa Faculty, in Viale delle Piagge until the end of 2009. With the completion of the departmental structures and the construction of the Veterinary Teaching Hospital, all the sections will be finally together.

Moving to the new premises has allowed considerable expansion both of the teaching activity (especially the practical side) and training activity. The activation of the Veterinary Teaching Hospital will allow a much larger improvement of student practical training.

Since the previous Self Evaluation Report (1997-98) the FVMP has undergone a significant change of generation: during these twelve years the Faculty lost 31 member but these losses have been compensated by the employment of one Associate professor and 33 new Assistant Professors.

Furthermore, in compliance with Ministerial Decrees, the FVMP had to expand the teaching activities which form part of the Degree Course in Veterinary Medicine. These new rules will be adopted from the 2009-10 academic year.

In the last eight years the FVMP has strongly expanded its commitment to Continuing Professional Development. Both the Faculty and the Departments have undertaken a number of initiatives in the field of post-graduate education. Activities inside the European Colleges have been established and two institutions have obtained the recognition as Training Centres for European Colleges. Furthermore, the relations with local stakeholders have been strongly enhanced.

0.2.2. The EAEVE informal visit in 2003

In 2003 the FVMP requested an informal visit by the EAEVE Committee which visited the Faculty in 1999. On April 28th and 29th 2003 this visit was performed by the President (Dr. Francis Anthony) and the Secretary (Dr. Sidney Allman) of the 1999 Visiting Team.

After the visit, Dr Allman sent two letters (reported in the following pages) to the Rector of the University and to the Dean of the Faculty, appreciating the improvements introduced by the Faculty but, at the same time, also underlining the further efforts that were required to improve the student's *hands-on* activities.

FROM : PHONE NO. : 32 2 733 7862 MAY. 22 2003 09:29PM P1

EUROPEAN ASSOCIATION OF ESTABLISHMENTS FOR VETERINARY EDUCATION (E.A.E.V.E.)

ASSOCIATION EUROPEENNE DES ETABLISSEMENTS D'ENSEIGNEMENT VETERINAIRE (A.E.E.E.V.)

EUROPEAN SYSTEM OF EVALUATION OF VETERINARY TRAINING o SYSTEME EUROPEEN D'EVALUATION DE LA FORMATION VETERINAIRE

Università degli Studi di Pisa
Facoltà di Medicina Veterinaria
26 MAG. 2003
Prot. N° 1438
ARRIVO

Fax to 39 050 544 007

Prof Vittorio Tellarini
Il Preside
Facoltà di Medicina Veterinaria
56124 Pisa

22 May 2003

Dear Professor Tellarini:

Francis Anthony and I greatly appreciated the kind way in which we were received by you and your colleagues on our recent informal visit. We had an intensive two days, and hope that we were able to give you an adequate outside assessment of the progress made by the Faculty since the evaluaution in 1999.

This letter is to confirm the main points that we made in our presentation at the end of our visit.

We firstly explained that our visit was not part of the usual EAEVE procedures. When an evalation finds that a faculty has serious weaknesses, as was the case at Pisa, it is requested to rectify them, either to conform to EU law or to qualify for inclusion on the EAEVE list of evaluated and approved faculties, or both. When a faculty considers that it has taken the necessary corrective measures, it can then send a presentation to the EAEVE, explaining the improvements and requesting that the Education Committee re-assesses the faculty's status as regards EU law and/or the Approved List. At that point, the Education Committee may need more detail than is in the presentation, and in particular may ask the chairman of the team of experts to re-visit the faculty.

In Pisa's case, you introduced an additional step in the procedure by asking Francis Anthony and me to make an interim visit, to give you a "snapshot" of your progress in rectifying the weaknesses Our views are therefore informal and unofficial.

In our presentation, we looked firstly at Pisa's three Category 1 deficiences of 1999, listed on page 69 of the report.

1. The lack of intensive structured clinical training, in all major species and disciplines, for all students

We consider that much progress has been made, helped greatly by the new clinical facilities at San Piero a Grado. However, we made two main points:

1.1 we are not convinced that Pisa is yet fully implementing the ACVT/EAEVE concept of practical teaching, including the clinical teaching at San Piero. For the European evaluation process, the concept means "hands-on" teaching, where students themselves handle the material. It means students actually doing surgery, not simply watching staff do the work, or solely doing tidying up jobs like stitching.

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Prof T.H. FERNANDES
Universidade Tecnica de Lisboa, Faculdade de Medicina Veterinaria
Polo Universitario do Ajuda, PT-1300 [illegible] Lisboa, Portugal
Tel.: int. 351 21 3652820
Fax: int. 351 21 3652889
e-mail: filofernandes@fmv.utl.pt

Mr. S.T. ALLMAN
34 Rue Leys, B-1000 Brussels, Belgium
Tel.: int. 32 2 7368029
Fax: int. 32 2 7337862
e-mail: EAEVE@yahoo.co.uk

(Administrative Office)

Preside		Ali		Inoltrare a:	
Segr. Amm.		Copia		LUBASG	
Segr. Did. e Org.		Rispondere			
Uff. Studenti		Deliberare			
Ammin. di rete		Comunicazione			
Laborat. Central.		Affiggere			

We heard that at Pisa the teachers remain reluctant to permit too much hands-on work by students because of insurance reasons. This is not an acceptable argument, because the same problem is not met elsewhere in Europe, including at other Italian faculties. Students do surgery and other practical tasks on patients under the responsibility of the teachers, thereby covering the insurance liability. Furthermore, we noted at Pisa that owners of patients were allowed into the clinical areas. This may help discussion of the case during clinical examinations, but if clinical staff feel that the presence of owners inhibits the active use of students in hands-on work, the Faculty must introduce a rule excluding owners from rooms where clinical work is being carried out, ie the areas after the intial consultation areas. In fact, allowing owners into such areas presents its own insurance risk not necessarily covered by the Faculty's liability, for example if an owner picks up an infected needle or instrument.

1.2 San Piero still opens only for half days, yet the clinical caseload must be increased. To us, the obvious solution is to increase the opening hours (as in a private pravtice), thereby allowing for a greater throughput of cases per day, and increasing the potential hands-on work for students. The clinics should function like a veterinary practice including first and second referral cases, and involving students in the clinic's relationships with clients.

2. The number and diversity of production animal and equine cases must be greatly increased.

There is good progress here. We noted a satisfctory number of horses at San Piero for teaching and general management, with more specific work (eg AID) being taught elsewhere. The amount of horse surgery at San Piero could and should be increased, now that the Faculty has new facilities. We saw numerous possibilities for students' access to cattle. At present, there is little access to flocks of sheep and goats for teaching purposes.

3 Teaching in pig health and diseases

This area of Pisa's teaching is not yet at a satisfactory level, although a useful start has been made by the engagement of three part time swine experts, and by the proposed agreements with pig breeders willing to give practical experience to students. It will be interesting to see how these agreements work out in practice, because often the reality is that breeders are - for obvious reasons - reluctant to allow too much outside access to their animals.

Francis Anthony and I made also a number of general comments which we should confirm, even though they were not noted at the time of the 1999 visit.

Pisa lacks proper isolation facilities for infectious large and small animals. You pointed out, correctly, that it is unlikely that infectious horses or cattle would ever be referred to San Piero, but there is always the risk of an undiagnosed condition being unexpectedly discovered on site.

Pisa also lacks hospitalisation facilities for companion animals, and the appropriate accommodation for staff/students on overnight duty. Together with this weakness is the lack of a 24 hour clinical service.

Inclusion on the Approved List requires the above facilities. Unless suitable temporary arrangements are made, Pisa will not be able to meet the Approved List criteria until the next stage of the San Piero project is completed, probably in about four years time.

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FROM : PHONE NO. : 32 2 733 7862 MAY. 22 2003 09:30PM P3

In our short visit we did not have time or opportunity to discuss a general criticism made by the team in 1999 - the distorted balance between theoretical and practical teaching. From what we were told by the students on this occasion, Francis Anthony and I gained the impression that the teaching culture at Pisa is changing, away from traditional didactic lecturing to more modern and innovative methods of teaching. However, we also gained the impression that some teachers are still uncomfortable about changing the ways in which they have taught students for a large number of years. We suggest that they be encouraged and helped to change by arranging teacher training courses for them. A further stimulus for change would be greater use of student assessment of teachers and courses, with open discussion of the outcomes.

On all of the above points, we think that the general message should be that meeting the criteria of EU law and of the Approved List is the responsibility of everyone at the Pisa Faculty. Its future status and credibilty is the responsibilty of everyone there, not simply the responsibility of the Dean and the Rector.

We also noted some very favourable general points. The atmosphere at the Faculty has changed. In 1999 there was not much of an air of optimism. There is now. This has perhaps been encouraged by the fact that, after many years of uncertainty, the new premises are becoming a reality.

We are glad to see that some of our 1999 criticisms of the San Piero project have been acted upon. Notably, the Faculty has recognised that students are not second class citizens but deserve space for their own needs, eg studying. We very much hope that even more notice will be taken of students' needs in the next stages of the new campus. After all, if it was not for the students, the staff would be unemployed!

The increase in the number of new young teachers is impressive. The University and the Faculty are to be congratulated for this improvement.

The University and Faculty deserve congratulations also for the rapid and effective way in which use has been made of space vacated on the central Pisa site. Too often when a new campus is planned, faculties allow existing premises to

Finally, Francis Anthony and I gave the University and the Faculty a [illegible] warning. There is considerable danger that because of the inevitable delays in the building programme, you will find yourselves with two veterinary faculties - the old site and the new site. The risk is that they grow steadily apart, and fail to share teaching and research activities as fully as they should. The Faculty as you know it today loses its corporate identity.

Experience of similar situations elsewhere is that the San Piero facility could become an independent kingdom, foscussing mainly on providing a clinical service, answerable only to itself. We suggest that the Rector, the Dean and staff of all levels at the San Piero and city sites should make conscious efforts over the next several years - which could be difficult ones for professional and academic communications - to ensure that the Faculty remains a single cohesive unit.

We hope that the above comments cover adequately for you the issues we discussed at various points in our visit. We would, of course, be pleased to explain any of them more fully. The EAEVE looks forward to continued contact with the Facullly, especially regarding your eventual presentation relating to the Approved List. Thank you again for your kind reception.

I am copying this letter to the Rector, Prof Pasquali, and enclose for your information a copy of my letter to him, sent by mail.

With kind regards

Sydney Ellis Allman

FROM : PHONE NO. : 32 2 733 7862 MAY. 22 2003 09:31PM P4

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Prof Marco Pasquali
Rettore dell'Università di Pisa
Lungarno Pacinotti 43
56124 Pisa

22 May 2003

Dear Rector

Re: the Faculty of Veterinary Medicine of Pisa

As you may know, Dr Francis Anthony and I made an informal visit to the Faculty at the end of April. Dr Anthony is the Chairman of the team of experts who evaluated the Faculty in March 1999. and I was the EAEVE coordinator for the evaluation.

Our recent visit was to provide the Faculty with an outside view on the progress made there in rectifying the major deficiences noted in 1999. Those are deficiences which could prevent the Faculty from providing training of a standard which meets the requirements of EU law and of the EAEVE for inclusion on its Approved List of faculties.

You were away at the time of our visit, but Dr Anthony and I had a very useful meeting with Prof Sassu and Dr Bianchi, who kindly explained the present and proposed building programme for your Veterinary Faculty.

I enclose a copy of our letter to the Dean, Prof Tellarini, confirming points that we made at the end of our visit. You will see that in general we feel that the Faculty has made good progress since 1999. The atmosphere within the Faculty is noticeably different; there is an air of optimism about the future. Even though incomplete, the San Piero facilities are good and effective. The University has invested money sensibly and effectively in refurbishing parts of the old city site.
Continued progress depends largely, but not entirely, on completion of the new buildings at San Piero. There is little that can be done about the building timescale, but staff can address now some of the other weaknesses that we have noted, especially the hands-on quality of the teaching.

Our fear of the development of two separate faculties because of the split sites is a genuine one, especially as it is broadly a split between basic and applied sciences. We hope that the Rectorate can find ways to ensure that the Faculty keeps its sense of corporate identity over the next several year, pending completion of the whole San Piero campus.

The EAEVE appreciates the confidence that the University has shown so far in the future of the Veterinary Faculty, and for its continued confidence in the shape of the proposed new campus.

We look forward to continued contact with the Faculty over the next few years of its development. The Association is available for any further advice and help that the University and the Faculty may need.

Please thank on our behalf Prof Sassu and Dr Bianchi for their interest and help.

Yours sincerely

G. T. Allman

President: Prof. T.H. FERNANDES
Universidade Tecnica de Lisboa, Faculdade de Medicina Veterinaria
Polo Universitario do Ajuda, PT-1300 477 Lisboa, Portugal
Tel.: int. 351 21 3652820
Fax: int. 351 21 3652889
e-mail: titofernandes@fmv.utl.pt

Coordinator: (Administrative Office) Dr. D.M. ALLMAN
34 Rue Leys, B-1000 Brussels, Belgium
Tel.: int. 32 2 7368029
Fax: int. 32 2 7337862
e-mail: EAEVE@yahoo.co.uk

0.3. Suggestions

0.4. Annotations

Chapter 1 – THE OBJECTIVES OF THE FACULTY OF VETERINARY MEDICINE OF PISA

1.1. Factual information and comments

1.1.1. Mission of the Faculty of Veterinary Medicine of Pisa: Veterinary Medicine Degree Course

The main aim of the Faculty of Veterinary Medicine of Pisa (FVMP) is to provide and properly run the Veterinary Medicine Degree Course. Another important objective of the Faculty, which can be considered collateral to the previous one, is to provide post-graduate education through specialisation courses, training for European Colleges, Masters, and Continuing Professional Development Programmes in Veterinary Medicine for professionals.

As already said in the Introduction (see paragraph 0.3), the Italian Ministry of Education, Research and University (MIUR) has recently (in 1999 and again in 2004) activated new rules for all the University Degrees (Ministerial Decrees n. 509/1999 and n. 270/2004).

Currently all the **scientific areas of disciplines** have been rearranged into *basic*, *professional* and *interrelated* or *integrative* disciplines (see Chapter 4 for details) which are briefly summarised below. Basic knowledge must be provided on:

- fundamentals of veterinary activities;
- structure, functions, reproduction and veterinary hygiene;
- animal behaviour and welfare;
- causes, nature, pathogenesis and development, effects, diagnosis and treatment of animal diseases, in particular those that can be transmitted to man;
- preventive medicine;
- hygiene and technologies concerning production, transformation and marketing of food of animal origin for human consumption;
- clinical and therapeutical practical experience;
- laws and regulations concerning the above-indicated subjects.

A clear set of teaching and learning objectives are given for each area and course year as shown on the web site of the Faculty: *http://www.vet.unipi.it*

Holding a Veterinary Medicine Degree enables the holder to sit for a State Board Examination. Those graduates passing the State Examination can be registered within the local Licensing Board of professional Veterinarians and then practice as Doctors in Veterinary Medicine all over Italy (see paragraph 5.1.7). The examining Committee for the State Board Examination is formed by professors of the Faculty together with Veterinarians employed in public or private services.

1.1.1.1. Qualifying training objectives of the Veterinary Medicine Degree Course

The graduates in the Veterinary Medicine Degree Course are endowed with scientific bases and technical practical training necessary to practice the veterinary profession and possess the methodological and cultural bases necessary to engage in Continuing Professional Development, as well as the methodological bases of scientific research.

Veterinary Medicine graduates should possess:

- the basic theoretical knowledge of basic sciences in view of their subsequent professional application;
- skills in critically detecting and evaluating data relating to the state of health, well-being and illness of the individual animal as well as in livestock, interpreting this data through the basic scientific knowledge: physiopathology, organ and apparatus pathology, performing medical and surgical procedures to remove the state of illness;
- knowledge on epidemiology, diagnosis, prophylaxis, therapy and control of animal infectious and parasitic diseases;

- skill in critically detecting and evaluating the state of health, hygiene, quality and possible alterations of food of animal origin which can impair human health. Graduates should also know the production and processing of foodstuffs of animal origin;
- knowledge on animal nutrition, feeding and breeding technologies;
- knowledge on management of reproduction in different species of domestic animals, and basic skills in the application of artificial insemination in cows and in mares;
- skills in critically detecting and evaluating the impact of animal breeding on the environment.

1.1.1.2. Possible career perspectives of the graduate in Veterinary Medicine

The graduates in Veterinary Medicine deal with health care of animals and humans who come into contact with animals and eat food of animal origin. In addition, veterinarians contribute to environmental protection. Beside practicing independently, veterinarians are employed in the national health service, public and private industry (animal husbandry, pharmaceutics, animal feeds), transformation of food of animal origin, as well as in research bodies.

1.1.1.3. Overview of the knowledge and skills that characterise the training profile of the Veterinary Surgeon

The training activities of the subjects relating to the *basic training* include an in-depth study of Chemistry, Biochemistry, Anatomy and Physiology essential for understanding biological phenomena. The graduates of the Veterinary Medicine Degree Course should learn:

- the physical methods of specific interest to study the biological systems, the instruments to formulate elementary mathematical models and computer applications to numerically solve mathematical problems;
- inorganic and organic Chemistry with particular mention to macromolecules of biological interest, biochemical concepts of the structural organisation of cells and metabolic processes in animals of veterinary interest; graduates should also possess general notions on principles and methods of chemical and biochemical analysis aimed at monitoring environmental pollution;

- the fundamentals of plant and animal biology and molecular biology;
- macroscopic, microscopic and ultrastructural notions of the animal organism;
- the fundamentals of veterinary cellular and general physiology.

The training activities in *subjects characterizing* the Veterinary Medicine Degree Course should be aimed at a basic veterinary medical training; the graduates should be able to operate in the fields of pathology, clinical medicine, reproduction and animal disease prevention and to control hygiene and quality of food of animal origin.

In particular, the graduates in Veterinary Medicine should learn:

- the organisation of the different systems of domestic species with the main notions of topographic anatomy and the structural organisation of the animal organism, also comparatively;
- the functioning of animal organs and systems, also comparatively, and the dynamic integration of the different functions; graduates should also have understood the general fundamentals of animal behaviour and the factors influencing their well-being;
- the etiopathogenetic mechanisms contributing to the symptoms of pathological processes and their interrelations with the various organ systems, anatomical pathology and histology of the organ systems and the etiology of the most important diseases of domestic animals, microscopy techniques, methodology and morpho-physiopathological diagnostics;

- main knowledge on epidemiology, etiology, transmission modes, prophylaxis, control and diagnosis of infectious and parasitic diseases of domestic animals, also comparatively, and the fundamentals of hygiene and veterinary health care and veterinary police regulations;
- the mechanisms of action and pharmacokinetics of the metabolism of drugs used in animals of veterinary interest and the legislative aspects connected with their use, as well as with the toxic agents most frequently used in agriculture and animal husbandry;
- the fundamentals of ethnology, genetics applied to the improvement of animal species and breeding technologies. The student should also acquire the basic concepts of economics and animal husbandry productions;
- the general concepts for chemical and biological evaluation of animal feeds and the factors conditioning their digestibility and utilisation. Students should acquire the concepts of feed ration, nutritional needs and the administrative rules regulating the preparation and the trading of all nutritional substances for domestic animals;
- clinical methods of direct and collateral semeiological investigations. Students should demonstrate an excellent knowledge of organ and apparatus diseases, including dysmetabolic, autoimmune and deficiency-related diseases. They should be able to identify the clinical signs in order to achieve a diagnosis and adopt a suitable therapy;
- students should know the main techniques of general and local anaesthesia and the main surgical techniques for the therapy of various diseases in the different domestic species; the student should also learn the fundamentals of physics for diagnostic imaging;
- the fundamentals of reproductive physiopathology in males and females of the different domestic species, also from a comparative point of view;
- methods and objectives of ante and post-mortem inspection of different animal species for slaughter, the fundamentals of hygiene and food technologies applied to the various production stages and trading of foodstuffs of animal origin and the criteria, methodologies and techniques of tests aimed at evaluating quality and health status, and preservation of the above-mentioned foodstuffs;
- the main bases of health and quality certifications necessary for the management of food productions, in order to assess compliance with the law in force and the necessary protection of public health. Great importance will be given the knowledge of health and commercial regulations, at both national and European Union level, with basic notions of public law. Students should know the problems affecting the environment as a result of slaughterhouses, transformation plants and the food industry.

The training activities within *interrelated and integrative disciplinary areas* have as their goal to allow students an in-depth study of issues concerning the man-animal relation, the features of animal hospitalisation, breeding management, marketing, the economic management of breeding, genetic and reproductive biotechnology, molecular biology.

The activities concerning the preparation for the final test should allow students to discuss a thesis in order to prove the professional skills acquired. The knowledge of one of the EU languages is also required, according to the national indications of Academic Regulations.

The training activities in the linguistic and in the information technology fields are useful in order to allow the graduates to achieve the needed skills and start a professional career, including the possibilities of working within the European Union; students should therefore possess the knowledge of European Union health systems, the concept and methodology of a Continuing Professional Development and the development of specific skills in the technological field; these

training activities also enable students to obtain UFCs (University Formative Credits) for the practical apprenticeship necessary to be admitted to the State Board examination.

1.1.2. Mission of the FVMP: research

Another very important objective of the Faculty is research. Its major task is to develop both basic and applied knowledge in the field of Veterinary Sciences and, at the same time, provide teachers, PhD students, other research fellows as well as students of its Degree Courses with an appropriate environment to expand their research capabilities. The FVMP has many research and cooperation agreements with Public and Private Institutions; it also provides third-party services which provide benefits to the teaching activity.

A more detailed overview of the research activities of the Departments connected with the FVMP is showed in Chapter 13.

1.1.3. Mission of the FVMP: Post Degree Education

Even if in these last ten years the FVMP has been involved in its traditional activities in Postgraduate Education (PhD Courses and Specialisation Schools), in 2002 the Faculty increased its activity by organizing University Master Courses, formally introduced for the first time in the Italian University by the 1999 Decree.

1.1.3.1. Postgraduate Specialisation Schools

The FVMP has been organizing the following three postgraduate Specialisation Schools for several decades:

1. *Small Animals Pathology and Clinics*: this 3-year course was started in 1964, and accepts a maximum of 10 students every year;
2. *Animal Health, Breeding and Husbandry*: this 3-year course was started in 1987, and accepts a maximum of 15 students every year;
3. *Inspection of Food of Animal Origin*: this 3-year course was started in 1987, and accepts a maximum of 20 students every year.

More information and a more detailed explanation of the contents of these Specialisation Schools can be found in Chapter 12.

1.1.3.2. PhD Courses

At the FVMP the following three different PhD Courses are activated:

1. *Veterinary Medicine*;
2. *Animal Husbandry, Health and Hygiene in Countries with Mediterranean Climate*;
3. *Inspective and Sanitary Concerns in Animal Productions in Exchanges Between the European Union and the People's Republic of China*;

Furthermore, the FVMP participates in other two PhD Courses activated in Faculties of Veterinary Medicine of other Universities:

1. *Epidemiology and Control of Zoonoses*, Administrative headquarter: University of Bologna;
2. *Experimental and Applied Equine Physiology*, Administrative headquarter: University of Messina.

More information and a more detailed explanation of the contents of these PhD Courses can be found in Chapter 12.

1.1.3.3. European Colleges

The FVMP functions as Training Institution for the following European Colleges:

1. *European College of Animal Reproduction, subspecialty Equine* (Programme Director: prof. Francesco Camillo). In November 2008 the first two trainees were approved as ECAR residents;
2. *European College of Veterinary Pathology* (Programme Director: prof. Alessandro Poli); in 2008 the first five trainees have been approved as ECVP resident.

Furthermore, in the 2002-03 and 2003-04 academic years, a Faculty Dipl. ECVIM-CA, Internal Medicine, supported the residency programme on European College of Veterinary Internal Medicine for Cardiology for the subspecialty of Internal Medicine as supervisor of one resident, whose site was the Veterinary Clinic "*Gran Sasso*" in Milan.

More information and a more detailed explanation of the contents of these activities can be found in paragraph 12.1.4.

1.1.3.4. Master Courses at the FVMP

As already mentioned in the Introduction (see paragraph 0.5), the following thirteen Master Courses (of at least one year duration: 60 UFCs) have been activated at the FVMP.

- *Veterinary Oncology* (secondary level);
- *Equine Reproduction* (secondary level);
- *Pet Behavioural Medicine* (secondary level);
- *Control and Certification of Food Safety in Animal Productions* (secondary level);
- *Sport Physiology and Veterinary Physiotherapy* (secondary level);
- *Bees Pathology* (secondary level);
- *Clinical Biochemistry and Veterinary Laboratory Medicine* (secondary level);
- *Ethology of Pets* (secondary level): this course is not intended for Veterinarians only;
- *Risk Management in Animal Production Food Chains* (primary level);
- *Pet Therapy Activities and Therapies aided by animals: the operator with a dog* (primary level);
- *Dog Training* (primary level);
- *Animal Health Care, Quality and Hygiene of Small Ruminant Productions* (secondary level);
- *Animal Bioethics* (secondary level).

More information and a more detailed explanation of the contents of these PhD Courses can be found in Chapter 12.

1.1.3.5. Continuing Professional Development events

Over the last seven years a growing number of events of Continuing Professional Development (CPD) has been organised by the FVMP on a variety of different topics of interest for practicing veterinarians. All CPD courses are open to veterinary students at no cost. The Faculty has also given hospitality to initiatives organised by third parties: scientific veterinary associations, public subjects, private veterinary associations, etc. During this period the FVMP regained its role as the point of reference for scientific and professional development of veterinarians in Tuscany.

A detail of the CPD events organised by the FVMP is shown in Chapter 11.

1.1.4. Secondary aims of the FVMP

In comparison with the other Faculties of the University of Pisa, the FVMP has always had only two other Degree Courses in addition to the Veterinary Medicine Degree Course. One of these two

Degree Courses ("*Canine Breeding Techniques and Training*") was initially activated in 2004-05. This Degree Course will probably cease from 2009-10 because of administrative problems.

Until 2003-04 the FVMP has been the smallest Faculty of the University of Pisa. This was a disadvantage because the funding and the staffing have traditionally proportional to the number of students enrolled, which means we are penalised when it comes to funding and staffing. In Italy, the fact that a veterinary student cost much more than a student from another faculty (e.g. Arts, Law, etc.) is not considered when it comes to funding.

In an attempt to reduce these difficulties, and to stop the decrease of its relative importance inside the University of Pisa (and, consequentially, to obtain a larger amount of resources), the FVMP increased the number of registered students by expanding the number of Degree Courses offered. This action was successful: the total of students registered at the FVMP has increased from 1,183 in the 2001-02 to 1,631 in 2008-09. An important consequence of this increase in the number of students in other degree courses, has been the possibility to begin to reduce the limited number for the Veterinary Medicine Degree Course.

1.1.4.1. The Degree Courses in "*Sciences and Technologies of Animal Productions*" (primary and secondary level Degrees)

Since 1968 the FVMP has been offered a Degree Course in "*Sciences and Technologies of Animal Productions*" (STAP). Admission is open to all students with a high school diploma.

The curriculum of this Degree has changed several times. At present, in accordance with the recent regulations (Ministerial Decrees n. 509/1999 and n. 270/2004), it is organised as a double level degree: a primary 3-year degree and a secondary 2-year degree, with a greater level of specialisation.

Graduates in STAP should operate in all aspects of animal production, especially in the technical, hygienic and economical aspects of farm management as well as in the industries of production of feeds and of transformations of animal products. They can also operate in laboratories.

The Degree Course in STAP provides basic knowledge on:

- mathematics, statistics, informatics, chemistry, biochemistry;
- structure, functions, reproduction and hygiene of healthy animals.

Furthermore, it provides professional competences in:

- animal management and breeding;
- feed production and animal nutrition;
- hygiene and technologies concerning production, transformation and marketing of foods of animal origin destined for human consumption;
- law and regulations concerning the above-indicated subjects.

1.1.4.2. The Degree Course in "*Canine Breeding Techniques and Training*" (primary level degree)

Recently (in the 2004-05 academic year), the Faculty of Veterinary Medicine activated a new primary level Degree Course (3-years) in "*Canine Breeding Techniques and Training*". Admission is open to all students with a high school diploma. Such a Course represents the answer to a strong demand form the market for a dog trainer/breeder professional.

Unfortunately, because of a restrictive interpretation of the 2004 Decree, this Degree Course will probably not be offered in the future.

During the propaedeutical first year, students obtain the necessary bases to understand the subsequent more professionalising subjects by studying Mathematics, Physics and Chemistry. The formative path begins during the second year mainly with the study of the management of the dog in its various aspects: genetic improvement, feed, ethology. The education of students is completed in the third year, when they learn how to manage the economical and organisational aspects of all activities related to canine breeding.

Compulsory practical extramural stages are part of the teaching requirements and form the basis for the final project work.

The professional opportunities for these graduates are mainly found in dog breeding kennels (both as entrepreneurs and as an employees), in dog training structures, in dog pounds and in the pet food industry.

1.1.4.3. The Degree Course in "*Biosafety and Quality of Food*" (secondary level degree)

In the 2009-10 academic year the FVMP will be involved, together with the Faculty of Agricultural Sciences of the same University, in the activation of a new 2-year secondary level degree in "*Biosafety and Quality of Food*". The graduate in this Degree Course will have the theoretical and practical knowledge to be able to operate in all the steps of food transformation and conservation. She/he will be able to assess whether or not the product composition is within the specifications of the national and EU laws. Furthermore, this graduate will have specific knowledge about biotechnological transformation processes of food products and about products traceability along the food chain.

1.1.4.4. The Professional Teaching Module "*Expert in Animal Welfare*"

The Professional Teaching Module (PTM) "*Expert in Animal Welfare*" (EAW) was activated within the framework of the Veterinary Medicine Degree Course and has been active from September 2005 until October 2006. The module was requested and funded by the Regional Government of Tuscany, and it was co-organised by the Administrative Section of the Faculty of Veterinary Medicine in conjunction with a professional training company. The teaching responsibility was assigned to a Faculty teacher of Internal Medicine at the FVMP.

In November 2005 twelve senior veterinary medical students registered for this course. The course included classroom lectures, seminars, laboratory and desk work, clinical work inside and outside the Faculty facilities and self-learning computer-assisted work. The total work for the students was calculated to be equivalent to 353 hours of classroom, plus 237 hours of practical training.

Also, during the period February-May 2006 five seminars were organised with high qualified speakers dealing on different topics in small animal internal medicine. The participants were able to attend two national conferences for Continuing Professional Development organised by a small animal veterinary practitioners' association and to visit a large private facility for small animal clinic and laboratory located in Padua. From June, the students went through a number of practical training sessions on topics like: Animal Husbandry, Clinical Surgery and Obstetric, Clinical Medicine, Preventive Medicine and Avian Pathology.

Between October 2006 and March 2007 a further series of five seminars was organised with highly qualified speakers dealing with different topics in canine and feline internal medicine. All the senior veterinary medical students who registered for this course were able to graduate between October 2006 and September 2007 and to obtain the Diploma of "*Expert in Animal Welfare*" (formally recognised by the Regional Government) between December 2006 and September 2007. Additional information about this PTM can be retrieved at the address:

http://wwwold.vet.unipi.it/new/didattica/mv/esperto_ben_anim_0506.htm

1.1.5. The international relations of the FVMP

Over the last ten years the FVMP has maintained and improved its international relations. The FVMP keeps relations with the Erasmus-Socrates and the Erasmus-Mundus Programmes as well as with the following Universities:

1. University of Rio Grande do Sul (Brasil);
2. University of Montreal (Canada);
3. University of Limoges (France);
4. University of Lyons (France);
5. University of Tehran (Iran);
6. University of Jerusalem (Israeli);
7. University of Guangxi (People's Republic of China);
8. University of Xining (People's Republic of China);
9. University of Lublin (Poland);
10. Universities of Chungnam and Daejeon (South Korea);
11. University of Ankara (Turkey).
12. University of Afyon Kocatepe (Turkey);
13. University of Sheffield (United Kingdom);
14. Cornell University (USA);
15. Ljubljana (Slovenia).

Some details about each of these Programmes and these relations will be shown in the following paragraphs.

1.1.5.1. The Erasmus-Socrates Programme at the FVMP

The FVMP activated its first Erasmus Programme in 1992. At the beginning this was a joint programme together with the Faculty of Agricultural Sciences of the University of Pisa, and the partner Universities were five: Cordoba and Valencia in Spain; Nantes and Rennes in France; Gottingen in Germany.

When the Socrates Programme was launched, in 1996, the veterinarian network lost the Faculty of Gottingen but, during the next years, gained seven other European Veterinary Faculties.

Students Mobility

In table 1.1.5.1.a the incoming and outgoing flows of Socrates students[4] at the FVMP are summarised, whilst in the following two the details for each partner University are shown.

Table 1.1.5.1.a – Outgoing and incoming flows of Socrates students at the FVMP: total values

	Ac. year 1998-99	Ac. year 1999-00	Ac. year 2000-01	Ac. year 2001-02	Ac. year 2002-03	Ac. year 2003-04	Ac. year 2004-05	Ac. year 2005-06	Ac. year 2006-07	Ac. year 2007-08	Ac. year 2008-09	Total 11 years
Total outgoing students	7	10	9	11	2	11	13	11	2	1	3	80
Total outgoing scholarships	9	9	9	11	12	12	18	18	17	17	16	148
Use rate of outgoing scholarships	77.8%	111%	100%	100%	16.7%	91.7%	72.2%	61.1%	11.8%	5.9%	18.8%	54.1%
Total months outgoing	63	90	81	99	18	99	107	94	18	9	17	695
Total months/outgoing student	9.0	9.0	9.0	9.0	9.0	9.0	8.2	8.6	9.0	9.0	5.7	8.7
Total incoming students	5	3	8	4	11	12	8	7	10	12	12	92
Total incoming scholarships	9	9	9	11	12	12	18	18	19	21	19	157
Use rate of incoming scholarships	55.6%	33.3%	88.9%	36.4%	91.7%	100%	44.4%	38.9%	52.6%	57.1%	63.2%	58.6%
Total months incoming	39	27	60	36	99	112	74	63	90	104	102	806
Total months/incoming student	7.8	9.0	7.5	9.0	9.0	9.3	9.3	9.0	9.0	8.7	8.5	8.8

From this data it is possible to make the following considerations:

1. the number of the outgoing students has strongly decreased during the last few years;
2. the FVMP of Pisa uses, a heavily decreasing percentage of the outgoing scholarships assigned: 54% in the average of the last eleven years, but less, and often much less, than 20% in the last three years;
3. on the contrary, the number of the incoming students has quickly reached a good level; even if the use rate of the incoming scholarship appears to be rather variable in the years, the trend is certainly steady;

[4] It is important to notice that this data refers to all the Faculty courses, and not just to the degree in Veterinary Medicine. These latter students represent 64% of the total number of outgoing students, whereas incoming students from foreign Veterinary Medicine Courses represent 95%.

4. the FVMP has globally received a greater number of students than the number sent abroad;
5. half of the University partners are Spanish;
6. Spanish Faculties are widely preferred by the outgoing students.

It is clear that the most useful "variable" in explaining this situation must be searched in the low interest of the Italian students in studying foreign languages. Actually the level of the learning of the languages in the Secondary Schools is very low, and it is basically impossible to reach a good level during the University studies. For this reason the students of the FVMP prefer to go to Spain.

Another relevant explanation must be searched in the lack of stimulus to go abroad. Furthermore, even if the FVMP has been active in the Erasmus-Socrates Programme for the last 17 years, outgoing students are burdened with the same bureaucratic difficulties: the validation of every examination passed abroad is approved by the Council of Degree Course only after the verification by the specific teacher. Furthermore no specific incentive is recognised to outgoing students. A certain number of Italian teachers do not really believe that students going abroad can learn enough of their own subjects. The idea that students want to go abroad just because in other Countries the exam pass rate is much higher than in Italy is actually deeply rooted among some senior members of the teaching staff.

Even if students have big difficulties in leaving Pisa, it is interesting to notice that many of them decide to remain abroad for a period much longer than the duration of the Socrates scholarship. Very often these students, after graduation, decide to look for a job abroad. Unfortunately the FVMP loses contact with them.

Table 1.1.5.1.b – Outgoing flows of Socrates students at the FVMP: flows per University of destination

	Ac. year 1998-99	Ac. year 1999-00	Ac. year 2000-01	Ac. year 2001-02	Ac. year 2002-03	Ac. year 2003-04	Ac. year 2004-05	Ac. year 2005-06	Ac. year 2006-07	Ac. year 2007-08	Ac. year 2008-09	Total 11 years
1. Nantes-Rennes (France)												
- outgoing students	1	2	1	1		2				1		8
- months outgoing	9	18	9	9		18				9		72
- months/outgoing student	9	9	9	9		9				9		9,0
2. Barcelona (Spain)												
- outgoing students		4	4	4		2	2	2	2			20
- months outgoing		36	36	36		18	18	13	18			175
- months/outgoing student		9	9	9		9	9	6,5	9			8,8
3. Cordoba (Spain)												
- outgoing students	6	4	4	4	2	4	5	5				34
- months outgoing	54	36	36	36	18	36	45	45				306
- months/outgoing student	9	9	9	9	9	9	9	9				9,0
4. Murcia (Spain)												
- outgoing students				2			2	2			2	8
- months outgoing				18			8	18			8	52
- months/outgoing student				9			4	9			4	6,5
5. Leon (Spain)												
- outgoing students							2					2
- months outgoing							18					18
- months/outgoing student							9					9,0
6. Valencia (Spain)												
- outgoing students						2	1	1			1	5
- months outgoing						18	9	9			9	45
- months/outgoing student						9	9	9			9	9,0
7. Wageningen (The Netherlands)												
- outgoing students						1						1
- months outgoing						9						9
- months/outgoing student						9						9,0

	Ac. year 1998-99	Ac. year 1999-00	Ac. year 2000-01	Ac. year 2001-02	Ac. year 2002-03	Ac. year 2003-04	Ac. year 2004-05	Ac. year 2005-06	Ac. year 2006-07	Ac. year 2007-08	Ac. year 2008-09	Total 11 years
8. Evora (Portugal)												
- outgoing students												
- months outgoing												
- months/outgoing student												
9. Lublin (Poland)												
- outgoing students							1	1				2
- months outgoing							9	9				18
- months/outgoing student							9	9				9,0
10. Afyonkarahisar (Turkey)												
- outgoing students												
- months outgoing												
- months/outgoing student												

Even if the number of the incoming students continues to be steady (perhaps at the maximum acceptable level), it must be underlined that these students, at least at the beginning, have some difficulties in comprehending the different Italian way of teaching (and of studying) and of passing examinations. Sometimes, some of them do not make all the necessary efforts to adequately learn the Italian language. For this reason they have difficulties both in attending lessons and in sitting the exams (which, in Italy, are mainly oral). This is another element which pushes some Italian teachers to treat foreign students in a different way than the Italian ones.

Table 1.1.5.1.c – Incoming flows of Socrates students at the FVMP: flows per University of provenience

	Ac. year 1998-99	Ac. year 1999-00	Ac. year 2000-01	Ac. year 2001-02	Ac. year 2002-03	Ac. year 2003-04	Ac. year 2004-05	Ac. year 2005-06	Ac. year 2006-07	Ac. year 2007-08	Ac. year 2008-09	Total 11 years
1. Nantes-Rennes (France)												
- incoming students			2									2
- months incoming			6									6
- months/incoming student			3									3,0
2. Barcelona (Spain)												
- incoming students	3		2		2	2				1	1	11
- months incoming	21		18		18	18				9	9	93
- months/incoming student	7		9		9	9				9	9	8,5
3. Cordoba (Spain)												
- incoming students	2	3	4	2	3	4	4	4	3	3	3	35
- months incoming	18	27	36	18	27	36	36	36	27	27	27	315
- months/incoming student	9	9	9	9	9	9	9	9	9	9	9	9,0
4. Murcia (Spain)												
- incoming students				2	2	2	2		2	2	2	14
- months incoming				18	18	18	18		18	18	18	126
- months/incoming student				9	9	9	9		9	9	9	9,0
5. Leon (Spain)												
- incoming students					4	4	2	1	2	2	3	18
- months incoming					36	40	20	9	18	18	27	168
- months/incoming student					9	10	10	9	9	9	9	9,3
6. Valencia (Spain)												
- incoming students								1		2		3
- months incoming								9		18		27
- months/incoming student								9		9		9,0
7. Wageningen (The Netherlands)												
- incoming students												
- months incoming												
- months/incoming student												
8. Evora (Portugal)												
- incoming students								1	3	1	3	8
- months incoming								9	27	9	21	66
- months/incoming student								9	9	9	7	8,3

	Ac. year 1998-99	Ac. year 1999-00	Ac. year 2000-01	Ac. year 2001-02	Ac. year 2002-03	Ac. year 2003-04	Ac. year 2004-05	Ac. year 2005-06	Ac. year 2006-07	Ac. year 2007-08	Ac. year 2008-09	Total 11 years
9. Lublin (Poland)												
- incoming students												
- months incoming												
- months/incoming student												
10. Afyonkarahisar (Turkey)												
- incoming students										1		1
- months incoming										5		5
- months/incoming student										5		5,0

Teaching Staff Mobility

Within the framework of its Socrates Programme, the FVMP has a Teaching Staff Mobility programme. Almost every year the FVMP succeeds in using the single grant available to send a teacher abroad. At the same time, at least one partner University succeeds in sending a teacher to Pisa. Even if it is really interesting and useful, the teacher exchange programme is not easy to accomplish. In fact, because of the continuous teaching duties in their own Faculty, teachers (both Italian and foreign ones) can very often go abroad to give lessons or seminars only during academic holidays.

1.1.5.2. The Erasmus-Mundus Programme

In the 2004-05 academic year, an International Master on Rural Development funded by the EU Erasmus-Mundus Programme was activated. The objective of this Master is to train specialists in integrated rural development, focusing on socio-economic and institutional aspects, not only from the European Union but also from developed, developing Countries outside the European Union. The Master is a 2-year programme (120 UFCs), jointly organised by seven European leading institutes in agricultural economics and rural development.

The Master programme is offered by Ghent University (Belgium), Agrocampus Ouest (France), Humboldt University of Berlin (Germany), the University of Cordoba (Spain), in collaboration with Wageningen University (The Netherlands), the Slovak University of Agriculture in Nitra (Slovakia) and the University of Pisa (Italy).

The methodology consists of a combination of basic and specialised training in technical, economic and social sciences, a case study of one month, an individual master thesis and extensive student and scholar mobility. Every year there are more than 300 applications for the 15 grants funded for this Master. This programme is designed for veterinary students who want to gain experience in international development cooperation. The Programme has just been funded again for the next five years.

1.1.5.3. The cooperation between Pisa and the University of Rio Grande do Sul (Brasil)

Within the framework of the activities in cooperation with the Pharmacological Division of the University of Lublin (see paragraph 1.1.5.11), a Brazilian Pharmacology Professor (Departamento de Farmacologia Universidade Federal do Rio Grande do Sul, Porto Alegre, Brasil) has recently contacted the Pisa Pharmacology division to request a research cooperation with student exchange fully financed by the Brazilian Government. We are currently organising these activities.

1.1.5.4. The cooperation between Pisa and the University of Montreal (Canada)

The cooperation between the FVMP and the Faculty of Veterinary Medicine of the University of Montreal (Canada) started in 2002. In these years Professors of both Faculties, working in the scientific areas of Anatomy, Clinics, Pharmacology and Toxicology went through an exchange programme which included presenting lectures and seminars concerning their research. Collaborative research projects were also elaborated particularly in the field of Veterinary Anatomy and Pharmacology. This cooperation continued until 2006.

1.1.5.5. The cooperation between Pisa and the University of Limoges (France)

In 2006, the Genetic Biotechnology Lab of the FVMP and the *Unité de Génétique Moléculaire Animale* (UMR 1061) of the Faculty of Sciences and Techniques of the University of Limoges, agreed to participate in a collaborative program funded by the two Universities. During the past three years, the following research fields have been developed.

1. Validation of molecular methods for meat traceability applied to cattle and their derived products. As the source breed is increasingly considered a trademark for highly valued products, breed traceability of individual genetic profiles is becoming more and more important to assure food safety and authentication.
2. Analysis of genetic polymorphisms in loci involved in coat colour in the canine species. An original study was conducted on the "brindle" locus, in individuals from Boxer and Great Dane breeds.

The scientific cooperation, which continues to the present day, has taken the form of frequent exchanges of PhD students and scientists from the two Universities, and constitutes a precious opportunity of mutual cultural enrichment.

1.1.5.6. The cooperation between Pisa and the University of Lyons (France)

The cooperation between the FVMP and the *Ecole Nationale Vétérinaire* of Lyons (France) started in 1996. Since that year Professors of both Faculties, working in the scientific areas of Clinics, Pharmacology and Toxicology travelled in both directions to give lectures and seminars.

Collaborative research projects have also been elaborated particularly in the field of Veterinary Pharmacovigilance and of Diagnostic Toxicology as at the *Ecole Nationale Vétérinaire* of Lyons both the French Centre of Veterinary Pharmacovigilance (CPVL) and the National Centre of Veterinary Toxicological Information (CNITV) are located. The agreement of cooperation continued until 2008.

1.1.5.7. The cooperation between Pisa and the University of Tehran (Iran)

In 2008 the Veterinary Pharmacology team of the University of Tehran (Iran) invited a Pharmacology professor from the FVMP to hold scientific and plenary lectures at an international congress held in Tehran. After this congress and a meeting with the Italian Ambassador in Tehran, there has been an increase in the exchange of scientific information between the two parts.

1.1.5.8. The cooperation between Pisa and the University of Jerusalem (Israel)

The FVMP has a significant number of students arriving from Israel. This situation has allowed a joint research project between the FVMP and the Hebrew University of Jerusalem. The Israel students are "utilised" as carriers to develop their theses works in Italy and Israel, learning modern research methods from both parts. Some of these new data has been submitted to international journals and has been presented in the 2009 congresses.

1.1.5.9. The cooperation between Pisa and the University of Guangxi (People's Republic of China)

As a consequence of the International PhD Programme in "*Inspective and Sanitary Concerns in Animal Production in Exchanges between the European Union and the People's Republic of China*" (see paragraph 12.1.2.4), a meeting on "*Food safety problems in a globalised world: cooperation among Countries and Institutions*" has been organised in Nanning (Guangxi, China) from the 19th to the 21st of March 2007, by the University of Guangxi and the University of Pisa, based on the exchange of information and the comparison between the respective safety systems in food production for public health protection. During the meeting, the base for a collaboration in the field of food safety between the autonomous Province of Guangxi and the Tuscany Region was created, leading to the development of a project aimed to the re-qualification of the present food safety control system in the Chinese Province.

The final goals of the project are:

- to yield a hygienic improvement of the food productions;

- to help the Guangxi Province in the re-organisation of the sanitary services and of the laboratories of official analysis.

Such a project is to be considered a CPD opportunity also for people that already operate in Europe in the new reality of increasing commercial exchanges and relations between Western Countries and China.

1.1.5.10. The cooperation between Pisa and the University of Xining (People's Republic of China)

In 2004, the Italian Ministry of Foreign Affairs funded a 3 million euro Project: "*Assistance and Qualification of the Animal Husbandry and Veterinary Medicine College of Xining, Qinghai Province*".

In this project the FVMP has been involved together with the Faculty of Agricultural Sciences of Viterbo, Italy. The aim of the project was:

1. to restructure the laboratories and the veterinary clinic of the Xining College and to renew the scientific and clinical equipment;
2. to improve the skills of the Chinese teaching and research staff; to ameliorate the management; to develop relations with other Universities.

1.1.5.11. The cooperation between Pisa and the University of Lublin (Poland)

The cooperation between the University of Pisa and the Faculty of Veterinary Medicine and Agriculture of Lublin (Poland) started in 1989 following the meeting of students and teachers of the FVMP who visited the Faculties of Veterinary Medicine in Kracow, Warsaw and Lublin during an educational trip organised by the FVMP. During this trip, a permanent collaborative relation both at student and teacher level was developed.

Since 1989, every year some professors of the Faculty of Lublin, working in the scientific areas of Parasitology, Infectious Diseases, Anatomy, Physiology, Obstetrics, Gynaecology, and Clinics, have travelled to the FVMP presenting lectures and seminars concerning the research activities carried out at their own University. Likewise the teachers of Pisa have travelled to Lublin to perform similar activities regarding seminars and scientific collaboration. Collaborative research projects have also been elaborated and are currently ongoing at both sites.

This cooperation has also been used to perform new studies in the Pharmacological field. The partnership with the Polish Pharmacological Division has been quite advantageous: it started in August 2007 and at the moment counts four international ISI manuscripts, four national manuscripts and two congress communications. The innovative research studies carried out by the two groups allowed the Pisa Pharmacological team to have new contacts for perspective foreign cooperation (see previous paragraph 1.1.5.3).

1.1.5.12. The cooperation between Pisa and the Universities of Chungnam and Daejeon (South Korea)

This cooperation (lasting 5 years) between Pisa and the Universities of Chungnam and Daejeon (South Korea) has been activated in 2009 with an agreement between the Rectors of the two Universities.

As the budget allocated for inter-institutional agreements by the University of Pisa was drastically reduced in 2008 due to financial constraints, the cooperative agreement between Pisa and the Universities of Chungnam and Daejeon was not financially supported. Anyway professors of both parts have tried other routes of funding, as Italian Ministry of Foreign Affairs (bilateral cooperation) and MIUR (inter-University cooperation), and now they are awaiting for the decisions.

Fortunately, the Korean counterpart has found a grant to host a professor during the month of October 2009 and at that time scientific and teaching duties will be better discussed and performed.

1.1.5.13. The cooperation between Pisa and the University of Ankara (Turkey)

During 2009 the FVMP has been developing a new agreement with the Faculty of Veterinary Medicine of the University of Ankara (Turkey). A PhD students of the Department of Animal

Nutrition of this University has already applied to spend one year (2010) at the Department of Animal Productions of the University of Pisa to participate to the ongoing research.

1.1.5.14. The cooperation between Pisa and the University of Afyon Kocatepe (Turkey)

Since September 2007 a scientific relation has been developed between the FVMP and the Department of Animal Nutrition and Nutritional Diseases of the Afyon Kocatepe University (Afyonkarahisar, Turkey). Within the framework of this agreement a Turkish PhD student came to Pisa for a period of five months to participate on a research project in Animal Nutrition. Furthermore a Continuing Professional Development Programme Bilateral Agreement was signed for the 2007-08 and 2008-09 academic years. Furthermore an Interdepartmental Bilateral Agreement was signed to provide a framework for the following activities:

- collaborative research projects;
- exchange of publications, reports and other academic information;
- collaborative professional development and other activities such as conferences, symposia and workshops as mutually agreed.

1.1.5.15. The cooperation between Pisa and the University of Sheffield (United Kingdom)

On the 5th October 2007 a Memorandum of Understanding between the Sheffield Hallam University (UK) and the University of Pisa was signed. The goals of the Memorandum of Understanding are related to academic and cultural links between the two Universities, under which the parts will foster understanding between the two institutions and cooperate in the field of food safety and public health related themes.

1.1.5.16. The cooperation between Pisa and the Cornell University (USA)

Over the last few years an Associate Professor of the Department of Animal Sciences of the Cornell University (Ithaca, USA) and an Assistant Professor of the FVMP have been coordinating a programme of student exchange and of educational trip among the two Faculties and some Italian private Companies. The aim of this activities is to involve foreign students in the practical activity of Agro-Companies of the other Country (practical stage), as well as to organise student educational regional trips.

1.1.5.17. The cooperation between Pisa and the University of Ljubljana (Slovenia)

The cooperation between the FVMP and the Faculty of Veterinary Medicine of the University of Ljubljana started in 2004. Since that year there have been several meetings held both in FVMP and in the Faculty of Ljubljana. Italian and Slovenian teachers, working in internal medicine, oncology and pathology, have given lectures and seminars in academic courses in both Faculties. Moreover some projects are in common with the Department of *Veterinary Clinics* of the FVMP and the Faculty of Ljubljana, especially in the field of oncology and particularly in respect of electrochemotherapy procedures. The cooperation is still going on with some cases and patients sent from Pisa to the Faculty of Ljubljana to undergo this kind of chemotherapy.

1.1.6. Methods adopted to assess the achievements of the Faculty goals

1.1.6.1. Assessment of the quality of teaching

In 1996 the FVMP began, within the Degree Course in "*Sciences and Technologies of Animal Productions*", an experimental quality self assessment process by the students. Five years later a national law set such an evaluation as mandatory for all the Degree Courses. Since 2002-03 this evaluation has also carried out by Veterinary Medicine students.

Towards the end of each semester questionnaires are anonymously filled in by all students. These questionnaires are not aimed to only evaluate teachers, but also Faculty's premises, organisation and services offered. The answers of these questionnaires are processed and the results

used by the Faculty to improve its organisation and services and by the President of the Degree Course (and by the Dean too, if necessary) to address problems and issues related to quality of teaching.

More details about the assessment of the quality of teaching are show in paragraph 5.1.6.

1.1.6.2. Assessment of the quality of scientific production

The achievement of scientific research is assessed on the basis of scientific reports that Full, Associate and Assistant Professors must produce to the Faculty every three years for an evaluation. Furthermore, at each yearly application for local University funds, all faculty members are evaluated for scientific production by a joint Scientific Committee whose members are elected by and among Professors from the Faculties of Veterinary Medicine and of Agricultural Sciences.

At present this Committee has decided the following criteria to evaluate the scientific production of the last five years of all the professors of the two Faculties:

1. the research must be relevant to the scientific disciplinary sector (see the following paragraph 4.1.2) that the researcher is appointed to;
2. quantity and continuity of the research activity during the last five years;
3. level and quality of the scientific work, on the basis of the importance of the publishing review, taking into account the specific features of each scientific-disciplinary sector.

To evaluate this last aspect, the following categories of publications, with a decreasing weight in evaluation, have been identified:

a. *Category 1:*
   - complete works in ISI reviews.
b. *Category 2:*
   - papers in proceedings either of international meetings or of international scientific societies;
   - complete work in non-ISI reviews with referees;
   - chapters of ISBN books with an international diffusion;
   - international or European patents.
c. *Category 3:*
   - chapters of ISBN books with a national diffusion;
   - papers in proceedings of national meetings;
   - summaries in international meetings;
   - complete work in non-ISI reviews without referees.
d. *Category 4:*
   - summaries in national meetings;
   - multimedia products and other kind of research products.

At the end of the evaluation process, a "*scientific rating*" (using a scale between 0 and 4) is given to each Professor. On the basis of the rating reached, research funds from the University of Pisa are assigned to each Professor.

Even if the amount of these funds is really low (2.5-3 thousand euro per year per person as a maximum), we must recognise that the results of this evaluation are encouraging, and it is possible to say that it has produced a growing production of scientific papers either in ISI international reviews or, as a last result, in reviews with referees. A research register of the University has been organised to monitor, evaluate and highlight papers published by our University: see the address:

http://arp.unipi.it

Another important evaluation which all the Italian Professors must pass is the "confirmation of tenure" (in Italian: "*conferma in ruolo*"). Three years after her/his competition, every Professor must obtain an evaluation on her/his scientific and teaching activities by both the Faculty and a national evaluation committee nominated by the Ministry. If the evaluation is not positive, the Professor can try it again two years later. If the new evaluation is still negative, the Professor is fired from the University.

Even if very few Professors all over Italy have had a negative evaluation, it still is an important moment in the career of all the Italian Professors.

1.2. Additional comments

The goal of the FVMP is to assure the proper efficiency of the Veterinary Medicine Degree Course and to provide post-graduate education to practitioners throughout specialisation courses, training for European Colleges, Masters, and Continuing Education Programmes in Veterinary Medicine.

To qualify the training objectives of the Veterinary Medicine Degree Course, the scientific bases and technical practical training necessary to practice the veterinary profession have been carefully identified as well as the knowledge and skills that characterise the training profile and the possible career perspectives of the young graduate.

Moreover, the FVMP is involved in Post Degree Education (PhD Courses and Specialisation Schools) and since 2002 the Faculty increased its activity by organizing University Master Courses and Training Institution for European Colleges.

Secondary aims of the FVMP are two other Degree Courses in addition to the Veterinary Medicine one. These two Degree Courses are "*Sciences and Technologies of Animal Productions*" (primary and secondary level Degrees) and "*Canine Breeding Techniques and Training*" (primary level Degree). This course has been activated in the 2004-05 academic year, and it probably will cease since the 2009-10 academic year because of administrative problems.

Another very important objective of the Faculty is the research activity both in basic and applied knowledge fields of Veterinary Sciences. To reach this important objective many research and cooperation agreements with public and private Institutions have been developed, as well as an important third-party services.

Over the last ten years the FVMP has maintained and improved its international relationships. Beside the Erasmus-Socrates Programme and an International Master within the framework of the Erasmus-Mundus Programme, the FVMP has relationships with Universities of several European and non-European Countries.

Finally, since 1996 the FVMP began to asses the achievements of the Faculty aims through a quality assessment process by the students themselves and on the basis of scientific reports that Full, Associate, and Assistant professors must produce to the Faculty every three years for an evaluation. Furthermore, upon each yearly application for local University funds, all Faculty members are evaluated for their scientific production by a joint Scientific Committee whose members are elected by and among Professors from the Faculties of Veterinary Medicine and Agricultural Sciences.

1.3. Suggestions

To improve the efficiency of the Veterinary Medicine Degree Course we consider important to improve the quality assessment process by the students. The Specialisation Schools, the PhD Courses and the Master Courses activities should be accurately organised and the European College Residencies expanded as well as the relations with the other European and non-European Universities for the research activity.

1.4. Annotations

Chapter 2 – THE ORGANISATION OF THE FACULTY OF VETERINARY MEDICINE OF PISA (FVMP)

2.1. Factual information and comments

2.1.1. Details of the Establishment

Name: Facoltà di Medicina Veterinaria
Address: Viale delle Piagge 2, 56124 Pisa, Italy
Phone: +39 050 2216 700
Fax: +39 050 2216 706
Website: *http://www.vet.unipi.it*
Email: presidenza@vet.unipi.it
Dean Prof. Vittorio Tellarini, Dean of the Faculty (*in charge until the 31st October 2009*)
Prof. Alessandro Poli, Dean of the Faculty (*in charge since the 1st November 2009*)
(preside@vet.unipi.it)

The Faculty of Veterinary Medicine is part of the University of Pisa (University of Pisa, Lungarno Pacinotti 43-44, 56125 Pisa, Italy). The Rector of the University of Pisa is the competent authority overseeing the Faculty of Veterinary Medicine as outlined in the diagram 2.1.2.a. His address is:

Rector: Prof. Marco Pasquali, Lungarno Pacinotti 43, 56125 Pisa, Italy, Phone: +39 050 2212111.

The composition of the teaching, technical and administrative staff of the University of Pisa at the date of 1st October 2009 is showed in tables 2.1.1.a and 2.1.1.b.

Table 2.1.1.a. Teaching staff of the University of Pisa

Full Professors	589	32.6%
Associate Professors	559	30.9%
Assistant Professors	659	36.5%
Total teaching staff	1,807	100.0%

Table 2.1.1.b. Technical and administrative staff of the University of Pisa

Executive staff	10	0.7%
Administrative staff	519	36.2%
Technicians	587	41.0%
Librarians	95	6.6%
General services staff and others	222	15.5%
Total technical and administrative staff	1,424	100.0%

The total number of students registered at the University of Pisa over last eight years is shown in the table 2.1.1.c.

Table 2.1.1.c. Students enrolled in the University of Pisa

Academic year	Students enrolled	Increase on a.y. 1999-2000
1999-00	47,395	
2000-01	46,620	-1.64%
2001-02	49,772	+5.02%
2002-03	50,354	+6.24%
2003-04	49,865	+5.21%

Academic year	Students enrolled	Increase on a.y. 1999-2000
2004-05	50,454	+6.45%
2005-06	51,868	+9.44%
2006-07	52,420	+10.60%
2007-08	53,382	+12.63%
2008-09	52,781	+11.36%

As already stated in Chapter 1, the 1999 law introduced a double level of degree (a first level, 3-year long degree, and a second level, 2-year long degree) for almost all the Faculties (except for the degrees ruled by European regulations, like Veterinary Medicine, Medicine and Surgery, Pharmacy and Architecture).

Because of these changes, it is fairly difficult to compare across time numbers of students graduating at the University of Pisa. The number of the students graduated in all the eleven Faculties of the University of Pisa during the last ten years is shown in table 2.1.1.d

Table 2.1.1.d. Students graduated in the eleven Faculties of the University of Pisa

Year	All graduations	Graduated pre 1999 law	Graduated post 1999 law	
			first level	second level
1999	3,658	3,658	0	0
2000	3,849	3,849	0	0
2001	4,182	4,111	71	0
2002	7,152	4,253	2,688	211
2003	6,738	3,840	2,331	567
2004	6,908	3,406	2,820	682
2005	7,084	2,622	3,539	923
2006	7,072	1,697	3,868	1,507
2007	7,173	1,025	4,111	2,037
2008	7,044	666	4,013	2,365

2.1.2. The FVMP in the University organisation

2.1.2.1 Constitution, functions and responsibilities of the main administrative structures of the University of Pisa

The Faculty of Veterinary Medicine is part of the University of Pisa. The relations between the FVMP and the external academic structures as well as its internal organisation are outlined in diagram 2.1.2.a.

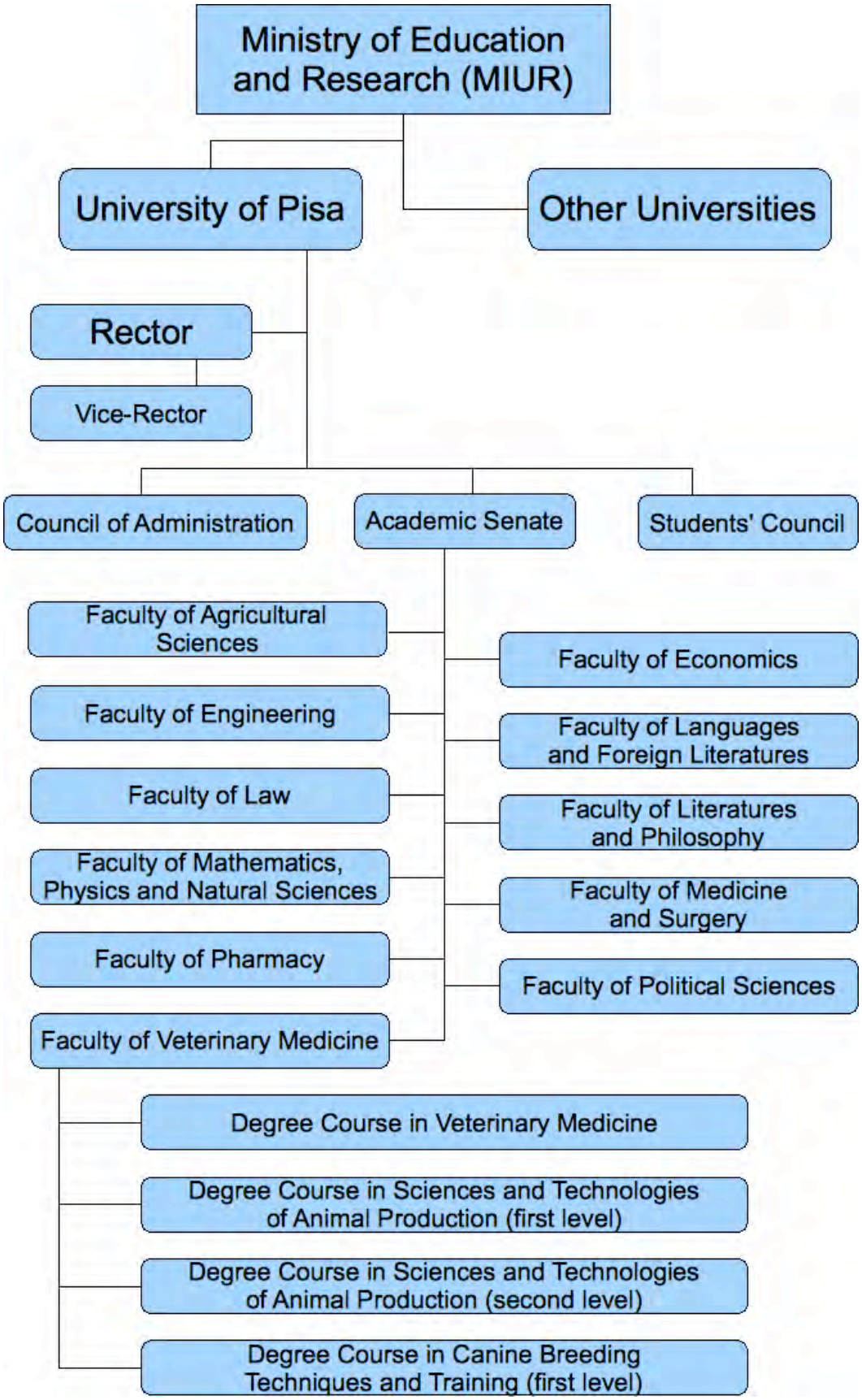
The central Organs of the University of Pisa are:

- the Rector;
- the Academic Senate;
- the Council of Administration;
- the Students' Council.

The teaching and research structures of the University of Pisa are:

- *Structures mainly devoted to teaching activities:*
  - the Faculties;
  - the Degree Courses;
  - the Specialisation Schools;
- *Structures mainly devoted to research activities:*
  - the Departments;
  - the Interdepartmental Centres.

Diagram 2.1.2.a. The Faculty of Veterinary Medicine within the University of Pisa



The **Rector** represents the University of Pisa and supervises all its activities. She/he has functions of initiative, promotion and implementation. The Rector nominates as Vice Rector a Full Professor, who can substitute for the Rector in any of her/his function, in case of absence.

The Rector can also nominate some Pro-Rectors (chosen among the full-time teaching staff) for specific topics: finances, research, teaching, juridical affairs, students affairs, buildings affairs, personnel, international relations, stakeholder (local) relations, and so forth (number and type of Pro-Rector may vary between Universities).

The **Academic Senate** represents the political government of the University of Pisa. It coordinates the University activities and verifies their efficiency. It gives to the Council of Administration the political guidelines for its action.

At present, the Academic Senate of the University of Pisa is composed of 32 members: the Rector, who acts as chairman; the Vice Rector; the Deans of the 11 Faculties; 12 full-time representatives of the teaching staff (two on behalf of each of 6 homogeneous scientific areas of research); 2 representatives of technical and administrative staff; 5 student representatives. Furthermore the Administrative Director of the University participates with a consultative vote.

The **Council of Administration** manages all the administrative, economic, financial and patrimonial aspects of the University of Pisa. At present, the Council of Administration of the University of Pisa is composed of 15 members: the Rector, as chairman; the Vice Rector; the Administrative Director of the University; 1 representative of all the Departments Chairpersons; 2 full-time representatives of Full Professors; 2 full-time representatives of Associate Professors; 2 full-time representatives of Assistant Professors; 2 representatives of technical and administrative staff; 3 representatives of students.

The **Students' Council** is an independent students' organisation at the University of Pisa. It has proposing, advisory and control tasks. It is composed of 57 members: all the students voted in the Senate, in the Council of Administration, in all other University Councils, and a quarter of the students voted in each Faculty Council.

The **Faculties**, in number of 11, are the structures of the University of Pisa which have a substantial cultural homogeneity; their main aim is to promote the scientific and professional development in their specific fields, and they are devoted to the organisation and coordination of the teaching activities.

Faculties have administrative and budgetary autonomy, along the guidelines and the finances approved by the Senate and the Council of Administration. They can obtain their own external financial income from their academic activities; although technically possible, at present the amount of outside funding is extremely limited across the eleven Faculties.

Each member of the teaching staff is appointed as well as accountable to one and only one specific Faculty. Technical and administrative staff is assigned to the Faculty by the Central Administration of the University.

Faculties are managed by the Dean and by the Faculty Council (see below).

The **Degree Course** is a body of the Faculty which organises and coordinates all the teaching activities which are necessary for awarding a specific Degree (of first or second level).

Degree Courses do not have financial autonomy, but rather depend on the Faculty to which they belong. They are managed by a President and by the Council of Degree Course.

The **Specialisation Schools** are the bodies of the Faculty which organise and coordinate all the teaching activities devoted to obtaining a specific postgraduate academic title. They are managed by a Director and by the Council of the Specialisation School.

The **Departments**, at present in number of 51, are the structures of the University of Pisa entrusted with the organisation and coordination of the research activities in one or more scientific areas, substantially homogeneous from the cultural point of view and for scientific objectives and methods. Departments have administrative and financial autonomy, along the guidelines and the finances approved by the Senate and the Council of Administration. They can have their own financial income, which is generally obtained for research activities done in favour of third parties.

Members of the teaching staff must choose the Department in which they want to perform their research activity. The choice must be done on the basis of scientific homogeneity with the objectives and methods of the Department. Technical and administrative staff is assigned to the Department by the University Central Administration.

Departments cooperate with Faculties to implement teaching activities by providing space, equipment, expertise as well as teaching material. Departments are completely independent from Faculties, and, at least in theory, they do not need to refer to any specific Faculty. However, very often each Department mainly refers to only one Faculty.

Departments are managed by a Director and by the Department Council.

In case of complex teaching and/or research activities, implemented in the general interest of the University of Pisa, **Interdepartmental Centres** can be established. They are managed by a Director and by a Council of the Interdepartmental Centre. The most important Interdepartmental Centres of the University of Pisa are the following three:

- Interdepartmental Linguistic Centre;
- Interdepartmental Centre for Agro-Environmental Researches;
- Interdepartmental Centre "Museum of Natural History and of Territory".

As shown in the following paragraph 6.1.6, the *Interdepartmental Centre for Agro-Environmental Researches*, which actually is the University Farm, is of special interest for the FVMP as it plays a very important role for many practical activities of Veterinary students.

2.1.3. Organisation of the FVMP

2.1.3.1. <u>The Organs of the FVMP</u>

The Organs of the Faculty are:

- the Dean;
- the Faculty Council;
- the Faculty Executive Committee;
- the Faculty Teaching Committee;
- the Councils of the Degree Courses;
- the Councils of the Specialisation Schools.

The **Dean** represents the Faculty and supervises all its activities. The Dean must be a full time Full Professor, and she/he is voted by all the members of the Faculty Council. She/he is responsible for promoting and implementing all the activities which are necessary to allow for proper teaching as well as for proper Faculty management to be performed.

A Vice-Dean is nominated by the Dean among the Full Professors. The Vice-Dean can substitute for the Dean in any of her/his functions, in case of absence.

The **Faculty Council** is a political body whose aim is the government of the Faculty. It coordinates all Faculty activities and verifies their efficiency. In particular, the main functions of the Faculty Council are:

- to plan the utilisation of teaching and technical staff assigned to the Faculty by the Academic Senate;
- to plan the utilisation of the finances assigned to the Faculty by the Academic Senate;

- to organise classes and teaching activities;
- to decide about the proposals of the Councils of the Degree Courses of the Faculty.

The Faculty Council, chaired by the Dean, is composed by all the Full Professors, Associate and Assistant Professors who are assigned to the Faculty; 6 representatives voted by the students; 3 representatives voted by the technical and administrative staff which are assigned to the Faculty and to the Departments referring to the Faculty. The Administrative Secretary of the Faculty participates with a consultative vote on administrative decisions.

Usually the Faculty Council meets once a month, or more if necessary.

The **Faculty Executive Committee** (FEC) is the body that cooperates with the Dean in carrying out the resolutions of the Faculty policy, and in preparing the subjects to be discussed in the Faculty Council. At present, the FEC is composed of 14 members: the Dean, as chairman; the Vice Dean; the 3 Presidents of the Councils of the Degree Courses of the Faculty; 2 representatives of Full Professors; 2 representatives of Associate Professors; 2 representatives of Assistant Professor; 2 representatives of students elected to the Faculty Council; 1 representative of technical and administrative staff elected to the Faculty Council.

The **Faculty Teaching Committee** (FTC) has the task to evaluate the functionality and the efficacy of all teaching activities implemented by the Faculty. It can make proposals to the Faculty Council. Every year the FTC must prepare a report about the teaching services provided by the Faculty to the students, in which excellence as well as shortcomings are critically reviewed and underlined. The report must be discussed as a specific agenda item during an official session of the Faculty Council.

Until the 31st October 2009, the FTC will be composed of 13 members: the Dean, as chairman; all the 6 student representatives elected to the Faculty Council; 6 representatives of teaching staff elected to the Faculty. After 1st November 2009, since the students elected only 4 representatives to the Faculty Council, the FTC will be reduced to 9 members.

The **Councils of Degree Course** (CDC) have the task to organise and coordinate teaching activities devoted to necessary for awarding a specific degree. Each CDC, chaired by its President, is composed of all the Full Professors, Associate and Assistant Professors who have an official teaching assignment in that Degree Course; all the Assistant Professors who support the teaching activities of that Degree Course; 6 representatives voted by the students registered in that Degree Course. Usually the Councils of Degree Course meet once a month, or more if necessary.

At present, there are three Councils of Degree Courses within the FVMP:

- *Veterinary Medicine* (5-year diploma);
- *Sciences and Technologies of Animal Productions* (3-year diploma, followed by a 2-year second level diploma);
- *Canine Breeding Techniques and Training* (3-year diploma).

Every Council of Degree Course of the Faculty has activated specific Committees. In particular, they have activated a **Degree Course Teaching Committee** chaired by the President of the Degree Course and composed by all the students voted in the Council of Degree Course and by an equal number of teaching staff of that same Course. Furthermore, the Council of Degree Course can activate other Committees just for specific tasks.

In this context, all the Degree Courses have activated their **Committees for practical training of the students**. In particular, these Committees have the important task to organise, monitor and evaluate the intra- and extra-mural training activities of the students.

2.1.4. Other bodies connected with the FVMP

Other bodies closely connected with the FVMP are the following:

- Postgraduate Specialisation Schools (3);
- Centre for Faculty Library Services;
- Departments (3+4);
- PhD Courses (3+2).

As already mentioned above (see paragraph 1.1.3.1), there are three **Specialisation Schools** at the FVMP:

1. *Small Animal Pathology and Clinics*;
2. *Animal Health, Breeding and Husbandry*;
3. *Inspection of Food of Animal Origin*;

These Specialisation Schools are devoted to organise and coordinate the teaching activities in their specific field of post graduate teaching.

The **Centre for Library Services of the FVMP** provides any kind of library services to the students, to the teaching staff and to external people as well. A more detailed explanation of its organisation and services is reported in Chapter 8. The Library Centre has administrative and financial autonomy, along the guidelines and the finances approved by both the Academic Senate and the Faculty Council. The Centre is managed by a President, helped by a Director, and by a Library Council. The Council, chaired by the President, is composed by:

- the Director;
- representatives of:
  a. the teaching staff of the Degree Courses offered by the FVMP;
  b. the teaching staff of the Departments which refers to the FVMP;
  c. the students of the Degree Courses of the FVMP.

The **Departments** which explicitly refer to the FVMP are the following three:

1. Dept. of *Animal Pathology, Prophylaxis and Food Hygiene* (29 teaching staff);
2. Dept. of *Animal Production* (21 teaching staff);
3. Dept. of *Veterinary Clinics* (25 teaching staff).

Furthermore, there are other 4 Departments which do not explicitly refer to (or are not physically located at) the FVMP, who have one or more teaching staff members who are officially appointed to the FVMP. They are the following:

1. Dept. of *Agronomy and Management of Agro-Ecosystem* (2 teaching staff);
2. Dept. of *Biology* (1 teaching staff);
3. Dept. of *Physics* (1 teaching staff);
4. Dept. of *Physiological Sciences* (6 teaching staff).

As already shown in table 0.3.a, at the date of the visit the teaching staff of the FVMP is composed by 85 teachers.

It is worthwhile underlining that, until the 31st of December 2008, there was another Department which explicitly referred to the FVMP. It was the Dept. of *Veterinary Anatomy, Physiology and Biochemistry*. According to the rules established by the Statute of the University of Pisa, a Department must have at least 15 teaching staff members. As, during 2007, the number of teaching staff members of this Department dropped below 15 due to retirements, the remaining 13 Faculty members had to opt either to establish a new Department or to join an already existing one. Therefore:

- 6 Faculty members, together with 14 Human Physiologists, founded the Department of *Physiological Sciences*;
- 5 Faculty members joined the Dept. of *Animal Pathology, Prophylaxis and Food Hygiene*;
- 2 Faculty members joined the Dept. of *Veterinary Clinics*.

Actually, the first two groups of colleagues maintained their old office space in the same buildings as before, whilst the last two colleagues opted to move to the new premises in San Piero a Grado as soon as they will be available (early winter 2009).

As already mentioned above (see paragraph 1.1.3.2), three different **PhD Courses** are activated at the FVMP:

1. *Veterinary Medicine*;
2. *Animal Husbandry, Health and Hygiene in Countries with Mediterranean Climate*;
3. *Inspective and Sanitary Concerns in Animal Productions in Exchanges Between the European Union and the People's Republic of China*;

Furthermore, members of the teaching staff of the FVMP participates in two other PhD Courses organised by other Faculties of Veterinary Medicine in Italy:

1. *Epidemiology and Control of Zoonoses*, University of Bologna;
2. *Equine Physiology*, University of Messina.

Actually the PhD Courses do not depend on the FVMP but on Departments and, almost always, they are organised at an interdepartmental level, and in fact all the above five PhD Courses involve more than two or three Departments. PhD Courses do not have financial autonomy but rather depend on the University, while depending on a Department from the administrative point of view.

PhD Courses are managed by a President and by the Council of the PhD Course, formed by all the teaching staff involved in the teaching activities.

It is important to notice that in the majority of the Italian PhD Programmes there are not really structured teaching courses just for PhD students. In fact students usually attend either under-degree courses, or seminars specifically organised for them and usually given by teachers of the PhD Course.

Most frequently PhD students study by alone the subjects of their specific interest and especially work with their tutor in her/his researches.

Over the last few years, the University of Pisa began a reorganisation of all its PhD Courses in "**PhD Schools**", by grouping all together a number of homogeneous PhD Programmes. This reorganisation reached an end during the year 2009.

All the PhD Courses of both the Faculties of Veterinary Medicine and Agricultural Sciences have been joined in a PhD School named "***PhD School in Veterinary and Agricultural Sciences***".

The School has the following curricula:

- *Veterinary Medicine*;
- *Animal Husbandry, Health and Hygiene in Countries with Mediterranean Climate*;
- *Inspective and Sanitary Concerns of the Animal Productions within the Exchanges between the European Union and the People's Republic of China*;
- *Agricultural Sciences*.

The *PhD School in Veterinary and Agricultural Sciences* has been established in July 2009 and will start its teaching activities on January 2010.

2.2. Additional comments

In this chapter information on the composition of the teaching, technical and administrative staff of the University of Pisa at the date of 17th August 2009 are presented. Also, the organization of the FVMP and of the other bodies connected with the FVMP (Centre for Library Services of the FVMP, Departments, and the PhD School in *Veterinary and Agricultural Sciences*) are analyzed in details.

2.3. Suggestions

2.4. Annotations

Chapter 3 – FINANCES

3.1. Factual information and comments

3.1.1. The income of the FVMP

The majority of Italian Universities are State-funded. Every year the Italian Ministry of Education, University and Research (MIUR) provides an institutional fund (called Ordinary Financing Fund: FFO) which is used by the Universities to cover almost all the expenses for teaching and support staff.

Actually, according to a 1995 law, the total amount of staff-related expenses of each University should not be more than 90% of its FFO. In case of overflow, the University is penalised with a heavy reduction of the possibility to fund new positions to replace staff members who are retiring due to age.

Over the last few years, the University of Pisa has approached or even gone beyond this limit such as in 2006, when it reached the percentage of 90.09% and in 2007 when it reached 90.00%. In 2008 the University of Pisa was at the percentage of 88.79%. This result was obtained with a heavy reduction in the hiring of new teachers and support staff as well as with a curbing in the number of promotions to higher levels. In 2008 the FFO given to the University of Pisa has been of 215 million euro. Unfortunately the current Government, with the law n. 133/2008, has decided heavy cuts to the University FFO since 2009, which will jeopardise the survival of many Faculties in several Universities throughout the Country.

The rough percentages of reductions for the FFO foreseen for the next years are the following:

2009 -1%
2010 -3%
2011 -5%
2012 -6,5%
2013 -7%

After 2013 the FFO will remain the same than in 2013.

In 2006 the previous Government gave to the Universities extraordinary funds to engage around 4,000 new young Assistant Professors in the years 2007-09. With these funds, in the last two years the FVMP was able to hire 4 new Assistant Professors (for 3 of them the search process is still ongoing), and we hope to have assigned at least 3 new ones at the end of 2009, making a total of 7 new posts for the period 2007-2009.

All the incomes and revenues of the FVMP during the last three years are summarised in table 3.1.1.a. Some further details of our finances are shown in tables 3.1.1.b and 3.1.1.c.

Both income and expenses of the Faculty Library are not treated here, but by alone in paragraph 8.1.5.

Table 3.1.1.a: Income of the Faculty (euro)

Year	By the State to the University for the wages of the		By the University to the Faculty	Income from any other source	TOTAL
	teaching staff A	support staff B	C1	D1	E=A+B+C1+D1
2006	7,195,346	2,379,809	286,750	229,966	10,091,871
2007	7,287,560	2,407,300	313,692	193,956	10,202,508
2008	7,004,949	2,331,038	305,592	232,086	9,873,666

Note: The income of the Faculty Library is not included here. It is treated in paragraph 8.1.5.

Even if technical and administrative staff is assigned by the University to their own structures (Faculties or Departments), whilst teaching staff is enrolled in the Faculties, in table 3.1.1.a all the wages (items A and B) are attributed to the Faculty. It should be kept in mind that support staff is

assigned by the University to both Faculties or Departments. Teachers, on the basis of the competition performed to enter the University, are formally assigned to Faculties. After this, they can choose the Department where to perform their research activities.

Table 3.1.1.b: Income of the Vet-Departments (euro)

Year	By the University to the Depts C2	Public income for research F	Private income for research G	Income from services provided H	Other incomes D2	TOTAL I=C2+F+G+H+D2
2006	372,300	1,097,382	101,617	824,112	408,613	2,804,023
2007	337,765	687,586	95,283	772,785	765,167	2,658,586
2008	215,554	696,707	152,088	833,473	718,937	2,616,759

As shown in the table 3.1.1.c, the majority of the income of the FVMP:

1. arrives by the State;
2. is used for the wages of teaching and support staff;
3. is decreasing year after year.

Table 3.1.1.c – Income of the Faculty and of the Vet-Departments (euro)

Year	By the State to the University A+B	By the University to Faculty-Depts C1+C2	Income from any other source to the Faculty D1	Income from any other source to the Depts D2	Public income for research F	Private income for research G	Income from services provided H	TOTAL J = E + I = A+B+C1+C2+ +D1+D2+F+G+H
2006	9,575,155	659,050	229,966	408,613	1,097,382	101,617	824,112	12,895,894
2007	9,694,861	651,457	193,956	765,167	687,586	95,283	772,785	12,861,094
2008	9,335,987	521,146	232,086	718,937	696,707	152,088	833,473	12,490,425

Furthermore, income for research represents 6-9% of the total income, mainly arriving from public subjects (especially Regional and other local Governments). It is noteworthy that also the "other sources" are mainly public subjects.

Actually in Italy private firms generally invest small amounts of funding in research and in the Universities. At the University of Pisa only the Faculty of Engineering receives very relevant amount of funding by private firms just for research projects on their specific interest.

Table 3.1.1.d – Income of the Faculty and of the Vet-Departments (row percentage)

Year	By the State to the University (A+B) / J	By the University to Faculty-Depts C / J	Income from any other source to the Faculty D1 / J	Income from any other source to the Depts D2 / J	Public income for research F / J	Private income for research G / J	Income from services provided H / J	TOTAL J = E + I
2006	74.2%	5.1%	1.8%	3.2%	8.5%	0.8%	6.4%	100.0%
2007	75.4%	5.1%	1.5%	5.9%	5.3%	0.7%	6.0%	100.0%
2008	74.7%	4.2%	1.9%	5.8%	5.6%	1.2%	6.7%	100.0%

Around 6-7% of the income arrives from services provided, mainly by Departments for their clinical and diagnostic activities. It is realistic to presume that these activities (and, as a consequence, the connected income) should show a net increase next year when the Veterinary Teaching Hospital will begin to operate on a regular basis.

It should be pointed out that the item "Other income" is quite different for Faculty when compared to Departments. In fact for the Faculty this item mainly includes external funds which arrive to the Faculty: usually EU funds (such as through the Tuscany Regional Government) to provide specific professional development projects (like the professional Teaching Module "*Expert in Animal Welfare*", cited in the previous paragraph 1.1.4.4).

On the contrary, for the Departments this items mainly include funds from external subjects for

specific formative projects performed in their own interest, and from the fees for enrolling to the Specialisation Schools and, especially, to Master Courses organised inside the Departments.

The baseline problem is that, actually, the FVMP has a very limited margin of autonomous decision about its financial policy. In fact, not only funding available for the Faculty is very small, but a large amount of it is already "finalised" by the University: the Faculty must use that money just for the aim fixed by the Central Administration.

In conclusion, over the last 5-6 years Faculty has been able to decide its own policy based on around 150-160,000 euro per year (in 2009 on 109,000 euro). And if we consider that at least 20-25% of these resources must be used for the functioning of the Faculty (see table 3.1.2.c), it is clear that Faculty has no real margins for really autonomous decisions.

Table 3.1.1.e – Income of the Faculty and the Vet Departments (excluding salaries) (row percentages)

Year	Total income (salaries not included: euro) K = J – (A+B)	By the University to Faculty-Depts C / K	Income from any other source to the Faculty D1 / K	Income from any other source to the Depts D2 / K	Public income for research F / K	Private income for research G / K	Income from services provided H / K	TOTAL K
2006	3,320,739	19.8%	6.9%	12.3%	33.0%	3.1%	24.8%	100.0%
2007	3,166,234	20.6%	6.1%	24.2%	21.7%	3.0%	24.4%	100.0%
2008	3,154,437	16.5%	7.4%	22.8%	22.1%	4.8%	26.4%	100.0%

At present it is very relevant to underline that, because of the growing financial difficulties of the University of Pisa, the Board of Administration, approving the budget for the year 2009, decided to cut 40-50% of its debts toward both the Faculties and the Departments, for a global amount of around 10 million euro.

In consequence of this decision, the flow of income from the University to the Faculty has been reduced of around 50,000 euro. The global flow of income to the three Departments of the FVMP has been reduced of around 100,000 euro.

Currently, the situation of the University budget for the year 2010 is not really clear…

3.1.2. The expenditure of the FVMP

As shown in table 3.1.2, the expenses for the wages of teaching and support staff represent the major part (more than 80%) of the expenses of the Faculty and of its Departments. The expenses for research represent around 8-10% of the total amount of the expenses, whilst expenses for teaching represent around 4-6% of the total amount of the expenses.

Table 3.1.2.a – Expenditure of the Faculty and of the Vet-Departments (euro)

Year	Expenses for teaching and support staff	Expenses for the functioning of the establishment	Expenses for teaching	Expenses for research	Expenses for building maintenance	Other expenses	TOTAL
2006	9,575,155	275,508	468,548	1,347,792	307,124	47,198	12,021,325
2007	9,694,861	307,509	577,397	934,694	292,465	54,175	11,861,102
2008	9,335,987	257,706	721,285	878,620	192,197	34,502	11,420,297

Note: The expenses of the Faculty Library are not included here. They are treated in paragraph 8.1.5.

As it is possible to clearly see in table 3.1.2.a, the expenses for building maintenance are very few, decreasing, and absolutely not in any relation with the real value of the buildings and with their actual needs of maintenance. Because of financial difficulties of the University of Pisa, usually maintenance in University buildings is very often done only in situation of emergency.

It is important to underline that these expenses are under the direct responsibility of the Council of Administration. Even if the reduction of the expenses for building maintenance is a general

policy of the Council of Administration, this policy is particularly evident towards the Faculty of Veterinary Medicine. In fact, since the main goal for the FVMP is to build a whole new Faculty in San Piero a Grado, the maintenance is positively limited just to the most urgent, immediate, needs.

Table 3.1.2.b – Expenditure of the Faculty and of the Vet-Departments (row percentages)

Year	Expenses for teaching and support staff	Expenses for the functioning of the establishment	Expenses for teaching	Expenses for research	Expenses for building maintenance	Other expenses	TOTAL
2006	79.7%	2.3%	3.9%	11.2%	2.6%	0.4%	100.0%
2007	81.7%	2.6%	4.9%	7.9%	2.5%	0.5%	100.0%
2008	81.7%	2.3%	6.3%	7.7%	1.7%	0.3%	100.0%

In tables 3.1.2.c and 3.1.2.d details for both the Faculty and the Vet-Departments are shown.
It seems relevant to underline some aspects:

- even if the funds to the Faculty have been more and more reduced, the FVMP continues to do its best to at least partly cover teaching costs: as it is possible to see in table 3.1.2.c, the 50-60% of the expenses of the Faculty are directly devoted to support teaching. This percentage grows to 75-80% if expenses for building maintenance (which are not under the responsibility and the control of the Faculty) are not included;
- the expenses for the functioning of the Faculty are extremely limited (8-9% of the total expenses): actually it really is a "fight for survival…";
- the total expenses for teaching increase only because Departments spend more and more money for Master Courses, whilst Faculty receives less and less money by the University (see tables 3.1.2.c and 3.1.2.d).

Table 3.1.2.c – Expenditure of the Faculty (euro)

Year	Expenses for the functioning of the establishment	Expenses for external staff for teaching	Expenses for teaching	Expenses for building maintenance	Other expenses	TOTAL
2006	35,492	69,657	181,631	108,974	25,492	421,247
2007	32,738	37,912	160,321	139,781	35,325	406,077
2008	33,833	34,074	145,060	141,420	9,292	363,678

Table 3.1.2.d: Expenditure of the Vet-Departments (euro)

Year	Expenses for the functioning of the establishment	Expenses for research	Expenses for teaching	Expenses for services provided	Expenses for building maintenance	Other expenses	TOTAL
2006	240,016	1,347,792	217,260	682,304	198,150	21,705	2,707,227
2007	274,771	934,694	379,165	878,671	152,685	18,850	2,638,835
2008	223,873	878,620	542,152	885,419	50,776	25,210	2,606,051

3.1.3. The enrolment fees at the University of Pisa

A national law establishes that the global amount of the fees paid by students cannot exceed the level of 20% of the Ordinary Financing Fund (FFO) given every year by the Ministry to the Universities. The FFO given to the University of Pisa has been, in the year 2008, around 215 million euro. For this reason, the global amount of the enrolment fees requested to the students cannot be more than 43 million euro. Since students enrolled at the University of Pisa are 53,000, it means that the average fee is around 830 euro per student.

In fact, even if the maximum amount of the enrolment fee, for the 2008-09 academic year, is 1,878 euro (and 1,896 euro for the 2009-10 academic year), very many fee reductions (see

paragraph 5.1.3, point b), both by the level of the student's family income and by her/his teaching merit, are provided; these reductions reduce the average fee paid by each students to around 830 euro.

Based on a principle of solidarity, for many years the Academic Senate of the University of Pisa has applied an internal rule requesting that all the students studying in Pisa have to pay just the same amount of tuition fee regardless of the Faculty in which they register. When this decision was taken, fifteen years ago, the financial situation of the University was much better and therefore there was no financial repercussion on the budget allocated to our Faculty.

Furthermore, at that time the Central Administration of the University had agreed to pay not only the expenses connected with the construction of new buildings, but also all the general expenses for the functioning of Faculties and Departments (such as heating, electricity, maintenance of buildings etc). Lately, due to the worsening of the financial situation, less and less resources have arrived to the Faculty. On top of this, a growing contribution to the University budget for general expenses is requested by Faculties and Departments. For example, at present Faculties and Departments must pay on their own finances a percentage of 40% of the expenses for heating, water and electricity.

Over the last few years the Academic Senate actually has not been applying any specific criterion in allocating the budget to the different Faculties, but rather it has simply used the same percentage of budgetary reduction to all the Faculty assigned in the previous year, instead of either applying the old criteria to the new situations (i.e. considering the higher number of students enrolled at the FVMP) or studying new, more appropriate, criteria. This decision was excessively punishing for the Veterinary Faculty as it heavily risked to affect the quality of our teaching. Because of this, over the last four years the Dean of the FVMP has voted, alone, unfortunately, against this decision of the Academic Senate of the University of Pisa.

As other Faculties are also being affected by this decision, and thanks also to some vivid discussions during a number of Academic Senates as well as some lobbying, the University of Pisa is beginning, although somewhat slowly, to discuss about the possibility to allow a differentiation of student fees in the different Faculties. This proposal is currently meeting a very strong opposition by the students and by their representatives in the Academic Senate, who thinks that they are already paying too much. The students' attitude is that they seem to prefer a reduced amount and a reduced quality of the services offered by the Faculty rather than to pay a higher fee.

A further complicating aspect of this issue is the fact that Italian Universities do not accept the concept that the education of Veterinary students is more expensive than the education of students of other Faculties. Despite a number of formal acknowledgements in official documents of the Ministry that Veterinary students have a higher "specific weight", when it comes to calculating costs related to teaching, this has not being reflected in the way funds are allocated to the Italian Veterinary Faculties. Too often the criterion utilised for resource allocation is simply the number of students. With this criterion the Faculty of Veterinary Medicine can only see its funding to decrease year after year.

However, we must recognise that, in the distribution of Assistant Professor positions which will be assigned over the next few months, our Academic Senate is oriented to partially adopt a higher coefficient for Veterinary students, although there is no security that such a decision will be adopted also in future motions on budget allocation.

3.1.4. The enrolment fees at the FVMP

A comparison between table 3.1.4.a and table 3.1.1.a clearly demonstrates the financial policy of the University of Pisa about the funding of Faculties: the majority of registration fees paid by students is kept by the University, and only a little part of the fees is directly given to the Faculties.

In the case of the Faculty of Veterinary Medicine, only around 20% of the enrolment fees paid by the Vet students is directly given to the Faculty.

Of course, University (or National Government) pays all other expenses for the Faculty (wages,

new buildings, building maintenance…); an amount of money much and much more than the total enrolment fees paid by the Vet students.

Table 3.1.4.a – Total amount of enrolment fees paid by the students of the Faculty of Veterinary Medicine of Pisa (euro)

Degree Courses	2004-05	2005-06	2006-07	2007-08	2008-09
Veterinary Medicine	758,566.28	855,171.30	797,147.17	828,589.76	899,390.37
Sciences and Technologies of Animal Productions	272,155.57	285,522.65	284,724.07	300,249.39	326,438.82
Techniques of Canine Breeding Techniques and Training	96,596.00	256,308.36	318,326.84	411,524.62	468,828.88
Total enrolling fees	1,127,317.85	1,397,002.31	1,400,198.08	1,540,363.77	1,694,658.07

Table 3.1.4.d synthesises the average fee paid by the students of the FVMP and of each Degree Course of the Faculty.

It is clear that the students of the FVMP pay enrolment fees higher than the other students of the University of Pisa: 1,039 euro versus 830 euro, in 2008.

Furthermore Vet students pay higher fees than the students of the other Degree Courses of the Faculty: 1,123 euro versus 1,033 and 912 euro, still in 2008.

The reasons of these higher fees should be found in the better income situation of the veterinary students' families, and/or in the lower "educational merit" of our students: actually, studies in Veterinary Medicine are not easy…

Table 3.1.4.b – Usage of enrolment fees

	Enrolment fees paid by Vet students	By the University to the Faculty	Percentage of fees given to the Faculty
2006	1,400,198.08	286,749.61	20.5%
2007	1,540,363.77	313,691.62	20.4%
2008	1,694,658.07	305,592.22	18.0%
Total	4,635,219.92	906,033.45	19.5%

Table 3.1.4.c – Students enrolled in the Faculty of Veterinary Medicine of Pisa (number)

Degree Courses	2004-05	2005-06	2006-07	2007-08	2008-09
Veterinary Medicine	868	836	839	827	801
Sciences and Technologies of Animal Productions	318	298	314	298	316
Techniques of Canine Breeding Techniques and Training	289	335	402	475	514
Total students enrolled	1,475	1,469	1,555	1,600	1,631

Table 3.1.4.d – Average enrolment fee paid by each student of the Faculty of Veterinary Medicine of Pisa (euro)

Degree Courses	2004-05	2005-06	2006-07	2007-08	2008-09
Veterinary Medicine	873.92	1,022.93	950.12	1,001.92	**1,122.83**
Sciences and Technologies of Animal Productions	855.84	958.13	906.76	1,007.55	1,033.03
Techniques of Canine Breeding Techniques and Training	334.24	765.10	791.86	866.37	912.12
Average enrolling fee	764.28	950.99	900.45	962.73	1,039.03

3.1.5. An estimation of the average cost of graduates at the FVMP

Even if it isn't very easy, especially from the conceptual point of view: there are too many common costs, to evaluate the average cost of the graduates in Veterinary Medicine, anyway this estimation, even approximate, should be useful to have a less rough idea of how expensive the veterinary education is.

Because of the presence of the common costs (which cannot be directly attributed to each Degree Course), it is not really possible to evaluate the average cost only for the students of the Degree Course in Veterinary Medicine. For this reason, in table 3.1.5 the average cost of all the graduates of the three Degree Course of the FVMP is estimated.

Another approximation is connected with the evaluation of the percentage of costs for teaching and for research. In this evaluation the annual costs for structural values (both buildings and

equipment) are ascribed for 60% to teaching and the remaining 40% to research. In the same way, the cost for Departmental support staff has been attributed to teaching only for a percentage of 15%.

Table 3.1.5 – Estimation of the average cost of graduates at the FVMP (triennium 2006-2008)

3.1.5.a – Structural values

Construction value of the buildings	30,000,000	60% of the total value of the buildings
Duration of buildings	50	years
Value of equipment	6,000,000	20% of the value of the buildings
Duration of equipment	10	years

3.1.5.b – Annual costs

Buildings amortisation	954,696	Interest included (2%)
Equipment amortisation	667,959	Interest included (2%)
Expenses for teaching staff	7,162,619	All the teaching staff of the FVMP
Expenses for Dean's Office support staff	323,903	Dean's Office support staff
Expenses for Library support staff	154,064	Library support staff
Expenses for Departmental support staff	355,907	15% of Departmental support staff
Expenses for the functioning of the Faculty	55,970	Faculty and Library only
Expenses for teaching	273,465	Faculty and Library only
Expenses for building maintenance	130,058	Faculty and Library only
Other expenses	23,370	Faculty and Library only
Total annual cost of the Faculty	**10,102,011**	**euro per year**

3.1.5.c – Average cost of graduates at the FVMP

Average graduates in the triennium	123.3	Graduates of all the FVMP Degree Courses
Average cost of each graduate	**81,908.20**	**euro per graduate**

Even with these prudential estimations, the average cost of each graduate at the FVMP is considerably high: almost 82,000 euro per veterinarian. This result appears to be aligned with the result obtained ten years ago in writing the SER for the first EAEVE evaluation visit, when the average cost was around 70,000 euro. It means a global cost increase of 17% (1.58% per year).

The major part (84.7%) of this cost is taken up by the State. In fact, as shown in table 3.1.5.d, all the enrolment fees paid by the students on average for the period 2006-2008 represent the 15.3% of the total annual costs of the Faculty.

Table 3.1.5.d – Average cost burden by the State for each graduate at the FVMP

Total annual costs of the Faculty	10,102,011	100.0%
Total fees paid by all the students	1,545,073	15.3%
Annual cost burden by the State	8,556,938	84.7%
Average cost burden by the State for each graduate	**69,380.58**	**euro per graduate**

This means that the average cost for the State for each graduate at the FVMP is 69,381 euro.

3.2. Additional comments

The University of Pisa as well as the majority of the Universities in Italy, is State-funded. Every year the Italian Ministry of Education, University and Research (MIUR) provides an institutional fund which is used by the Universities to cover almost all the expenses for teaching and support staff.

The incomes and revenues of the FVMP during the last three years are presented in detail in this chapter. As clearly reported in the proper tables the income of the FVMP arrives mainly by the State, and it is used for the wages of teaching and support staff, and unfortunately it is decreasing year after year. On the contrary the incomes of the FVMP's Departments have been constant over the last three years. The income for research represents 6-9% of the total income, mainly arriving from public subjects (especially Regional and other local Governments). It is noteworthy that also the "other sources" are mainly public subjects. Actually, in Italy private firms generally invest small

amounts of funding in research and in the Universities. Around 6-7% of the income arrives from services provided mainly by Departments for their clinical and diagnostic activities.

It should be pointed out that the income from "Other sources" is quite different for Faculty when compared to Departments. In fact for the Faculty this item mainly includes external funds which arrive to the Faculty: usually EU funds (such as through the Tuscany Regional Government) to provide specific professional development projects, while on the contrary, for the Departments this items mainly include funds from external subjects for specific formative projects performed in their own interest, and from the fees for enrolling to the Specialisation Schools and, especially, to Master Courses organised inside the Departments.

The analysis of this Chapter reveals that the FVMP has a very limited margin of autonomous decision about its financial policy. In fact, the expenses for the wages of teaching and support staff represent the major part (more than 80%) of the expenses of the Faculty and of its Departments. The expenses for research represent around 8-10% of the total amount of the expenses, whilst expenses for teaching represent around 4-6% of the total amount of the expenses.

It is relevant that, even if the funds to the Faculty have been reduced, the FVMP continues to do its best to at least partly cover teaching costs (the 50-60% of the expenses of the Faculty are directly devoted to support teaching) and this percentage grows if the expenses for building maintenance (which are not under the responsibility and the control of the Faculty) are not included.

The amount of the enrolment fees paid by students at the University of Pisa and the financial policy of our University about funding of the different Faculties, and particularly the FVMP, has been also presented and discussed.

Finally, in this chapter an estimate of the average cost of graduates at the FVMP has been calculated and compared with the result obtained ten years ago in writing the SER for the first EAEVE evaluation visit.

3.3. Suggestions

3.4. Annotations

Chapter 4 – THE CURRICULUM OF VETERINARY MEDICINE IN PISA

4.1. Factual information and comments

4.1.1. The new situation after the 1999 Ministerial Decree

There is a well defined national curriculum, established by Ministerial Decrees, which can be only partially customised by each Faculty of Veterinary Medicine. In accordance with the 1999 law (Ministerial Decree n. 509/1999, later integrated and partially modified by the Ministerial Decree n. 270/2004), a new University Education System was introduced in Italy in the 2001-02 academic year. A new feature of the 1999 law was the concept of University Formative Credits (UFCs). In a way similar to the European Credit Transfer System (ECTS), the Italian UFCs system indicates the workload required to a full-time student which has an "average" level of previous competences to achieve the objectives of a certain programme, preferably specified in terms of the learning outcomes and competences to be acquired.

According to the 509/1999 law, the value of each UFC is given by 25 working hours, including the activities performed by the student both with the teacher (teaching activity: both theoretical and practical activities) and at home by her/himself (individual study). The basic idea is that the individual study is the amount of time needed by the student to autonomously elaborate by the concepts explained by the teacher during the teaching activity.

The 1999 law further prescribes that the percentage of teaching activity cannot overpass 50% of each UFC, unless the activity has a high level of practical component.

For this reason the percentage of teaching activity and individual study are different depending on the area of study and on the typology of teaching. For example, the percentage of individual study can vary from 0% (e.g. for preparation of thesis and for practical training) to 64-68% (e.g. basic subjects).

4.1.2. The decisional process in teaching

The scientific/cultural areas of the Italian university system, defined as "*scientific-disciplinary sectors*" are scientific areas which include closely related disciplines for each profession or category of human thought. Over the years, these scientific areas have undergone several modifications being defined in a progressively broader way. The current definition of the following scientific areas was established on 4th October 2000, by a specific Ministerial Decree.

- VET/01: Anatomy;
- VET/02: Physiology
- VET/03: Pathology;
- VET/04: Food Hygiene;
- VET/05: Infectious Diseases;
- VET/06: Parasitology and Parasitic Diseases;
- VET/07: Pharmacology;
- VET/08: Internal Medicine;
- VET/09: Surgery;
- VET/10: Obstetrics and Gynaecology.

Other areas (further provided for by the EU Directive 2005/36, even if not all) are included, by law, among those needed to provide a complete education to Veterinarians.

- AGR/17: General Animal Husbandry and Genetic Improvement;
- AGR/18: Animal Feeding and Nutrition;
- AGR/19: Special Animal Husbandry;
- AGR/20: Poultry and Rabbit Sciences.

In accordance with the importance and the extension of the decisions, the decisional process in teaching develops by the appointment of four levels; each level has (or may have) its own specific consulting body. The four levels are the following (in parenthesis the consulting body):

- the Council of Degree Course (Degree Course Teaching Committee: optional);
- the Faculty Council (Faculty Teaching Committee: compulsory);
- the Academic Senate (University Teaching Committee: compulsory);
- the Ministry (University National Council: compulsory).

Every decision, before reaching its maximum level, must be approved by all lower levels, one after the other: so every level can stop any decision.

Within the framework fixed by the law, every Faculty can create or modify the curriculum in accordance with its specific competence and its specific ideas about the education a veterinarian must have. Within each class, the Council of Degree Course (CDC) distributes the hours among the "modules" (which are the elementary components of the different classes), in accordance with the educational aims of the Degree Course.

Typically any proposal about allocation of teaching hours to each discipline, and especially proposals about curricular modifications, are mainly decided by teachers of the related scientific areas, eventually discussed inside the Degree Course Teaching Committee, and then accepted by the CDC. Proposals are then formally submitted to the Faculty Council, whose approval usually is almost a formality.

Proposals which include deep curricular modifications must be approved by the Academic Senate, and finally by the Ministry. Also at these levels the control is only on formal aspects and not on contents or on substantial aspects.

Every year, the teaching plan of the Degree Course must be also approved by the Faculty and then by the Academic Senate. Prior to the beginning of each academic year, and whenever necessary, the CDC, possibly by consultation with the Degree Course Teaching Committee, establishes the organisation of the classes.

In the same way, the CDC has the control of the calendar of the lessons and decides on the balance ratio between theoretical and practical teaching, obviously within the limits dictated by law. But, again, each teacher has a large autonomy in practically organising this ratio.

4.1.3. Generalities on the Veterinary Medicine Degree Course

The Degree Course in Veterinary Medicine is, together with the Degree Courses in Medicine and Surgery, Pharmacy, Architectures, ruled by European regulations. Despite this, both the Ministerial Decrees n. 509/1999 and n. 270/04, very strangely, in any way neither refer to the EU Directives 1978/1026 and 1978/1027 nor to the presently in force EU Directive 2005/36, even if all of these Directives have been formally acknowledged by the Italian law. The consequence of this particularity is that, even if the Ministerial Decrees n. 509/1999 and n. 270/04 actually do not present any rule in conflict with these EU Directives, Italian Veterinary Medicine Degree Courses can respect the Italian law and, at least in theory, not respect the European Directives.

The Veterinary Medicine Degree Course is a 5-year course, with, since the 1989-90 academic year, a limited enrolment ("*numerus clausus*"). For more details about the "*numerus clausus*" both in Italy and at the FVMP, and about the admission test, see Chapter 9.

4.1.3.1. <u>The curriculum of the Veterinary Medicine Degree Course at the FVMP</u>

The curriculum in Veterinary Medicine is organised in areas of study (Table 4.1.4.l) where educational and formative aims are well defined (see paragraph 4.1.8).

Within each class, different amounts of teaching hours must be provided as practical or clinical work. Practical and clinical activities may be also carried out in qualified organisations other than the Faculty, such as Government Health Services (slaughterhouses, public kennels), State

Veterinary Service and Research Institutes (mainly Experimental Zooprophylactic Institutes), and other Institutions and private clinics, farms and companies operating in the field of Veterinary Medicine.

Each area of study is organised in classes, as listed in Tables 4.1.4.c-k. Every class may be composed of different "modules", which are the elementary components of the different classes.

The maximum number of examinations is established by the CDC, now in the limit of 30, fixed by the Ministerial Decree n. 270/2004. The examinations can be carried out only after the end of each class.

In order to obtain the Degree in Veterinary Medicine, students have to attend all classes and to pass all examinations, language and Informatics tests included.

The whole teaching workload of all the Italian Veterinary Medicine Degree Courses amounts to 300 UFCs. It means 7,500 hours of workload for each student, including teaching and practical activities, as well as individual study.

At the FVMP the Degree Course is organised, for every year level, in two coordinated periods, named "semesters", which last around 13-15 weeks. The length of each semester and the dates of beginning and end are yearly established by the CDC. Usually the first semester starts in the second half of September, and ends before Christmas. The second one starts at the beginning of February and ends around the middle of May, with a two weeks stop during the Easter holidays.

For each semester, classes for around 22-35 UFCs are offered. Together with the other activities, the total student workload per year is approximately 60 UFCs, corresponding to a global of 1,500 hours of work, individual study included. Each class is composed of one or more "modules" (which are the elementary components of the different classes). Actually, if we do not consider the foreign language class, only two courses, out of 26, are composed by only one module. The courses composed by more than one module are called "*Integrate Courses*".

At present, the composition, in modules, of the compulsory classes common to all students (during the first 9 semesters) is shown in the following Table 4.1.3.1.a.

Table 4.1.3.1.a. – Compulsory classes common to all students during the 5-year curriculum in Veterinary Medicine at the University of Pisa (foreign language excluded)

Classes composed by	Total classes	Held in the same semester	Held in two different semesters	Total modules
1 module	2	2	=	2
2 modules	11	7	4	22
3 modules	12	9	3	36
4 modules	1	=	1	4
TOTAL	**26**	**18**	**8**	**64**

As shown in table 4.1.3.1.a, the total number of compulsory examinations is 26, to which must be added the examinations of Foreign Language and of Informatics (ECDL) as well as elective examinations. Each compulsory module common to all students is characterised by an average (and a modal: 28 items) value of 4 UFCs per each, with a minimum of 2 and a maximum of 10.

The numbers of UFCs for each compulsory module is shown in the following Table 4.1.3.1.b.

It's important to underline that, from a formal point of view, every class is a unique "object", whatever the number of modules it has. It means that, in theory, the final examination must be a single one common to all the modules composing the class. And, as a consequence, the final validation of each integrate examination will be formally recognised only when students have passed the examinations of all the modules composing the integrate course. As shown in paragraphs 5.1.5 and 5.2.1, the real situation is even more complex.

The attendance at all the classes of the Veterinary Medicine Degree Course is compulsory, although the degree of attention teachers give to checking the presences of the students tends to vary (generally an attendance sheet is passed around during class). A much closer check is always performed by teachers for the attendance to practical activities.

Table 4.1.3.1.b. – Compulsory modules common to all students during the 5-year curriculum in Veterinary Medicine at the University of Pisa (foreign language excluded)

Modules with:	Total classes	Total UFCs
2 UFCs	9	18
3 UFCs	12	36
4 UFCs	28	112
5 UFCs	10	50
6 UFCs	2	12
7 UFCs	2	14
10 UFCs	1	10
TOTAL	**64**	**252**

In this way students can sit for the examination only after that the class has been held and, at least in theory, if they reached the 70% of class attendance (including both theoretical and practical activities).

At the end of each class students must sit for an examination to evaluate the quality of their work and study. Before sitting for any examination, students must have their attendance officially validated by the teacher by means of the teacher's signature ("*attendance signature*") on the personal University booklet of each student.

The evaluation is expressed as a score from a minimum of 18/30 to a maximum of 30/30. A mark of 30/30 "*cum laude*" may be given. UFCs are awarded on passing the examination, independently of the mark obtained.

In Italian Universities oral examinations are traditionally performed. And it is the same at the FVMP. However, things are (slowly) changing. In fact, also at the FVMP written examinations begin to be performed. Furthermore "*in itinere*" tests (tests on a part of the topics, i.e. a test after 1/3 of the class, and then another one after 2/3 of the class) are more and more often performed. In these cases student's knowledge is evaluated only on topics discussed in the previous lessons. If positive, the result of these "*in itinere*" tests are taken in account for the final evaluation.

In order to not reduce class attendance, exam sessions are held, at least in theory, only during periods when classes are over. Only "*off-course students*" (students who have gone beyond their study length expectations, either within a specific year or within the entire curriculum, see over) can have examinations during the teaching periods. But this rule is not always well respected: not rarely *on-course* students are very glad to have exam sessions in any period of the year.

More details about the Italian system of performing examinations are given in paragraph 5.1.5 points a, b and c, and paragraph 5.2.1.

Until the first semester of the fifth year compulsory subjects common to all the students are taught. During the second semester of the fifth year students can choose optional activities for a maximum of 15 UFCs. Every year the FVMP offers to the students a large choice of teaching proposals organised within a homogeneous set of classes, always finalised to some professional goal, called "*Professionalising Integrated Courses*" (PICs), each of 5 or 10 UFCs. These PICs are activated only if required by a minimum number of students (usually from 5 to 10).

Over the last two-three years students have begun to choose, as elective activities, to do more intra- and/or extra-mural practice training. A more detailed explanation of the (compulsory) elective activities is shown in paragraph 4.1.5. Compulsory practical training must be performed also during the fourth and the fifth year.

Students must demonstrate to know at the level "*B1*" a language of the European Union taught by the Interdepartmental Linguistic Centre (ILC) of the University of Pisa, by passing an examination (3 UFCs) there. Twice a year the ILC organises courses of different level for the various languages, which are very cheap for all the students (around 30 euro per course) and with a timetable as compatible as possible with the calendars of the different Faculties. Since these courses

are taught downtown, veterinary students do not attend them. In an effort to help students in learning languages, since 2002 the FVMP organises a specific English course just in a classroom of the Faculty and scheduled inside the lessons timetable. Actually the frequency has not been really enthusiastic: not more then 20-25 students per course.

Students must achieve the "*start level*" of the "*European Computer Driving Licence*" (ECDL: 3 UFCs). Actually this is not a structured teaching activity. Students can prepare this examination, either at home or in the computer rooms of the Faculty, by a self-learning course on CD which is put at their disposal by the Faculty Library.

Before graduating, students must prepare their final thesis (with a workload of 15 UFCs, i.e. 375 hours), which will be discussed at the end of the fifth year. The topic of the thesis must be chosen by the student at least one year before the date of graduation. The degree thesis consists of a written original dissertation (often a research work, sometimes a review paper: more details are reported in paragraph 13.1.1) to be prepared by the student under the guidance of a member of the teaching staff, and to be discussed in front of an official Committee composed by at least seven teachers.

The final evaluation is graded with a score out of one hundred and ten. A mark of 110/110 "*cum laude*" can be given with the unanimous vote of all the members of the Committee. In theory the final mark is the average of the marks of all members of the Committee, considering the global curriculum of the student, the contents of the thesis and its presentation. Actually the final mark is the sum of two numbers:

- the average of the marks obtained by the students in all her/his examinations, referred to 110, and computed by multiplying the average mark (out of 30) by 110/30;
- the mark, usually between zero and eleven, for the evaluation of the contents of the thesis and for its presentation.

As students generally take their final thesis very seriously and work very hard for it, the evaluation of this work is very often as high as possible. The Council of Degree Course has been obliged to fix strong rules to avoid this escalation.

In theory students should graduate in five years. But only around 20-25% of students reach this goal. After the fifth year students can continue to be registered as veterinary students (they have to pay their annual registration fee as usual): these students are called "*off-course students*" (in Italian: "*studenti fuori corso*"). If they have already attended all courses (and obtained the relative "*attendance signature*") they can continue to study and to pass examinations on their own, while if they are missing proof of attendance to one or more classes they must re-attend that/those class/es in order to be able to take that exam

Since "*off course students*" have just all the same rights of the "regular" students ("*on-course*" students), they can attend (again, if they want) classes and practical activities, and, of course, sit for examinations. Furthermore there are special exam sessions held during the class time, which are especially for them (and not for the regular students).

In order to try to reduce this phenomenon (which penalises the Universities in receiving funds by the Ministry), the University of Pisa decided to increase, since the 2009-10 academic year, the enrolment fee for *off-course students*.

4.1.4. The curriculum followed by all students

4.1.4.1. <u>The compulsory hours per year and per semester</u>

All the compulsory hours taken by all students are reported, per year of course, on Table 4.1.4.1.a. Hours of compulsory practical training taken by all students are showed in Table 4.1.4.1.b. In the following nine tables (Tables 4.1.4.1.c-k) the details of the modules taught in each semester are shown. It is to be noticed that, in the column "*Exam.num.*", the first number indicates

the number of the integrate examination (from 1 to 26, plus the Language: 29); the second number indicates the number of the module inside the integrate examination (from 1 to a maximum of 4).

Table 4.1.4.1.a – General table of curriculum compulsory hours taken by all students, per year of course

Year of course	Hours of training								Total UFCs (2) (3)
	Theoretical training			Total supervised practical training			Final thesis (G)	Total hours to be taken by each student	
	Lectures (A)	Seminars and Videos (B)	Self-directed Learning (1) (C)	Laboratory & & desk work (D)	Non-clinical animal work (E)	Clinical work (F)			
First	478	4	105	57	32			676	58
Second	591	10		128	10			739	60
Third	597	36		93	75			801	63
Fourth	489	51		54	128	121	175	1,018	59
Fifth (compulsory)	351	16		126	133	199	200	1,025	45
Fifth (elective) (3)								375	15
Total	2,506	117	105	458	371	320	375	4,634	300

(1) 75 hours of Informatics (ECDL) and 30 compulsory hours of Anatomy are included in the 105 Self-directed Learning hours.
(2) 3 compulsory UFCs of Language and 3 compulsory UFCs of Informatics (ECDL) during the first year are included.
(3) Elective hours refer to compulsory teaching activities chosen by all the students. For details, see paragraph 4.1.5.

As already said, Informatics is not a structured teaching activity and students can prepare this examination, either at home or in the computer rooms of the Faculty, by a self-learning course which is put at their disposal by the Faculty Library. Because of this, the relative 75 hours (3 UFCs) of workload are included in the hours of Self Directed Learning.

Table 4.1.4.1.b – Hours of compulsory supervised practical training taken by all students, per year of course

Year of course	Practical training during lessons			Other practical training inside Faculty			Other practical training outside Faculty			Total practical training (D+E+F)
	Laboratory and desk work (D)	Non-clinical animal work (E)	Clinical work (F)	Laboratory and desk work (D)	Non-clinical animal work (E)	Clinical work (F)	Laboratory and desk work (D)	Non-clinical animal work (E)	Clinical work (F)	
First	57	32								89
Second	128	10								138
Third	93	75								168
Fourth	54	3	71		80	50		45		303
Fifth (compulsory)	31		49	76	63	150	19	70		458
Total	363	120	120	76	143	200	19	115		1,156

The number of UFCs of the fourth and of the fifth years includes the workload of the degree thesis (15 UFCs, i.e. a workload of 375 hours) and of the other compulsory supervised practical activities (not carried out together with the lessons).

A synthetic comparison with the new study plan (MD n. 270/04) is reported in paragraph 4.2.6.

Table 4.1.4.1.c – First year – Semester 1 (hours)

Mod. num.	Exam. num.	Name of the teaching module	UFCs	Lectures	Seminars & Videos	Lab. & desk work	Non clinical animal work	Clinical work
1	1	Mathematics and Physics	5	43				
2	2.4	Veterinary Zoology I	2	15		2		
3	3	Veterinary Biochemistry	10	95				
4	4.1	General Embryology and Histology	5	51	1	11		
5	5.2	Topographic Anatomy of Domestic Animals	4	39	1		10	
		TOTAL first semester	26	243	2	13	10	

Table 4.1.4.1.d – First year – Semester 2 (hours)

Mod. num.	Exam. num.	Name of the teaching module	UFCs	Lectures	Seminars & Videos	Lab. & desk work	Non clinical animal work	Clinical work
1	2.1	Veterinary Botany	4	25		10		
2	2.2	Animal Genetics	5	31		12		
3	2.3	Veterinary Zoology II	4	27		8		
4	4.2	Morphogenesis & Developmental Disorders Dom. Anim	2	23			2	
5	5.1	Systematic & Comparative Anatomy of Domestic Anim.	3	29	1	6	2	
6	6.1	Systematic & Comparative Anatomy of Domestic Anim.	6	52	1	8	14	
7	6.2	Anatomy of Vertebrates of Veterinary Interest	2	21			4	
8	29	Foreign language (generally English)	3	27				
		TOTAL second semester	29	235	2	44	22	
13		**TOTAL first year**	**55**	**478**	**4**	**57**	**32**	

Table 4.1.4.1.e – Second year – Semester 1 (hours)

Mod. num.	Exam. num.	Name of the teaching module	UFCs	Lectures	Seminars & Videos	Lab. & desk work	Non clinical animal work	Clinical work
1	7.1	Physiology	6	65		8	2	
2	7.2	Ethology	3	28	2	8		
3	8.1	Physiology	5	57		6		
4	8.2	Endocrinology	4	34		16		
5	9.1	Microbiology	5	56		16		
6	9.2	Veterinary Parasitology	5	47		16	2	
7	26.2	Molecular Biology	7	61				
		TOTAL first semester	35	348	2	70	4	

Table 4.1.4.1.f – Second year – Semester 2 (hours)

Mod. num.	Exam. num.	Name of the teaching module	UFCs	Lectures	Seminars & Videos	Lab. & desk work	Non clinical animal work	Clinical work
1	23.1	General Animal Husbandry and Genetic Improvement	2	17		12		
2	23.2	Animal Feeding and Nutrition	5	47	5	10	6	
3	23.3	Feed Industry	3	29	3	9		
4	12.1	General Pathology	4	43		15		
5	12.2	Physiopathology	4	46		12		
6	26.1	Clinical Biochemistry	7	61				
		TOTAL second semester	25	243	8	58	6	
13		**TOTAL second year**	**60**	**591**	**10**	**128**	**10**	

Table 4.1.4.1.g – Third year – Semester 1 (hours)

Mod. num.	Exam. num.	Name of the teaching module	UFCs	Lectures	Seminars & Videos	Lab. & desk work	Non clinical animal work	Clinical work
1	16.1	Pharmacology	4	58		4		
2	16.3	Veterinary Chemotherapy	2	27		4		
3	13.1	Anatomical Pathology I	4	34	5	2	12	
4	13.2	Anatomical Pathology II	4	34	5	3	11	
5	13.3	Necropsy Techniques	4	39			14	
6	10.1	Viral Infectious Diseases	4	36	3	15		
7	10.2	Bacterial Infectious Diseases	4	46		8		
8	10.3	Veterinary Epidemiology	2	16	3	8		
9	25.2	Agronomy and Forage Crops	3	26				
10	25.3	Rural Building	2	17				
		TOTAL first semester	33	333	16	44	37	

Table 4.1.4.1.h – Third year – Semester 2 (hours)

Mod. num.	Exam. num.	Name of the teaching module	UFCs	Lectures	Seminars & Videos	Lab. & desk work	Non clinical animal work	Clinical work
1	16.2	Toxicology	3	33		13		
2	24.1	Animal Husbandry I (Polygastric)	4	38		2	14	
3	24.2	Animal Husbandry II (Monogastric)	4	36	2	8	8	
4	24.3	Poultry and Rabbit Science	4	22	8	3	10	
5	11.1	Avian Pathology	4	48		2	4	
6	11.2	Veterinary Public Health	2	16	3	8		
7	11.3	Parasitic Diseases	4	32	3	13	2	
8	25.1	Economics	5	39	4			
		TOTAL second semester	30	264	20	49	38	
18		**TOTAL third year**	**63**	**597**	**36**	**93**	**75**	

Table 4.1.4.1.i – Fourth year – Semester 1 (hours)

Mod. num.	Exam. num.	Name of the teaching module	UFCs	Lectures	Seminars & Videos	Lab. & desk work	Non clinical animal work	Clinical Work
1	14.1	Control & Food Inspection of Products of Animal Origin	4	32	12	8	3	
2	14.2	Food technologies	3	29		12		
3	14.3	Veterinary legislation on foods of animal origin	2	15	4	8		
4	17.1	Medical Semeiotics	4	41	8			10
5	21.1	Andrology	3	34	2	3		5
6	21.2	Reproductive Technology	4	49		2		8
7	22.1	Reproductive Pathology	4	48				11
		TOTAL first semester	24	248	26	33	3	34

Table 4.1.4.1.j – Fourth year – Semester 2 (hours)

Mod. num.	Exam. num.	Name of the teaching module	UFCs	Lectures	Seminars & Videos	Lab. & desk work	Non clinical animal work	Clinical Work
1	17.3	Veterinary Medical Pathology	4	41	8	10		
2	17.2	Medical Diagnostics	3	32		11		1
3	19.1	Surgical Pathology	4	55				4
4	19.2	Surgical Semeiotics	4	47	4			8
5	19.3	Veterinary Radiology	3	31				13
6	22.2	Veterinary Obstetrics	4	35	13			11
		TOTAL second semester	22	241	25	21		37
13		**TOTAL fourth year**	**46**	**489**	**51**	**54**	**3**	**71**

Table 4.1.4.1.k – Fifth year – Semester 1 (hours)

Mod. num.	Exam. num.	Name of the teaching module	UFCs	Lectures	Seminars & Videos	Lab. & desk work	Non clinical animal work	Clinical Work
1	18.1	Veterinary Internal Medicine	5	53	8			13
2	18.2	Forensic Veterinary Medicine	3	39		5		
3	18.3	Veterinary Therapeutics	3	38				6
4	20.1	Veterinary Surgery	4	51				8
5	20.2	Anaesthesiology	4	45				14
6	20.3	Veterinary Surgical Procedures	3	31	5			8
7	15.1	Industry & Food Inspection of Products of Animal Origin	5	54		14		
8	15.2	Food Hygiene and Technology	4	40	3	12		
		TOTAL first semester	31	351	16	31		49
		TOTAL fifth year	**31**	**351**	**16**	**31**		**49**
8		**TOTAL five years**	**255**	**2,506**	**117**	**363**	**120**	**120**

The second semester of the fifth year is lecture-free, and totally devoted to complete the practical training, to make the elective compulsory activities and to finish the final degree thesis.

4.1.4.2. The compulsory hours in EU-listed subjects taken by all students

The compulsory hours in EU-listed subjects taken by all the students are shown in the Table 4.1.4.l. Almost all the EU-listed subjects are taught at the FVMP. The ones not explicitly taught, are taught, just how foreseen by the EU Directive 2005/36, within some other teaching modules.

For instance:

1. *Biomathematics* is taught within the module of *Mathematics and Physics*;
2. *Practice management* is taught within many modules: *Animal Feeding and Nutrition*, *Animal Husbandry I* and *II*, *Poultry and Rabbit Science*, *Economics* and other professional modules;
3. *Field veterinary medicine* (surgery clinics) is taught within many modules of the *Clinical Sciences*;
4. *Preventive medicine* and *Veterinary hygiene* are taught within the modules of *Viral infectious diseases*, *Bacterial infectious diseases*, *Veterinary epidemiology*, *Avian Pathology*, *Parasitic diseases*;
5. *Veterinary certification and report writing* is taught within the module of *Forensic Medicine*;
6. *Career planning and opportunities* is taught within the module of *Economics*;
7. *Professional Ethics* is taught within the modules of the 4th and 5th year.

4.1.4.3. The compulsory supervised practical training in EU-listed subjects taken by all students

At the FVMP practical activities are carried out in three different ways:

1. *practice closely connected with the teaching activities*: these practice hours – scheduled in the lectures and practical work timetable (see Annex VII) – are performed under close guidance of the teacher; this kind of practice represents the 52% of the total practice hours;
2. *other practical training inside the Faculty*: this training, of more general kind, and not closely connected with some specific teaching activity, is always supervised by a teacher (tutor of the student) of that specific subject; the validation of the results is under the responsibility of that teacher; but, anyway, the student has a much higher degree of autonomy and personal responsibility in doing things and in achieving teaching objectives; furthermore, the student is requested to perform activities requiring a higher degree of professional expertise; this kind of practice represents around the 36% of the total practice hours;
3. *other practical training outside the Faculty*: this activity, also of a more general kind, and not closely connected with some specific course, is performed by the student outside the Faculty. Also this training is always supervised by a teacher helped by an *external tutor*, who formally

accepts to guide students and to survey their work. Anyway the final check and the validation of the results obtained by the student is under the responsibility of the teacher (taking into account the evaluation of external tutor/s). Also these activities require a higher level of professional expertise and a relevant degree of autonomy by the student and are very useful for the student to directly know the professional world; this kind of practice represents around the 12% of the total practice hours.

Table 4.1.4.l – Curriculum compulsory hours in EU-listed subjects taken by all students

	Subjects	Theoretical training			Total supervised practical training			Total hours to be taken by each student
		Lectures (A)	Seminars & Videos (B)	Self-direct learning (C)	Laboratory & desk work (D)	Non-clinical Animal work (E)	Clinical work (F)	
1.	**Basic Subjects**							
	1.a) Physics	43						43
	1.b) Chemistry	10						10
	1.c) Animal biology	42			10			52
	1.d) Plant biology	25			10			35
	1.e) Biomathematics							
	1- Total number of hours	*120*			*20*			*140*
2.	**Basic Sciences**							
	2.a) Anatomy (incl. histology and embryology)	202	4	30	25	30		291
	2.b) Physiology	156			30	2		188
	2.c) Biochemistry, cellular and molecular biology	207						207
	2.d) Genetics (including molecular genetics)	48			24			72
	2.e) Pharmacology and pharmacy	58			4			62
	2.f) Toxicology (including environmental pollution)	33			13			46
	2.g) Microbiology (including virology, bacteriology and mycology)	123	3		75	6		207
	2.h) Immunology	26			26			52
	2.i) Epidemiology (including scientific and technical information and documentation methods)	16	3		8			27
	2.j) Professional ethics							
	2- Total number of hours	*869*	*10*		*205*	*38*		*1,152*
3.	**Clinical Sciences**							
	3.a) Obstetrics	35	13				11	59
	3.b) Pathology (including anatomical pathology)	209	10		32	102		353
	3.c) Parasitology	68	3		63	4		138
	3.d) Clinical medicine and surgery (including anaesthetics)	317	29		10		207	563
	3.e) Clinical lectures on various domestic animal, poultry and other animal species including avian pathology	48				5		53
	3.f) Field veterinary medicine (surgery clinics)							
	3.g) Preventive Medicine							
	3.h) Diagnostic imaging (including radiology)	31					13	44
	3.i) Reproduction and reproductive disorders	131	2		5		74	212
	3.j) Veterinary state medicine and public health	16	3		9			28
	3.k) Veterinary legislation and forensic medicine	39			5			44
	3.l) Therapeutics	65			4		6	75
	3.m) Propaedeutics (including laboratory diagnostic methods)	79	4		11		9	103
	3- Total number of hours	*1,038*	*64*		*139*	*111*	*320*	*1,672*
4.	**Animal Production**							
	4.a) Animal production	74						74
	4.b) Animal nutrition	76	8		19	51		154
	4.c) Agronomy	26						26
	4.d) Rural economics	39	4					43
	4.e) Animal husbandry	22	10		13	112		157
	4.f) Veterinary hygiene							
	4.g) Animal ethology and protection	28	2		8			38
	4- Total number of hours	*265*	*24*		*40*	*163*		*492*
5.	**Food Hygiene/ Public Health**							
	5.a) Inspection, and control of animal foodstuffs or foodstuffs of animal origin and the respective feedstuff production unit	32	12		8	66		118
	5.b) Food hygiene and technology	94	3		26			123
	5.c) Food science including legislation	15	4		8			27
	5.d) Practical work (including practical work in places where slaughtering and processing of foodstuffs takes place)	29			12			41
	5- Total number of hours	*170*	*19*		*54*	*66*		*309*
6.	**Professional Knowledge**							
	6.a) Practice management							
	6.b) Veterinary certification and report writing							
	6.c) Career planning and opportunities							
	6- Total number of hours							
7.	**Language, Informatics and non EU-listed subjects**							
	7.a) Foreign language (generally English)	27						27
	7.b) Informatics (European Computer Driving Licence - ECDL)			75				75
	7.c) Other non EU-listed subjects (Rural Building)	17						17
	7- Total number of hours	*44*						*119*
	Total global hours							
	Total number of compulsory hours to be taken by all students	***2,506***	***117***	***105***	***458***	***378***	***320***	***3,884***
	Percentage out of total hours to be taken by all students	*64.52%*	*3.01%*	*2,70%*	*11.79%*	*9.73%*	*8.24%*	*100.00%*
	Workload for (compulsory) elective activities chosen by each student (hours)							*375*
	Workload for final thesis (hours)							*375*
	Total workload for graduation (hours)							***4,634***

In order to be admitted to the second and to the third type of practical training, students must have already obtained at least 180 UFCs, 60 of whose must be in the areas where the practical training is to be performed. Until two years ago students could choose where to perform their practical training (previous points 2 and 3). It means that they could spend these hours either attending practical activities within Departments at the FVMP or at outside public or private institutions. However, over the last two years, in the forecast of establishing the Veterinary Teaching Hospital, students have been obliged to do their clinical training at the Department of Veterinary Clinics.

When the practical training is done within a University structure, the student works under the responsibility of a teacher of the Faculty (internal tutor). When the training is performed outside the University, the student works under the responsibility of an external tutor and of a teacher of the Faculty (internal tutor). When this occurs, a formal agreement is undersigned by the Dean of the Faculty (under the approval of the Faculty Council) with the legal representative of all the external structure where veterinary students do their practical training. This agreement not only ensures the firm about the insurance situation of the students, but also ensures both parties about their reciprocal responsibilities in the managing of the training. The scheme of this agreement is reported in Annex II.

Since the Faculty does not own a slaughterhouse, the training in Inspection and in Food Hygiene is done in public slaughterhouses in the territory around Pisa. In this case the external tutor usually is an Official Veterinarian of the local public Veterinary Service.

The training in Animal Husbandry and in Animal Nutrition is usually done in the University Farm, but also in private farms. Over the past several years, during their training in the University Farm students are assisted not only by the official teacher, but also by a private practitioner (contracted by the University Farm) who helps them in all their activities managing the large animals present in the University Farm. For more details about the organisation and the contents of the internal and external practical training, see paragraph 4.1.6.

The total number of compulsory hours of supervised practical training in EU-listed subjects taken by each student is shown in table 4.1.4.m.

4.1.4.4. Curriculum compulsory hours in non EU-listed subjects taken by all the students

As shown in Table 4.1.4.c, apart from Language and Informatics, the only non EU-listed subject taught in the Degree Course in Veterinary Medicine of the FVMP is "*Rural Building*", just for 2 UFCs (17 hours of lessons).

Anyway, the situation of these three subjects is the following:

1. Foreign language (usually English): 3 UFCs, 27 hours of lessons;
2. Informatics: 3 UFCs, 75 hours of self-learning with an apposite course on CD;
3. Rural Building: 2 UFCs, 17 hours of lessons.

Table 4.1.4.m – Total supervised practical training in EU-listed subjects taken by all students (compulsory hours) (1)

Subjects	Total supervised practical training			Practical training during lessons			Other practical training inside Faculty			Other practical training outside Faculty		
	Laboratory & desk work (D)	Non-clinical animal work (E)	Clinical work (F)	Laboratory & desk work (D)	Non-clinical animal work (E)	Clinical Work (F)	Laboratory & desk work (D)	Non-clinical animal work (E)	Clinical work (F)	Laboratory & desk work (D)	Non-clinical animal work (E)	Clinical work (F)
1. Basic Subjects												
1.a) Physics												
1.b) Chemistry												
1.c) Animal biology	10			10								
1.d) Plant biology	10			10								
1.e) Biomathematics												
1- Total number of hours	*20*			*20*								
2. Basic Sciences												
2.a) Anatomy (incl. histology and embryology)	25	30		25	30							
2.b) Physiology	30	2		30	2							
2.c) Biochemistry, cellular and molecular biology												
2.d) Genetics (including molecular genetics)	24			24								
2.e) Pharmacology and pharmacy	4			4								
2.f) Toxicology (including environmental pollution)	13			13								
2.g) Microbiology (including virology, bacteriology and mycology)	75	6		35			30			10	6	
2.h) Immunology	26			10			8			8		
2.i) Epidemiology (including scientific and technical information and documentation methods)	8			8								
2.j) Professional ethics												
2- Total number of hours	*205*	*38*		*149*	*32*		*38*			*18*	*6*	
3. Clinical Sciences												
3.a) Obstetrics			11			11						
3.b) Pathology (including anatomical pathology)	32	102		32	39			63				
3.c) Parasitology	63	4		25	4		38					
3.d) Clinical medicine and surgery (including anaesthetics)	10		207	10		57			150			
3.e) Clinical lectures on various domestic animal, poultry and other animal species including avian pathology		5			4						1	
3.f) Field veterinary medicine (surgery clinics)												
3.g) Preventive Medicine												
3.h) Diagnostic imaging (including radiology)			13			13						
3.i) Reproduction and reproductive disorders	5		74	5		24			50			
3.j) Veterinary state medicine and public health	9			8						1		
3.k) Veterinary legislation and forensic medicine	5			5								
3.l) Therapeutics	4		6	4		6						
3.m) Propaedeutics (including laboratory diagnostic methods)	11		9	11		9						
3- Total number of hours	*139*	*111*	*320*	*100*	*47*	*120*	*38*	*63*	*200*	*1*	*1*	
4. Animal Production												
4.a) Animal production												
4.b) Animal nutrition	19	51		19	6						45	
4.c) Agronomy												
4.d) Rural economics												
4.e) Animal husbandry	13	112		13	32			80				
4.f) Veterinary hygiene												
4.g) Animal ethology and protection	8			8								
4- Total number of hours	*40*	*163*		*40*	*38*			*80*			*45*	
5. Food Hygiene/ Public Health												
5.a) Inspection, and control of animal foodstuffs or foodstuffs of animal origin and the respective feedstuff production unit	8	66		8	3						63	
5.b) Food hygiene and technology	26			26								
5.c) Food science including legislation	8			8								
5.d) Practical work (including practical work in places where slaughtering and processing of foodstuffs takes place)	12			12								
5- Total number of hours	*54*	*66*		*54*	*3*						*63*	
6. Professional Knowledge												
6.a) Practice management												
6.b) Veterinary certification and report writing												
6.c) Career planning and opportunities												
6- Total number of hours												
7. Language, Informatics and non EU-listed subjects												
7.a) Foreign language (generally English)												
7.b) Informatics (European Computer Driving Licence - ECDL)												
7.c) Other non EU-listed subjects (Rural Building)												
7- Total number of hours												
Total global hours												
Total number of compulsory hours of supervised practical training	***458***	***378***	***320***	***363***	***120***	***120***	***76***	***143***	***200***	***19***	***115***	
Percentage out of total practical training to be taken by each student	*39.62%*	*32.70%*	*27.68%*	*31.40%*	*10.38%*	*10.38%*	*6.57%*	*12.37%*	*17.30%*	*1.64%*	*9.95%*	

(1) In these hours the compulsory elective activities chosen by each student are **not** included.

4.1.4.5. Seminars and other teaching activities performed by external teachers

As already said in paragraph 0.3, during the last six years the Faculty invited 28 external teachers to hold 47 short teaching classes (generally 10-20 hours) within official courses, with a global amount of 606 hours. These seminars have always been held in the presence of the official teacher. These classes have always a professional approach and their main goal is to put students in a closer touch with the professional world and with its practical problems. Even if, as a consequence of the growing financial difficulties of the Faculty, the possibility to pay professionals to perform these courses is being greatly reduced, many of these veterinarians are still willing to do this teaching activity just to remain in contact with the Faculty and with the students, just receiving an award of their activity.

Table 4.1.4.5.a – The short teaching classes taught by external teachers **Total number**

EU-listed subjects	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	Total
2.g. Virology and Bacteriology		1	1				2
2.i. Epidemiology		1					1
3.a. Obstetrics	1	2	2				5
3.b. Pathology	1	1	1	1	1	1	6
3.c. Parasitology			2	1		1	4
3.d. Clinical Medicine and Surgery	1	4	1	2		2	10
3.j. Veterinary state medicine and public health	1	1					2
4.b. Animal Nutrition	1	1	1				3
4.e. Animal Husbandry	1	2	1		1	1	6
5. Food Hygiene			1	2	2	3	8
Total	6	13	10	6	4	8	**47**

Table 4.1.4.5.b – The short teaching classes taught by external teachers **Total hours**

EU-listed subjects	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	Total
2.g. Virology and Bacteriology		8	7				15
2.i. Epidemiology		20					20
3.a. Obstetrics	20	28	30				78
3.b. Pathology	10	10	10	10	12	10	62
3.c. Parasitology			11	4		4	19
3.d. Clinical Medicine and Surgery	30	80	20	20		24	174
3.j. Veterinary state medicine and public health	8	8					16
4.b. Animal Nutrition	15	15	15				45
4.e. Animal Husbandry	10	22	10		10	10	62
5. Food Hygiene			20	15	30	50	115
Total	93	191	123	49	52	98	**606**

4.1.5. The (compulsory) optional activities

According to the Ministerial Decree n. 509/1999, 15 UFCs (out of the global 300 UFCs) must be reserved to the autonomous choice or the students. In theory, students can do this choice in any year they prefer. But usually, at least at the FVMP, most students do this choice during their fifth year.

In theory, on the basis of the MD 509/1999, students can choose any activity they prefer, even if not really connected with their curriculum. In the future, on the basis of the new MD 270/2004, these activities will have to be compulsory connected with their curriculum of study; as a consequence, in the future optional activities will have to be formally authorised by the Council of the Degree Course.

On the basis of the MD 270/04, since the next academic year, the number of compulsory elective UFCs will be reduced to 9 (see paragraph 4.2.6). At the FVMP, the basic idea for the compulsory

optional activities is to give to students the opportunity to achieve a deeper knowledge of what already learned, or to consolidate their practical experiences.

At the beginning (and for the first time in 2004-05), the FVMP offered students to choose these compulsory elective UFCs among a total of 20 different classes organised, during the second semester of the fifth year, within a homogeneous set of topics, and finalised to the same professional goal, called "*Professionalising Integrated Courses*" (PICs), each constituted of either 5 (14 PICs) or 10 UFCs (6 PICs). These PICs were activated only if a minimum number of students (usually from 5 to 10) were chosen them. Details are reported in paragraph 4.1.5.1.

Until the 2006-07 academic year most student have chosen to attend two or three of these PICs; but over the last two years they began to do different choices and, in particular, to attend one other module taught in the Faculty or to do more optional practical training. For details see paragraph 4.1.5.2.

4.1.5.1. The Professionalising Integrated Courses proposed by the Faculty

The twenty PICs proposed over the years by the Faculty are the following:

1. *Internal Medicine I*: 5 UFCs, 5 modules;
2. *Internal Medicine II*: 5 UFCs, 4 modules;
3. *Veterinary Dermatology*: 5 UFCs, 3 modules;
4. *Emergency Surgery for Small Animals*: 5 UFCs, 5 modules;
5. *Small Animals Orthopaedics*: 5 UFCs, 5 modules;
6. *Medicine, Surgery and Reproduction of Horses and Bovines*: 10 UFCs, 8 modules;
7. *Clinical Veterinary Oncology for Dogs and Cats*: 5 UFCs, 4 modules;
8. *Technique and Clinics of Reproduction of Pets*: 5 UFCs, 4 modules;
9. *Conventional and Assisted Reproduction in Equines and in Ruminants*: 10 UFCs, 5 modules;
10. *Neurology of Dogs, Cats and Horses*: 5 UFCs, 5 modules;
11. *Pet Behavioural Medicine*: 5 UFCs, 3 modules;
12. *Sport Veterinary Medicine*: 10 UFCs, 9 modules;
13. *Swine breeding: Technologies and Connected Topics*: 5 UFCs, 5 modules;
14. *Rearing and Management of unconventional species*: 5 UFCs, 5 modules;
15. *Organic Veterinary Farming I*: 10 UFCs, 7 modules;
16. *Organic Veterinary Farming II*: 5 UFCs, 4 modules;
17. *Biotechnologies Applied to the Control of Foods in a Globalised Market*: 5 UFCs, 3 modules;
18. *Fish Inspection in an Internationalised Market*: 5 UFCs, 3 modules;
19. *Tools and Methods for Preventing Food Risks*: 10 UFCs, 5 modules;
20. *Founding and Management of Private Veterinary Enterprises*: 10 UFCs, 5 modules.

Every PIC is composed by a different number of modules: from a minimum of 3 to a maximum of 9. These data are synthesised in Table 4.1.5.a.

Table 4.1.5.1. – Optional Professionalising Integrated Courses (PICs): fifth year

PICs with	Number of PICs	Total UFCs	Total modules
3 modules	4	20	12
4 modules	4	20	16
5 modules	9	60	45
6 modules	=	=	=
7 modules	1	10	7
8 modules	1	10	8
9 modules	1	10	9
TOTAL	**20**	**130**	**97**

Actually, in the 2008-09 academic year, only 3 PICs have been chosen by students (17 in total),

and consequentially activated by the Faculty. These PICs are the following:

1. *Emergency Surgery for Small Animals*: 5 UFCs, 5 modules; chosen by 9 students;
2. *Medicine, Surgery and Reproduction of Horses and Bovines*: 10 UFCs, 8 modules; chosen by 7 students;
3. *Clinical Veterinary Oncology for Dogs and Cats*: 5 UFCs, 4 modules; chosen by 7 students.

Four students chose two of these PICs and another one chose all these three PICs.

4.1.5.2. The other choices done by the students

In the last two academic year, the choices of elective activities done by the majority part of the students have been the following.

a. 65 students attended the module of "*Physiology and Animal Welfare*" (10 UFCs), taught in the Degree Course in "*Canine Breeding Techniques and Training*".
b. 25 students performed additional practical training for an average workload of 160 hours (i.e. around 6.4 UFCs).
c. 17 students chose to attend two or three PICs, for an average workload of 8.8 UFCs.
d. 14 students asked to attend meetings and seminars (4 UFCs).
e. 8 students attended other teaching modules for an average workload of 5 UFCs.
f. 5 students obtained the ECDL Full level (2 UFCs).
g. 2 students obtained a higher foreign language level (3 UFCs).
h. 2 students performed more activities inside the Socrates Programme (5 UFCs).

Obviously students performed more than one of these activities. Anyway, all these choices have been authorised by the Council of the Degree Course.

4.1.6. Some more information about the obligatory (internal and external) practical training

4.1.6.1. Generalities about practical training

As already said in paragraph 4.1.4.3, until two years ago students could choose whether to perform their practical training either inside the Departments referring to the FVMP or outside. But anyway the rules and the contents of both internal and external trainings were (and are) just the same.

Nowadays the external training is reduced at its minimum: just only for the training in the slaughterhouses (not owned by the FVMP) and in the premises for production, processing and distribution of food, in the Local and Regional Units of the National Veterinary Service, in the Experimental Zooprophylactic Institutes, and in some farms which have either animal species non reared in the University farm or some characteristics of specific interest for the students.

Even if the practical training at the Faculty ensures a more close supervision of the students by the tutors, it should be recognised that the extra-mural training provides an opportunity for students to begin to directly know the professional reality of the veterinarians and its problems. In fact, very often students are not interested to the job problems until their graduation. Furthermore, they often have some wrong ideas about the veterinary job market and therefore, once graduated, they end up in wasting a lot of time in trying to understand what they really want to do, and what it is better to do to enter the job market.

At the FVMP, practical training must be done in the following four EAEVE subject typologies and sixteen EU-listed subjects:

Basic Sciences

2.g) Microbiology, including virology, bacteriology and mycology
2.h) Immunology
2.i) Epidemiology

Clinical Sciences

3.b) Pathology, including anatomical pathology

3.c) Parasitology
3.d) Clinical medicine
3.d) Surgery (including anaesthetics)
3. e) Clinical lectures on avian pathology
3.i) Reproduction and reproductive disorders
3.j) Veterinary state medicine and public health

Animal Husbandry

4.b) Animal Nutrition
4.e) Animal Husbandry (farm animals)
4.e) Animal Husbandry (poultry and rabbits)

Food Hygiene / Public Health

5.a) Inspection, and control of animal foodstuffs or foodstuffs of animal origin and the respective feedstuff production unit
5.b) Food hygiene and technology
5.c) Food science including legislation
5.d) Practical work

Actually, at the FVMP:

1. practical trainings in: Microbiology (2.g), Immunology (2.h), Epidemiology (2.i), Avian Pathology (3.e) and Veterinary state medicine and public health (3.j) are jointly managed as *Infectious Diseases*;
2. practical training in Pathology, including anatomical pathology (3.b) is performed on its own as *Pathology and Anatomical Pathology*;
3. practical training in Parasitology (3.c) is performed on its own as *Parasitology and Parasitic Diseases*.

4.1.6.2. The procedures and the formalities to activate the practical activities

In order to avoid irregular employment, the Italian laws about utilisation of persons for any kind of training in private firms or in public structures are very strict. The Faculty must thus respect very closely many special rules. This is one other reason because all practical trainings performed in external structures must be done on the basis of a formal agreement approved by the Council of the Faculty and signed by the Dean and by the official responsible of the external body.

Furthermore, in order to avoid any abuse in effective performing of the practical training, other very strict internal regulations have been issued by the Council of the Degree Course in Veterinary Medicine. For these reasons the procedures for the activation of the student's practical training are fairly complicated and very closely followed by the Faculty.

The main steps of the procedures to activate the practical activities of the students may be summarised as follows.

1. Students can apply for admission to the practical training at the Student Office of the Faculty before the 15th day of each month. An application form together with a written proposal for a "*Training Project*" decided together with the internal tutor must be submitted. Also, students have to declare to have already obtained 180 UFCs, 60 of whose must be inside the areas where practical training has to be performed. An example of a "*Training Project*" for practical training in *Animal Husbandry* is reported in Annex III.
2. The Student Office verifies all the documentation and prepares all the formalities both for the CDC (and for the Dean), and for the external bodies involved by the law (the Local Agency for Job, the Centre for Employment, the local Syndicates…).
3. The contents of each "*Training Project*" are evaluated by the Degree Course Committee for practical training. If the evaluation is positive, the President of the Degree Course authorises the student's training.
4. The Dean signs all the documentation to be sent to external subjects.
5. The Student Office sends a copy of the "*Training Project*" to the official responsible of the

structure (both internal and external) where the students will perform the practical training.

6. After the end of the period of the practical training (not later than two months), students must submit to the Student Office all the documentation of their training and, in particular: the booklet with the individual dates of their presences (each of them validated by the tutor, internal or external), an evaluation form on their experience, the written final report, jointly with the evaluation of their work done by the internal tutor and, if the case, by the external one too.
7. At the end of all the training periods, the Student Office verifies all the documentation for each student and, in particular, the global amount of the hours of training performed. After this check, the President of the Degree Course signs the "*Certificate of practical training*", where all the trainings performed, jointly with the relative periods and places are reported.
8. After this, the practical activity is formally validated by reporting it on the student's University booklet and by communicating it to the University Central Offices to update the student's career.
9. At the same time the Student Office updates the situation of the student's practical training on the Faculty web site, at the address: *http://www.vet.unipi.it/content/mv/tirocinio/tirocinio-pratico*

4.1.6.3. The practical training in Clinical Sciences

As already said, the practical training in Clinical Sciences involves the following EU-listed subjects:

3.d) Clinical medicine
3.d) Surgery (including anaesthetics)
3.i) Reproduction and reproductive disorders

a. Organisation and goals of students' clinical practice

The clinical work in the fields of Medicine, Surgery (including Anaesthesia) and Reproduction is performed inside the structures of the Dept. of Veterinary Clinics. Each student has to do a total of 8 weeks (25 hours each week) divided as follows:

- Clinical medicine (small animal) 2 weeks
- Clinical medicine (equine) 1 week
- Anaesthesia 1 week
- Surgery 1 week
- Diagnostic imaging 1 week
- Reproduction (small animals) 1 week
- Reproduction (equine) 1 week

The activities are supervised by the teaching staff (16 lecturers) assisted by PhD students, post-docs, and other non structured veterinarians. Each student has a tutor who organises, supervises and finally evaluates her/his activity. The evaluation of student's performance is based on attendance, on verification of skills acquired and on submission of a report describing the activities performed and the most significant clinical cases managed during her/his training period. The evaluation is based on the presence and on the activities performed, evaluated through the description made in the report.

In details, the activities in the field of Internal Medicine have the goal to put the students in a position to learn how:

- to learn how to record the signalment and collect an accurate and relevant history of the animal and its environment;
- to handle and restrain an animal safely and humanely;
- to perform a complete clinical examination;
- to collect, preserve and transport samples for laboratory tests and to interpret the results;
- to access the appropriate sources of data on licensed medicines and to advise on appropriate treatment;
- to follow-up the patient along with monitoring the drugs used (reporting any adverse effect as well);

- to recognise when euthanasia is necessary and to perform it humanely by using an appropriate method.

In details, the activities in the field of Surgery (including Anaesthesia) have the goal to put the students in a position to learn how:

- to obtain the signalment and an accurate and relevant history of the animal and its environment;
- to handle and restrain an animal safely and humanely;
- to perform a complete clinical examination;
- to apply principles of aseptic surgery and sterilisation of surgical equipment;
- to use radiographic and ultrasonic and other technical equipment which can be used as diagnostic aid;
- to perform a correct preoperative anaesthetic assessment and a correct intravenous catheterisation and endotracheal intubation;
- to take part in surgery management as assistant surgeon;
- to perform pain management of the surgical patient;
- to supervise the recovery of patient after anaesthesia;
- to participate to the choice of the most appropriate post-operative management of the patient.

In details, the activities in the field of Reproduction have the goal to put the students in a position to learn how:

- to obtain the signalment and an accurate and relevant history of the animal and its environment;
- to handle and restrain an animal safely and humanely;
- to perform a complete clinical examination;
- to take part in the management of the reproductive cycle of mares, assessing behaviour and evaluating ultrasonographic images of the reproductive tract;
- to assist in artificial inseminations and embryo transfer in this species;
- to evaluate semen and embryo;
- to perform vaginal cytology and to participate in the management of oestrous cycle in fertile and sub-fertile bitches;

- to take part in surgery as assistant surgeon in obstetric surgeries;
- to perform diagnosis of pregnancy;
- to spay cat and dog females (to induce sterility or as surgical therapy for uterine and ovarian pathologies);
- to evaluate e to aid either the normal or the dystocial course of parturitions ;
- to administer therapies to the hospitalised animals.

All these practical activities are always performed by the students under the supervision (and the responsibility) of either a teacher or an authorised internal veterinarian.

b. Students' reproductive clinical practice at Pisa's Public Kennel

Italian law officially assigns to Public Veterinary Services also the control of stray dogs and cats, and supports specific spay/neuter programs in order to limit pet overpopulation.

In order to accomplish these functions, over the last few years some Municipalities of the Province of Pisa cooperatively supported the building and function of a public kennel, where many captured stray dog are identified by electronic devices, subjected to sanitary controls, and then, sheltered in the kennel, waiting for their legal or for a new adoptive owner. Obviously the structure is also equipped with small first-aid clinical and surgical services, well fitting also for simple

ordinary surgery.

In this context, Pisa's Municipality, the Local Sanitary Unit (LSU) and the Veterinary Faculty also subscribed an official agreement of collaboration through which, in the following three years (2006-2009), the teacher of Pathology of Reproduction and Obstetrical Clinics found a new weekly opportunity to bring students to spay and neuter (under his direct supervision and collaboration), cats and dogs from wild colonies in order to limit their reproduction and to make easier the task to find new owner. This activity is partially supported by Municipality and Faculty funds.

Normally, four students participate at each surgical session together with the Veterinarian of the LSU, responsible of kennel's sanitary aspects. During examination and preparation of animals for surgery, students evaluate each patient and discuss anaesthesiology and operative protocols.

Alternatively, two students, then, help the teacher and the LSU Veterinarian, performing their first and elementary surgical acts. During each session of 3-4 hours, students do surgery on at least 3 to 4 cats and one dog; and, occasionally, they can also observe and discuss other pathological cases and related therapies. Such an activity results in a practical demonstration of the possibility to perform at least minor surgical interventions also in absence of greater commodities, otherwise present in the Faculty Clinic. Moreover, students improve self-decisional capacity and confidence in their initial professional activity. Student's appreciation of this activity is very high, and many of them try to have more than one opportunity for practical training at the shelter.

c. Student reproductive clinical practice at the University Farm

Student activity is also performed at the University Farm, where there are 144 Holstein Friesian dairy cows and 98 *Pisana* cows, a very typical and endangered local beef breed, plus 2 bulls and 30 fattening calves of this same breed, once used also for work in the fields (for details about the farm, see paragraph 6.1.6). Students are admitted at the farm under the teacher's supervision and responsibility to learn rectal palpation and artificial insemination on culled or repeat-breeder females.

For a better exploitation of this opportunity in the last few years, the FVMP activated a tutelage service, in the form of a newly graduate or senior student, with the task of supervising students involved in local apprenticeship. So students can be trained in detecting signs of heat, in doing rectal palpation and in cervical catheterization for artificial insemination (AI). The choice of AI bulls and how to rule out the tank of liquid nitrogen are other learning opportunities. Assistance at parturitions is another common occasion for students to improve their skill, in manual aid of normal and abnormal parturition. Pregnancy diagnosis as well as other reproductive diagnosis are performed also by ultrasonography, and related therapeutic protocols are discussed and applied with students.

4.1.6.4. <u>The practical training in Infectious Diseases</u>

As already said, the practical training in Infectious Diseases involves the following EU-listed subjects:

2.g) Microbiology, including virology, bacteriology and mycology
2 h) Immunology
2. i) Epidemiology
3.e) Clinical lectures on avian pathology

3.j) Veterinary state medicine and public health

The practical training in Infectious Diseases is performed either inside the Department of *Animal Pathology, Prophylaxis and Food Hygiene* or outside the Faculty in some Local Sanitary Units of the National Veterinary Service or at the Experimental Zooprophylactic Institutes (IZS).

Accordingly to the national law n. 626/1994 about safety in working places (for details see paragraph 5.1.3), each student must attend an eight-hour self-learning course about "*Safety in the laboratories*". The course, performed in an appropriate room of the Department, aims to let students acquire the most relevant rules of behaviour in terms of safety inside the laboratories, through study of texts and multimedia support.

1. Practical training inside the Faculty

Students can do their practical activities in the laboratories of Infectious Diseases of the Department of *Animal Pathology, Prophylaxis and Food Hygiene*, in groups of, at maximum, four, for not more than 5 hours a day, for 13 days. Each student performs a rotating internship in the 5 laboratories of virology, bacteriology, serology, molecular microbiology and avian pathology.

2. Practical training outside the Faculty

Students are also allowed to perform their training activities in external structures, including the offices and laboratories either the IZS or the Local Sanitary Units of the National Veterinary Service. A specific agreement among the Faculty and these bodies must be already formally approved by the Faculty Council and signed by the Dean. The duration of these agreements is two years and then tacitly renewed. Students are under the responsibility of (and supervised by) both an internal tutor (a Faculty teacher) and an external tutor which usually is a veterinarian of the National Veterinary Services belonging to the body where the training is performed. The external tutor is responsible for coordinating and supervising, together with the internal tutor, all the activities undertaken by the student during the internship.

Objectives of the training in Infectious Diseases

The aim of the practical activities in Infectious diseases is to give the basic knowledge about the function and organisation of a diagnostic veterinary laboratory. Students are involved in daily laboratory activities on the main diagnostic procedures for viral and bacterial infectious diseases. The students perform *hands-on* activities in many diagnostic procedures which are performed in the diagnostic laboratory. At the end of the practical training period the student should be able to plan, organise and carry out the basic diagnostic procedures using the basic diagnostic laboratory instruments. The main activities are:

1. database set-up;
2. preparation of culture media and solutions;
3. preparation of aliquots for storage;
4. cell culture and virus isolation;
5. bacterial isolation and antibiograms;
6. PCR;
7. serology assays (ELISA; Immunofluorescence, Seroneutralisation...)
8. necropsy on avian species.
9. The students which fulfil the practical training outside the Faculty carries out, together with the Veterinary of the National Service, the following activities:
10. execution of basic diagnostic laboratory tests;
11. prophylaxis of infectious diseases;
12. vaccination programmes;
13. activities of veterinary public health such as urban veterinary hygiene and management of the national canine registry.

Students are always supervised in their activities by academic staff or by the external tutor in the

case of training at the IZS or in Local Sanitary Units of the National Veterinary Service. They are anyway supported by laboratory technicians. Participation of students to the laboratory activities is recorded daily through the signature of both the student and the tutor on the training student's booklet.

At the end of the practical training period, the student must prepare a written report on the activities conducted. This report is examined both by the internship contact person and the tutor responsible for the trainee. The teacher responsible gives a final assessment. If the evaluation about the activities performed during the training period is negative, the student must repeat the rotation.

4.1.6.5. The practical training in Pathology and Anatomical Pathology

As already said, the practical training in Anatomical Pathology involves the following EU-listed subjects:

3.b) Pathology, including anatomical pathology

Students' training in Pathology and Anatomic Pathology is performed in the structures of the Department of *Animal Pathology, Prophylaxis and Food Hygiene* and, in particular, in the necropsy room and related laboratories. Each student has to attend a total of 25 hours and her/his activity is supervised by the internal tutor and followed by 3 other members of the teaching staff, and assisted by PhD students and post-doctoral veterinarians. The training consists in actively performing the following activities:

- post-mortem examination of mammalian species;
- recognition of pathological lesions;
- sampling and handling of the pathological specimens;
- fixation and recording of the sampled specimens;
- writing the post-mortem report.

At the end of the training period, each student has to write a final report in which all her/his training activity is documented. If acceptable, this report is eventually approved by the tutor and sent to the Student Office records.

4.1.6.6. The practical training in Parasitology and Parasitic Diseases

As already said, the practical training in Parasitology and Parasitic Diseases involves the following EU-listed subjects:

3.c) Parasitology

The practical training in Parasitology is performed mainly at the Department of *Animal Pathology, Prophylaxis and Food Hygiene* of the Faculty. In very few cases some students are authorised to perform it outside the Faculty, at the Experimental Zooprophylactic Institute (IZS) for the Lazio and Tuscany Regions (especially at the Pisa branch of IZS) and to jointly perform the practical trainings in Parasitology and in Infectious Diseases. During this training period, each student is directly involved in the daily laboratory activities on the main diagnostic procedures for parasitic diseases.

As in the case of the practical training in Infectious Diseases, according to the national law n. 626/1994 about safety in working places (for details see paragraph 5.1.3), each student must attend an eight-hour self-learning course about "*Safety in the laboratories*". The course, taken at the Department, is aimed to let students acquire the most relevant rules of behaviour in terms of safety inside the laboratories, through the study of texts and multimedia supports.

1. Practical training at the Faculty

Students can do their practical activities in the laboratories of Parasitology within the Department of *Animal Pathology, Prophylaxis and Food Hygiene*, in groups of, at maximum, four students, for no more than 5 hours a day, for 8 days. Each student works as an internship in the laboratories of general parasitology, micology, entomology, serology and molecular parasitology.

2. Practical training outside the Faculty

Students are also allowed to perform their training activities in external structures, mainly limited to the offices and laboratories of the IZS. An appropriate agreement among the Faculty and these bodies must be already formally approved by the Faculty Council and signed by the Dean. When outside the Faculty, students are under the responsibility of (and supervised by) both an internal tutor (a Faculty teacher) and an external tutor who is always a Veterinary. The external tutor is responsible for coordinating and supervising, together with the internal tutor, all the activities undertaken by the student during her/his internship.

Objectives of practical training in Parasitology

The knowledge of the functions and the organisation of a diagnostic veterinary laboratory, and the ability to carry out the basic diagnostic procedures and protocols, from the collection of the clinical samples to the diagnosis of the most common parasitic diseases, represent the main aims of the practical training in Parasitology. The frequency and the importance of parasitic diseases in Veterinary Medicine justify these aims, and is the main reasons why it is so important for the future activity as a veterinarian, that during all the training period each student performs *hands-on* activities in diagnostic procedures.

At the end of the practical training period the student should be able to plan, organise and carry out the diagnostic procedures useful for the diagnosis of the most common parasitic diseases.

The labs and the activities of Parasitology

During practical training in parasitic diseases students are directly involved performing a variety of test as reported below, in the following laboratories.

1. Serology lab

In this lab serum specimens are processed for specific antibody (anti-*Leishmania*, *Toxoplasma*, *Babesia* spp and *Neospora caninum*) detection by means of IFAT and MAT (for the identification of anti-*Toxoplasma* IgG and IgM response);

2. Mycology lab

In this lab mycological culture from clinical specimens are set up; the isolates are characterised by mean of their macro- and microscopic morphological features. Furthermore in vitro testing of sensitivity versus different antimycotic agents is carried out by mean of microdilution test and agar diffusion test (mostly Etest);

3. Molecular diagnostic lab

In this lab quali-quantitative (Real Time Pcr) PCR assays are carried out on different clinical specimens for diagnosis purpose of different parasitic (*Leishmania*, *Toxoplasma*, *Babesia*, *Neospora caninum*, *Cryptosporidium* spp) as well mycotic agents;

4. General Parasitology lab

- Diagnosis of *Dirofilariosis* (*Dirofilaria immitis* and *D. repens*) by using mainly the modified Knott method and commercial immunoassays.
- Collection and examination of faecal samples by using several quali-quantitative copro-parasitological techniques (stained faecal smears; flotation test, using low and high specific gravity solutions; Baermann method; sedimentation; faecal cultures for infective stage 3

gastrointestinal strongyle larvae to identify genera; faecal cultures for *Coccidia* oocysts to identify species; modified McMaster methods; use of commercial immunoassays) for the diagnosis of protozoa and helminths and for the evaluation of the anthelmintic-resistance.
- Use of direct methods for the diagnosis of trichinellosis (trichinoscopy and artificial digestion) on muscle samples.
- Isolation and identification of helminths isolated from deceased animals.
- Collection of blood samples and preparation of stained blood smears for the search of emoprotozoa.
- Collection of earwax and skin samples examined by using cytological technique to evaluate the presence of *Malassezia* spp.

5. Entomology Lab
- Isolation and identification of parasitic artrhopods.

Students are also involved in setting up databases and in the search and reading of bibliographic material useful for the identification of some parasites.

Students performing practical training outside the Faculty (generally at the IZS) carry out the following activities.
- Serology (*Leishmania*, *Toxoplasma*, *Neospora*).
- Diagnosis of Trichinellosis (trichinoscopy and artificial digestion) on muscle samples.
- Collection and examination of faecal samples by using several quali-quantitative copro-parasitological techniques.
- Isolation and identification of helminths isolated from deceased animals.
- Collection of blood samples and preparation of stained blood smears for the search of emoprotozoa.
- Isolation and identification of some parasitic arthropods.

All the proposed activities are generally carried out with a great enthusiasm by the students. Students are always supervised in their activities by academic staff or by the external tutor in the case of training at the IZS and are supported by laboratory technicians. The participation of the students to the laboratory activities is daily recorded through the signature on the training student's booklet of both the student and the tutor.

At the end of the practical training period, the student must prepare a written report on the activities conducted. This report is examined both by the tutor responsible for the training and by the academic teachers (internal tutor) responsible for the training in Parasitology. The internal tutor verifies the accuracy of all protocols and procedures used during the training period, and gives the final assessment. If the outcome of the activities performed during the training period is not completely satisfactory or negative, the student must integrate or repeat the internship.

On the other side, each student gives an evaluation to the activities performed during the training period.

4.1.6.7. <u>The practical training in Animal Husbandry</u>

As already said, the practical training in Animal Production involves the following EU-listed subjects:

4.b) Animal Nutrition
4.e) Animal husbandry (farm animals)
4.e) Animal husbandry (poultry and rabbits)

Actually, the practical training in Animal Production is divided in two different sections:

a. practical training closely connected with specific teaching activities;
b. general practical training involving more than one single subject.

At the end of these practices, each student must produce a report, according to the aims of the

practical training. The report is finally revised and evaluated by the specific tutor of the training.

The practical trainings are held both in the structures of the FVMP and in external structures (private farms or labs).

Before beginning practical activities, each student receives a booklet ("*Bovine management safety handbook*") where the main safety measures related with the activities in the farm are reported. The booklet, written in a cooperation between the teachers of the involved subjects and the personnel of the University "*Health and Safety Office*" and edited by the University, shows the main risks in a farm and suggests the safety procedures to behave in the farm and to approach bovines.

1. <u>Internal structures</u>:

- the University Farm: it rears 144 *Holstein Friesian* dairy cows and 98 *Pisana* cows, a very typical and endangered local breed used for meat production, plus 2 bulls and 30 fattening calves of this same breed. At the Farm, students attend the *Animal Husbandry* and *Animal Feeding and Nutrition* practical training under the supervision of a Faculty and a private Veterinarian;
- the poultry and rabbits farm of the Department of *Animal Production*, located in the premises of "*Le Querciole*" (for details see paragraphs 6.1.5.2 and 7.1.4), where students attend to the poultry and rabbit practical training under the supervision of the Poultry class teacher or of some other specific Departmental graduated staff.

Points of strength of the activities performed in the internal structures:

a. students perform practical activities under the supervision of Faculty teacher or other responsible graduated employee.

Points of weakness of the activities performed in the internal structures:

a. the farm of the University is not able to host all the FMVP's students because the very high number of students coming also from other Degree Courses (Agriculture Sciences, Sciences of Animal Production);
b. the Departmental poultry and rabbit farm "*Le Querciole*" has old and deteriorated structures and it can host only few students per week because the reduced dimension of some rooms (hatchery and chick nursery).

1. <u>External Structures</u>

Many formal agreements have been signed between the FVMP and public or private institutions, farms and companies. These partners have been selected according to the following criteria:

- partners willingness to host and to integrate the students in the specific Company activities;
- structural characteristics of the farm: number of animals, quality management level, presence of farm veterinarians and nutritionists;
- opportunity to have a farm tutor (external tutor), who is responsible for the students activities, who will coordinate and verify (together with the internal tutor) the amount and the quality of the students activities during the practical training term. The external tutor has also the responsibility to check for the daily presence of the students, to sign the *ad hoc* registers, to give her/his evaluation of the student activities, to examine and to sign the final students

training reports.

On this basis, the FMVP has been able to supply practical training to each student in an adequate number of farms and dealing with many different animal species.

Points of strength of the activities held at the external structures:

a. Students have the chance to be in close touch with:
   1. real operative farming conditions for breeding of different species;
   2. different farming types such as intensive, extensive, organic, etc.;
   3. farmers, farm consultants and technicians.

Points of weakness of the activities held at the external structures:

a. the lack of the direct presence of a graduated responsible of the FVMP.

The choice of the farm which students attend the practical training in Animal Husbandry is done under the supervision of the responsible tutor who drives the student towards the most representative farm in the Tuscany area. In general this choice is done according to the following two steps: in the first, the student attends a 25-hour practical training at a farm particularly interesting for the subject to which the practical stage refers. In the second, by mean of a preliminary discussion with the student, the academic tutor suggests the animal species or the farm typology for which she/he still needs further practices and knowledge.

In this way, students may have the opportunity to improve their practical skills and knowledge and, at the same time, are introduced into a real production system. This kind of practical training management allows the students to get enough knowledge about both the various animal species and each step of the food chain.

A. Practical training closely connected with specific teaching activities

Objectives of practical training in Animal Husbandry

This training is composed by 25 hours of practical training per each one of the three different sectors. The responsible tutor of each sector defines the training goals per each student. During the practical training, students are introduced to the reality of the Animal Husbandry fields: in this way, after attending theoretical lectures, the student has the chance to melt theory into practical aspects, and to practically experience many manual farm activities. By mean of the "*Training Project*", the internal tutor gives precise directions about the activities that the student has to perform during the practical training. If different or unexpected activities become necessary during the stage in the farm, students can freely performs these activities even if they are not explicitly requested by the "*Training Project*".

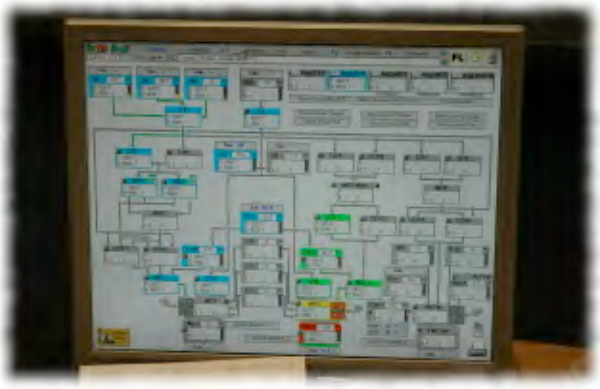
As already described, student's activities are always kept under the supervision of an external farm tutor. Her/his activity is anyway coordinated with the academic internal tutor, particularly in relation with the practical training contents and the student management: it is considered very important that students may develop a good skill about human relation with farm employees so that they may acquire knowledge of the routine farm practices and terminology. At the end of the training students have to write a report about their training activities. The report, examined and

signed by the external farm tutor, will be finally evaluated by the academic tutor.

1. Animal Nutrition

Students attend this practical training only after having attended the courses of *Animal Feeding and Nutrition* and *Feed Industry*, where they can acquire the theoretical knowledge necessary to carry-out the activities of the "*Training Project*" agreed upon with the internal tutor.

The training is held at the University's Farm, where dairy and beef cattle are raised, or in an external farm. During the training, students have to work under the supervision of the external tutor, the farm employees, the veterinarian and the nutritionist, with the purpose to achieve the goals described in the "*Training Project*"; these goals are formulated according to farm conditions and management:



a. to acquire knowledge about the main features of the farm: distribution and number of animals, structures, employees, nutrition management, main nutritional disorders, etc.;
b. to practically participate to the ration preparation and administration;
c. to observe and record:
   - nutritional status and general animal welfare and health condition (health, body condition score, etc.);
   - forage quality and production systems (maturation stage, crops harvesting management, hay and silage management and so on);
   - production levels, days from calving, season and other useful parameters to estimate daily feed intake and requirements;
   - diet composition;
d. to check for correspondence between the diet supplied and animal requirements, by mean of a written report that can show the procedure used for this purpose (energy, proteins, fibre, calcium e phosphorus). An appropriate discussion of the diet have to be done by the student with the tutors and the nutritionist.

2. Animal husbandry (farm animals)

The goals of the practical training are related with the animal species and with the production type of the animals raised on the farm where the training is held. Here they are shortly described.

For all species and productive activities, students have to describe the breed and the productive and breeding systems. Students have to acquire knowledge about the animal reproduction management by analyzing the farm reproductive parameters and efficiency. After this, students have to perform specific analysis different for each realities.

a. <u>Dairy cattle farms</u>: students have to observe all the different phases of dairy cattle breeding of the whole production cycle by mean of practically participating to all the management activities and practices: milking, animal grouping and regrouping, body conformation evaluations, morphological measurements, calves feeding, weaning, description of the milk chain.
b. <u>Beef cattle farms</u>: students have to observe all the different practices related to animal breeding and management, from calving to slaughtering: such as milking, weaning, grouping and regrouping, evaluation of the fattening situation, etc.
c. <u>Dairy sheep farms</u>: students have to observe all the different breeding phases of the whole production cycle by mean of practically participating to all the management activities and

practices: milking (including description of the milk chain), animal grouping and regrouping, from parturition to slaughtering of the lambs.

d. Pig farms: students have to observe all the different practices related to rearing and animal management, from farrowing to slaughtering such as suckling, piglet grouping and regrouping, weaning, evaluation of the fattening situation, etc.
e. Horse farms: students have to observe all the different practices related to the rearing and the training of the racehorse by mean of practically participating to all the management activities and practices: foal management, which starts with the specific sporting training; activities related to the yearlings preparation finalised to the selected auctions of *Thoroughbreds*; acquiring knowledge about the farming system and training methods.

3. Animal husbandry (poultry and rabbits)

Differently than the above described sectors, this training is spent at the poultry farm of the Department of *Animal Production* (for details see paragraphs 6.1.5.2 and 7.1.4). This training consists of 25 hours closely connected with the poultry lectures. Furthermore, 10 more hours are spent in an external poultry, rabbit or fish farm.

Regarding the training at the University Farm is performed from late spring till late fall according to the reproductive cycle of the outdoor raised birds. Groups of 5-6 students each are involved in routinely and other specifically organised activities. In this way students get to practice their skills about poultry and small hatchery plant management. The goal of this activity is to put into practice the knowledge acquired during lectures and to get more familiar with these species that usually are seldom seen by the average veterinary student. Therefore, during the training week, specific tasks are assigned to every group such as: daily egg collection, weight egg control, incubation, management of chicks, growing pullets, cockerels and breeders. Moreover, students have to carry out some sanitary control operations (blood samplings, treatments with pesticides, vaccinations).

All students are required to evaluate the following parameters in some bird groups: identification of species and breeds, ability of properly handling birds, evaluation of productive performances in growing animals (live body weight, feed consumption, feed conversion ratio) and reproductive efficiency in breeders (feed conversion ratio, egg laying percentage, hatching percentage, fertility percentage, embryo mortality percentage, etc).

Students in only one week have the opportunity to participate in all farm management aspects; this is possible because the unfinished activities of one group are passed on to the subsequent group in the following week during the 13-14 weeks. In fact, all activities are scheduled in such a way that every group of students completes an activity started during the previous week and begins a new activity to be completed by the following group of students. (for details see Figure 4.1.6.7, where a weekly agenda of practical training in Poultry Husbandry is shown).

During this training, graduated staff of the Department daily follows, as a tutor, the students

group. At the end of training, every student must fill out a form regarding the tasks, with the results obtained, together with a general report. Finally both the tutor and the teacher evaluate the students activities.

B. General practical training

The practical training in Animal Production is concluded with a practical activity regarding not only topics closely connected with lectures but also aspects connected with product-line management. It is performed almost completely in an external farm., First of all the academic tutor discusses with the student about her/his previous practice experiences, the animal species less well know; also the animal species chosen for the final thesis is held into account. In this way, the teacher can identify the most relevant weaknesses in the practical knowledge of the student and can suggest her/him to fill her/his deficiencies.

According to the student and the farm tutor, a "*Training Project*" is prepared. It can be considered the main track for the student practical training. In this way, the student is asked to participate to the main activities such as animal handling feeding, reproduction and general farm management. As much as possible, the food processing activities (eggs, milk, meat) are kept into right account.

In the case of horse farms, students have to participate to the horses sport training activities.

Even at the end of the general practical training, the student must write a report which has to fit with the goals of the "*Training Project*". Even in this case, the report must be firstly evaluated by the external tutor, and finally by the teacher who also discuss it with the student.

4.1.6.8. <u>The practical training in Food Hygiene / Public Health</u>

As already said, the practical training in Food Hygiene / Public Health involves the following EU-listed subjects:

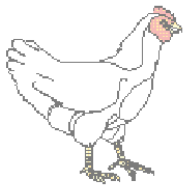
5.a) Inspection, and control of animal foodstuffs or foodstuffs of animal origin and the respective feedstuff production unit
5.b) Food hygiene and technology
5.c) Food science including legislation
5.d) Practical work

The practical training in Food Hygiene/Public Health is performed either closely connected with the teaching activities inside and outside the Faculty under the guidance of a university teacher or, with the aim of deepening, outside the Faculty under the guidance of a internal (a teacher of Food Hygiene) and external (an Official Veterinarian) tutor.

The aim of the practical training is to bring the student in close contact with all the activities of a veterinarian working in Food Hygiene/Public Health. The student will experience the work of a public or a private veterinarian in an important branch of the veterinary science which is often unknown to most of the students entered at the FVM. The objective of the planned practical activity is also to give to the student an experienced exploration of a sector with growing job possibilities.

Figure 4.1.6.7 – Weekly agenda of practical training in Poultry Husbandry

Week: 14th – 18th July



2008

Practical training in *Poultry husbandry*

Poultry Farm - San Piero a Grado
Dept. of Animal Production - Pisa University
Prof.ssa Isabella Romboli

WEEKLY AGENDA

→ **Monday**

1ST EGG GATHERING: pick up and mark eggs, weigh eggs and record data onto the specific "aviary egg weight register".

HATCHERY: record T and H values of Setter and check its water level. Weigh and transfer eggs of the incubation n.14 to Hatcher; record single egg weight onto the specific "egg weight loss sheet". Spray water on eggs of incubation n.12 (duck).

CHICK NURSERY: Weigh young pullets housed into the outdoor-nursery and transfer them to B4 aviary. Weigh pullets in B2 aviary and transfer half of them to B3 aviary. Weigh feed in B2, B3 and B4 aviary (as well as the feed you will add till Friday). Transfer chicks from the indoor-nursery (left-side pen) to the outdoor-nursery.

BREEDERS: weigh feed in D3, D6, D7, D8 aviaries (as well as the feed you will add till Friday).

2ND EGG GATHERING: pick up and mark eggs, weigh eggs and record data onto the specific "aviary egg weight register". Count all eggs picked up today and record the number in each specific "aviary egg laying register".

→ **Tuesday**

1ST EGG GATHERING: follow same instructions of Monday.

HATCHERY: record T and H values of Setter and check its water level. Spray water on eggs of incub. n.12.

CHICK NURSERY: check feed quantity in the right-side pen feeder, change water and clean drinkers; observe chicks behaviour and health condition. Prepare the left-side pen to house newly hatched chicks.

Identify poultry species/breeds host at the farm and make a census of adults per sex and aviary.

- *Feed formulation exercise* regarding one of the poultry group in care of you.
- *Calculate and draw the egg laying curve* (starting from the 1st laid egg till July the 10th) for D1, D4, C3, C8, ET1, ET8 aviaries (ten-day interval).

2ND EGG GATHERING: follow same instructions of Monday.

→ **Wednesday**

1ST EGG GATHERING: follow same instructions of Monday.

HATCHERY: follow same instructions of Tuesday.

EGG INCUBATION - select and weigh chicken eggs for incubation n.17; record the single egg weight onto a new "egg weight loss sheet"; set eggs and fill in the "incubation register".

EGG CANDLING – candle eggs of incubation n.16, identify early mortality by opening clear egg; update "incubation n.16 register" recording infertile eggs and dead embryos number.

HATCHER - Weigh and transfer newly hatched chicks to indoor-nursery (left-side pen).

CHICK NURSERY: Keep a check on chicks in the right-side pen of the indoor nursery. Observe chicks behaviour and health condition.

2ND EGG GATHERING: follow same instructions of Monday.

→ **Thursday**

1ST EGG GATHERING: follow same instructions of Monday.

HATCHERY: follow same instructions of Tuesday. Check Hatcher to verify new hatched chicks; if any, weigh and transfer them to indoor nursery.

CHICK NURSERY: check feeders, drinkers and litter for a correct management of chicks. Observe chicks behaviour and health condition.

BLOOD SAMPLING from birds chosen by the tutor

BREEDERS: external parasites treatment of birds in D5 and D8 aviaries; weigh them before the release.

- Weigh pullets and feed in B2, B3 and B4 aviaries. *Calculate the Feed Conversion Efficiency per group*.

2ND EGG GATHERING: follow same instructions of Monday.

→ **Friday**

1ST EGG GATHERING: follow same instructions of Monday.

CHICK NURSERY: follow same instructions of Thursday.

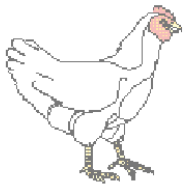
1

Week: 14th – 18th July

HATCHERY: follow same instructions of Tuesday.
2ND EGG GATHERING: follow same instructions of Monday.

- *Convert your 5-day Setter T values from °F to °C and your H values from °F to RH*
- *Calculate egg weight loss (%) and hatchability of incubation n.14.*
- *Calculate egg fertility and early mortality (%) of incubation n.16.*
- *Calculate the Feed Conversion Efficiency per breeders group in care of you.*

COMPLETE ALL CALCULATIONS AND SUBMIT RESULTS OF THE REQUIRED PARAMETERS AND INDEXES TO THE TUTOR. DELIVER ALL THE COLLECTED RECORDS TO THE TUTOR.



REPORT GUIDELINES

⇒ Student must describe the practical activity during the 5-day training and must show all gathered data. Curves, indexes, and percentage data must be elaborated and shown as student consider more suitable (tables, graphs, ecc).
Data to show are the following:

Female breeders (per species/breed)
- Laid eggs number
- Egg-laying percentage
- Mean egg weight
- Broken eggs percentage
- Draw egg-laying curve for light breed hen, for heavy breed hen and for Muscovy ducks.

Hatched chicks
- Total chick number per species/breed
- Mean live body weight per breed

Breeders performance
- Set egg number
- Candled eggs number per each species/breed
- Fertility percentage per each species/breed
- Embryo mortality per species/breed
- Hatchability per species/breed

Egg incubation
- Weight loss during storage (comments)
- Weight loss during incubation (comments)

Species and breed/variety
- Phenotypic characteristics of chicks
- 2 or more distinguishing attributes of adult birds

Chicken treated against external parasites
- Breed, sex and weight. Compare weight data with Poultry Breed Standards value.

Feed consumption (per pullets and breeders)
- Total and daily feed consumption (per group and bird)
- Feed conversion efficiency for growing chicken and for egg production (comments)

Contacts

Prof. Isabella Romboli: 050 2210 221
Dr. Margherita. Marzoni: 050 2210 225
Dr. Annelisse Castillo: 050 2210 230
Poultry farm and hatchery technician Mrs Manuela: 050 2210 231

a. Practical training closely connected with the teaching activities

External activity

During the course, together with the theoretical lessons, activities at the slaughterhouses and premises for production, processing and distribution of food are planned. During these activities students, divided in small groups (maximum 12 students per group), attend part of the teaching directly on the field in public or private plants, following the actions of Official and Company's veterinarians under the guidance of university teachers.

In particular, this practical training is performed at:

- *bovine, swine and poultry slaughterhouses*: students get a direct knowledge and experience of the methods and aims concerning the pre- and post-mortem sanitary inspection of the animals for slaughter; the sanitary seizure and related behaviours; the sample withdrawals in suspected animals or carcasses; students handle all the official documents related to the role of the official veterinarian and the waste and animal by-product management;
- *fish market*: this visit is performed during the night in order to bring the student inside the real work of an inspector performing surveillance and control in a fish market. Students, together with the official Veterinarian, examine the hygienic and commercial correspondence of fish lots: they control the freshness trough all the legal indicators, the sanitary status, especially the presence of parasites and spoiling or spoiled fishes; they verify the species identification, the correct size and the accompanying documents; they get direct knowledge of the sanitary or commercial seizure and related behaviours;
- *processing plants* (cutting and processing meat and fish plant, milk processing plant and cheese factory): students, following the internal plant Standard Operating Procedures, examine the arrival of all the raw material, observe the process of performing controls and analysis (internal or external lab), as well as the storage; they experience the processing of the various products and the related process control. Students also follow the internal quality assurance organized by the Company;

- *internal laboratories*: students experience the management and the analysis performed in an internal lab in order to control the hygienic, technological and commercial standard of the raw, intermediate and finished products.

Moreover, in all the above mentioned plants students, together with the official veterinarian or with the company veterinarian, examine the HACCP plan implemented for the plant, and analyze all the critical control points identified. Particular attention is given to the examination of all the facilities and the equipment of the plants, the cold or frozen storages and their management, the cleaning organisation and supervision and the manpower training.

Internal activity

A small part of the practical training in Food Hygiene is dedicated to the lab; because many of the techniques are basically the same that students experience during other practical activities in other subjects, we prefer to give more attention to the external activities. However, in our lab students experience some lab activities closely connected with the identification of food frauds as well as the identification of species, frozen/fresh fishes, etc.

b. The extra-mural practical training in Food Hygiene

The students of the FVMP must also go through a practical training outside the Faculty in Veterinary Public Institutions (Local Sanitary Units, Section of Food Inspection; Border Inspection Points; Veterinary Office for EU Fulfilments) on the basis of a formal agreement signed by the

Dean, and always under the guidance of both an internal and an external tutor. The public Institutions have been selected by the internal tutor (a Faculty teacher of Food Hygiene) on the basis of their potential to provide training for the students and also considering the availability of an external tutor (always an Official Vet) able to follow the student in her/his fieldwork.

Students, in order to choose the Institution for their practical activity, must be interviewed by the internal tutor with the aim to understand their interests and the Institution preferred by them.

At this point students, together with both internal and external tutors, must prepare a work-programme where all the activities are well defined, according to the slaughterhouses, premises for production, processing and distribution of food, and under the control of the Institution chosen; the work-programme must also be in accordance with the official activity (ordinary and extraordinary) foreseen for the selected period.

In Local Sanitary Units (Sections of Food Inspection), students work with the official veterinarian in premises of the food chain with the aim to guarantee the hygienic-sanitary protection; in the planned period students experience:

- the work within the slaughterhouses;
- inspection and surveillance in production, process, storage, transport, distribution and administration of animal origin foodstuff;
- evaluation of analytical tests (microbiological, chemical, physical);
- evaluation of all the legal certifications and mandatory requirements (HACCP plan, analytical tests…).

In Border Inspection Points and in Veterinary Offices for EU Fulfilments, students experience the control on products of animal origin or animals coming from EU or Third Countries arriving or in transit through our Country; in particular:

- the application of EU/international exchange normative;
- certification and mandatory requirements for import/export;
- restrictions from/to other Countries;
- correspondence's verification of the declared goods;
- mandatory or random analytical tests.

Each work-programme must be undersigned by both the tutors and sent to the Student Office one month before the starting date, in order for the President of the Degree Course to have time to approve it.

Student must register daily on their booklet the calendar and the activities, always validated by the external tutor. At the end of the period the student must produce a report on the performed activity, undersigned by the external tutor, to be approved by the internal tutor for the final assessment. In case of negative final evaluation, student must either integrate or repeat the training programme.

According to the programme, student performs the professional activities from the slaughterhouse to the end distribution acquiring a significant operational independence; moreover, directly contacting the productive world, students get in touch with important employment opportunities.

4.1.7. Ratios

4.1.7.1. General Indicators about the type of training

The compulsory teaching hours of the various teaching activities, and the consequent ratios, are synthesised as following.

Table 4.1.7.1 – Synthesis of the data necessary to calculate the ratios R6, R7 and R8

Figure	Typology of teaching activities	Total teaching hours
A	Lectures	2,506
B	Seminars	117
C	Self directed learning	75
D	Laboratory and desk based work	458
E	Non-clinical animal work	378
F	Clinical work	320
G	Other	
T1	TOTAL HOURS	3,854

X	Student's Individual Study	2,896
T2	TOTAL HOURS (1)	6,750

(1) The 375 hours for the final thesis and the 375 hours of the compulsory elective activities must be added to this total to reach the global 7,500 hours (300 UFCs) necessary to graduate.

$$\textbf{R6: } \frac{\text{Theoretical training (A+B+C)}}{\text{Supervised practical training (D+E+F)}} = \frac{2{,}698}{1{,}156} = \frac{1}{0.43} \Rightarrow \textbf{Denominator: 0.43}$$

$$\textbf{R7: } \frac{\text{Clinical work (F)}}{\text{Laboratory and desk based work + Non clinical animal work (D+E)}} = \frac{320}{836} = \frac{1}{2.61} \Rightarrow \textbf{Denominator: 2.61}$$

$$\textbf{R8: } \frac{\text{Self directed learning + Individual Study (C + X)}}{\text{Teaching load (A+B+C+D+E+F+G+X)}} = \frac{2{,}971}{6{,}750} = \frac{1}{2.27} \Rightarrow \textbf{Denominator: 2.27}$$

Comments about these ratios are in paragraph 4.2.4.

4.1.7.2. Special Indicators of training in Food Hygiene / Public Health

The compulsory teaching hours in Food Hygiene and Public Health, and the consequent ratios, are synthesised as following.

Table 4.1.7.2. – Synthesis of the data necessary to calculate the ratios R9 and R10

Figure	Typology of teaching activities	Hours
H	Total curriculum hours of Food Hygiene / Public Health	309
I	Total hours of Vet curriculum	3,854
J	Hours obligatory extramural work in Veterinary Inspection	63

$$\textbf{R9: } \frac{\text{Hours Food Hygiene-Public Health (H)}}{\text{Total hours of Vet curriculum (I)}} = \frac{309}{3{,}854} = \frac{1}{12.47} \Rightarrow \textbf{Denominator: 12.47}$$

$$\textbf{R10:}\ \frac{\text{Hours Food Hygiene-Public Health (H)}}{\text{Hours obligatory extramural work in Veterinary Inspection (J)}} = \frac{309}{63} = \frac{1}{0.20} \Rightarrow \textbf{Denominator: 0.20}$$

Comments about these ratios are in paragraph 4.2.3.

4.1.8. Further information on the curriculum

4.1.8.1. Basic Subjects

In the first two years students have to learn some notions of Physics applied to biological system. They should also be able to understand the basis of Information Technology, so that they can profitably use a personal computer and personal productivity software. Students have to be able to handle the basics of Descriptive Statistics and Statistical Inference, and acquire some basic knowledge of Calculus.

Nonetheless students have also to acquire the most up-to-date theories on the atomic structure, the chemical bonds, the Mendeleyev table, redox reactions and acid-basic reactions. Furthermore, a good knowledge of Organic Chemistry and the reaction mechanisms, paying special attention to the structures and properties of the macromolecules of biological interest are required.

With regards to plant and animal Biology, students have to get knowledge on the mechanisms of cell functions, morphology and taxonomy, above all of plants and animals of veterinary interest (fodder and toxic plants, animal parasites…). Moreover students have to get knowledge on gene structure and action and the patterns of inheritance of traits from parent to offspring, and on molecular genetics applied to animal productions

4.1.8.2. Basic Sciences

Students have to study Histology, Embryology and normal and pathological organogenesis. They have to master gross and topographic anatomy of domestic animals (including mammals, birds and fishes), even from a comparative point of view. Students have also to acquire an exhaustive knowledge of the organ's microscopic structure, in order to recognise them by the observation of an histological image.

The dynamic integration and regulation among the different functions and the main physiological parameters of the animals, through the most up-to-date technologies, are taught in the physiology classes along with the fundamentals of animal behaviour, learning and behaviour development, outline of species-specific behaviour of pet and farm animals and the factors conditioning their welfare. The study of endocrinology is finalised to give the students the basic knowledge necessary for applied endocrinology to clinics, to reproduction and to the animal productions.

Students must have a sound knowledge of the pharmacodynamic and pharmacokinetic of veterinary drugs, and of the toxicity of xenobiotics, paying special attention to the species differences.

As propaedeutic to clinical and professional courses students must also know epidemiology of bacterial and viral diseases. Preliminary knowledge such as classification, metabolism, and replication of the most important micro-organisms and viruses responsible for diseases in Veterinary Pathology are taught during the infectious diseases classes.

4.1.8.3. Clinical Subjects

The main etiological factors (physical, chemical, biological, metabolic, and environmental), and mechanisms involved in the pathologic processes and their relations are taught in the General Pathology class. Students should also master the necropsy techniques and the basic diagnostic methods, in order to recognise the different morphological patterns of organ disease and to differentiate post-mortem changes from ante-mortem lesions.

Students have to obtain a sound knowledge of the clinic methods used in both direct and collateral semiotic investigations. They also have to carry out general investigations on animals and particularly of their organs and systems, as well as to know the laboratory tests and their diagnostic meaning. An essential part of the training is dedicated to the knowledge of the different pathologies, the symptoms and the clinic methods that allow students to make a diagnosis and choose a therapy

Attention has to be paid to the collateral tests (e.g. radiology, endoscopy, ultrasound, electrocardiography and laboratory tests). They also have to study parasites and microorganisms in their pathogenic, clinical, diagnostic, prophylactic, and therapeutic aspects.

Students also have to get a sound knowledge of the general and local anaesthesia techniques and the main surgical techniques aiming at treating the different diseases of domestic animals. A good knowledge of the fundamentals of reproductive pathologies, both in male and in female domestic animals, is given during the obstetrics and gynaecology classes. They have also to study parasites morphology and biology as well as epidemiology, ethiopathogenetic, clinical, diagnostic, prophylactic, and therapeutic aspects.

Specific information on the practical clinical training

Intensive "*hands-on*" clinical training, provided in small groups of four-eight students, has been structured into the teaching curriculum that is taken by all Veterinary students starting from the 2001-02 academic year. In particular, especially during the lecture-free final semester, the CDC has provided structured practical training in clinical and other applied subjects. This kind of compulsory *hands-on* practical training is attended by each student through a comprehensive system of clinical rotations (internal medicine, surgery, and obstetric and gynaecology), and rotations through other applied subjects, including avian pathology, animal production and food hygiene.

The compulsory *hands-on* practical training is carried out on the Faculty premises (exam rooms, diagnostic laboratories, treatment rooms, surgery rooms, intensive care unit and other premises inside the Department of *Veterinary Clinics*) as well as at the University Farm. Since 2008 the practical training in clinical subjects is performed by all the students inside the Faculty.

The practical and clinical skills which students need to acquire during the compulsory *hands-on* practical training, are defined in details. With regard to the practical training in Medicine, Surgery and Reproduction, students are organised in weekly groups (2-3 students per group), which rotate among the various clinical areas (1 week, i.e. 25 hours, per each specific area: Internal Medicine, Surgery, Anaesthesia, Imaging Diagnostic, Obstetrics of small animals and Obstetrics of large animals). The same type of rotations is organised for the Medicine area.

Several teachers supported by other professionals involved in each subject (either Faculty staff or practitioners engaged by the Dept. of *Veterinary Clinics*) are in charge of the supervision of the students and of the evaluation of the practical skills obtained.

4.1.8.4. Animal Production and Animal Husbandry

Animal behaviour, breeding environment conditions and its influence on animals, paying particular attention to quality of production, are the basic topics taught in animal husbandry classes.

Students have to obtain:

- a good ability in evaluating animal morphological and functional characteristics;
- a good knowledge of poultry and rabbit biology and poultry egg incubation procedures;
- a good knowledge of different rearing systems, considering animal welfare and environmental hygiene;
- a good knowledge of the effect of management and environment on the quality of products of animal origin.

Students have to obtain a good knowledge of genetics and biotechnologies applied to the improvement of the different species, especially those of interest in animal husbandry.

Students have to know the chemical analysis of feed and their link to digestibility and nutritional value. The study also includes the laws which regulate the preparation and commercialisation of a feed and of the substances used in domestic animals feeding. Students have to obtain a good knowledge about the organisation and management of fodder plants and on how to correctly formulate rations.

4.1.8.5. Food Hygiene

Students must acquire a sound knowledge of the methods and aims concerning the pre- and post-mortem sanitary inspection of the animals for slaughter. They must understand the fundamentals of hygiene and food technology applied to production and placing on the market of food of animal origin. Furthermore, they must be familiar with the criteria, methods and techniques concerning tests aimed at assessing the safety requirements of the above mentioned products and the scientific basis of the relationships between food and human health. Students also must have a sound working knowledge of the sanitary and quality assessment certifications in compliance with the laws in force and the public health requirements.

Specific information on the practical training of Food Hygiene

Almost all the practical training is carried out outside the Faculty in public or private slaughterhouses, and food production processing and distribution plants; this activity is performed either closely connected with the teaching activity under the guidance of a University teacher or, detached from the teaching, under the guidance of an official veterinarian.

During the teaching course, students are transported at the premises by a bus rented by the University and, divided in small groups (maximum 12 students/group), attend part of the teaching directly on the field following a briefing of the official and company veterinaries under the guidance of University teachers. These activities take place during a working day so that students can experience the professional activities of a veterinary food inspector.

Students also make a practical training outside the Faculty in a Public Institution (Local Sanitary Units, Section of Food Inspection; Border Inspection Points; Veterinary Office for EU Fulfilments) agreed upon our Faculty with a formal agreement under the guidance of an external tutor for a total of 63 hours. During the planned period the student works beside the Official Veterinarian in the slaughterhouses, premises for production, processing and distribution of food under the control of the Institution chosen; in this case the student can acquire a significant operational independence because she/he is alone with the tutor and directly performs the professional activity under her/his guidance.

A small part of the practical training in food hygiene is dedicated to the lab because many of the techniques are basically the same that students experience during other practical activities: in internal lab students experience some lab activity closely related to the identification of food frauds as the identification of species, frozen/fresh fishes, etc.

4.2. Additional comments

4.2.1. Comments on the curriculum in Veterinary Medicine at the FVMP

After the 1999 Ministerial Decree, a new University Education System has been introduced in Italy. Since the 2001-02 academic year, the University Formative Credits (UFCs) system has been validated, which is similar to the European Credit Transfer System. The value of UFC is given by 25 working hours, including both teaching activity (theoretical and practical) and individual study.

The Degree Course in Veterinary Medicine is ruled by European regulations and it is a 5-year course with a limited enrolment of students, chosen following an admission test.

The curriculum of the Course is organised in areas of study, which are composed of classes. Within each class different amounts of teaching hours are provided as practical or clinical work. These activities can also be carried out in qualified organisations outside the Faculty. Every class is then composed of elementary components defined as "*modules*". The total of compulsory examinations is 26, plus the examinations of Foreign Language and Informatics as well as elective examinations.

The attendance at all the classes is compulsory and at the end of each the students sit for an examination. Before graduating, students must prepare their final thesis, which will be discussed at the end of the fifth year. About 20-25% of the students graduate in five years. After the fifth year students can continue to be registered as "*off-course students*" and can attend classes and practical activities and sit for examinations. During the 5 years of course the students have the possibility to improve their skills by selecting practical opportunities in qualified centres and all the main fields of the Veterinary Medicine are contemplated.

The veterinary curriculum seems to adequately prepare the graduates for the various aspects of the veterinary profession. Special attention is given to companion animals and horses for the internal medicine, surgery and obstetrics classes, to the horse and dairy cow for the reproduction and animal husbandry classes. Other specific parts of the veterinary profession that receive more emphasis during the 5-year course reflect the conditions prevailing in Tuscany where pets and horses represent an important part of the veterinary profession and of livestock economy.

According to the EAEVE suggestions for other species, such as pigs, the Faculty has appointed several professional practitioners as teaching staff.

4.2.2. Comments on the dichotomy in the responsibilities for the practical activities

The Departments connected with the FVMP and their scientific-disciplinary sectors (and, sometimes, each individual teacher) have an almost total autonomy in taking any decision about the contents, the organisation and the management of practical activities, both of intra-mural and extra-mural ones, especially for the most professional subjects. Sometimes this autonomy is the result of a *de facto* situation. For example, many teachers deeply think that only they are authorised to (and only they can) decide in total autonomy about the contents of the teaching modules taught by them. Actually the Teaching Code of the University of Pisa says that the teaching programmes are proposed by the official teachers and that "*The Council can ask for justified modifications to the programme (…) In the case the Council does not approve the programme, the question is subjected*

to the examination of the Academic Senate, which definitely decides". But actually, whilst the teachers decide the programme by themselves, the Council can only use a "moral suasion" in trying to coordinate the programmes of the various modules.

On the other hand, in other cases this autonomy is formally well established either by the law or by some University's internal regulation. A relevant example is the case of almost all practical training, both for those performed inside the Faculty as well as for those performed outside. In fact, when we say "*within the Faculty*" we actually mean "*within the Departments*". It happens just because most structures and equipment necessary for the students for their training are officially under the responsibility of the Departments: therefore the Director of the Department, which is, by law and by University's internal regulations, totally autonomous from the Dean of the Faculty, actually becomes the real responsible for the training activities of the students. This is particularly true for the most professional training activities.

To go over the dichotomy in the responsibilities for the practical activities, from the next academic year a deep revision of the organisation of the different practical activities has been operated. This revision focused on the improvement of the coordination among the different activities and, at the same time, to improve its carrying out through one detailed planning of the different activities during the teaching period. Furthermore, in organizing the new Veterinary Teaching Hospital, it has been proposed to activate a new structure where both the Faculty and the Departments have just the same common responsibilities towards the clinical practical training of the students.

4.2.3. Comments on the efficacy of the practical activities

4.2.3.1. <u>The practical training in Clinical Sciences</u>

Even if the FVMP has done and continues to do a lot of efforts to improve the students' practical training, and even if the situation is increasingly better than ten years ago (at the time of the previous EAEVE visit) actually the Faculty is still not completely satisfied about the results achieved. An important motivation must be looked for in the situation of uncertainty about the construction of the Veterinary Teaching Hospital. The project was already completely finished just in 2002, but an incredible number of delays occurred due to many administrative (and financial) problems. Inevitably this "stop and go" situation has had a negative effect on the attitude of some teachers. Furthermore any project of a better organisation especially of the practical training in small animal clinics was continuously delayed "to next year, when the Veterinary Teaching Hospital will be completed…". Especially for these reasons practical training with small animals – both the one connected with lessons and the general one – sometimes is not felt by the students as completely effective. They would like to do less theoretical lessons and more *hands-on* practice…

Quite different has been the situation of equines. Because along the last years the Faculty succeeded in building many paddocks and, subsequently, 14 boxes (even if provisional) and a foal unit, many horses and some donkeys have been continuously hospitalised (the major part of the horses especially during the stud season), with a great benefit for the students' practical training.

On the other side, a relevant problem which complicates the practice of students with small animals is connected with the well-established habit of the clients to be present at every time during the visit: actually they do not really appreciate that their animals are managed by inexperienced people. This problem certainly will disappear next year when clients will leave their animals to be anyway hospitalised in the Veterinary Hospital.

4.2.3.2. The practical training in Animal Husbandry and Animal Nutrition

Some problems must be underlined about the Animal Husbandry and Animal Nutrition practical training. In fact most students are, since the beginning of their Vet studies, only interested in pets or in exotic animals. For this reason, and despite the efforts of the teachers, they have great difficulties in understanding the importance of practical training with farm animals, and they tend to dislike any activity related with farm animals. Therefore, many of them end up in participating without interest and only because obliged. As they are not very interested in animal feeding, this lack of interest shows up in small animal feeding as well.

Another problem is connected with the too limited duration of the period of student practical training. In fact a number of fodder plants and more intensive farms, where the working rhythms are strictly scheduled, have difficulties in accepting trainees because when they have learnt the procedures the time of the training is already over.

4.2.4. Comments on the ratios

Certainly the Faculty of Veterinary Medicine of Pisa cannot be really satisfied for its ratios. In fact a value of the ratio R6 = 0.43 simply means that there are too many theoretical lessons in comparison with the hours of practice. And actually not only students complain that their practical activities are not too much, but the time spent by them to graduate is, in at least 75% of the cases, more (and sometimes much more) than the five years foreseen by the official plan of studies.

On the other hand we must recognise that our students very often have a very strong theoretical preparation, which is very useful alongside their future professional life when they necessarily need to update their competences: the strong basis received during the University studies reveal their utility when they have to build on them…

The most important reasons for the unsatisfying value of the ratio R7 = 2.61 have been explained in the previous paragraph 4.2.3. We are really sure that, with the activation of the Veterinary Teaching Hospital, the clinical practical work with small animals of our students will considerably increase both in number and in quality, and that students can perform much more *hands-on* activities.

Furthermore the Faculty has to perform a different, and more effective and efficient, policy in driving the choices of the students about the elective subjects. In fact, on the basis of the Decree n. 270/2004, these activities have to be compulsory (and closely) connected with their curriculum of study. It is clear that this new policy could increase the quantity and quality of practical training.

4.2.5. Comments on the suggestions given in the 1999 EAEVE Report

The Faculty made a big effort to take in account all the suggestions given in the 1999 EAEVE Report have been taken in account. In particular, "*hands-on*" activities have been greatly improved and are now taught to small groups of students. Also, the number of animals of different species, especially equines, directly handled by the students has strongly increased. For a more detailed analysis, see paragraphs 7.2.1-4.

Faculty also did efforts to increase the theoretical and practical education about swine and its management and pathologies. Many of these aspects are taught in many different courses.

a. Anatomy: during the practical work of Anatomy swine carcasses are utilised in the Anatomy practical work (see table 7.1.1 in Chapter 7).
b. Endocrinology: in this module the following topics are dealt with by the teacher:
   - analysis of the hormonal influence on swine growing, with an evaluation of hormones both stimulating and inhibiting, with taking in account the impact of the effects deriving from the puberty endocrine production; this knowledge can be considered propaedeutic to the presentation of the connected topics in Animal Husbandry;
   - the weight increase and its endocrine references;
   - the stress in the swine species; description of the physiology and endocrine evaluation; functional connections with both clinical and animal husbandry aspects.
c. Physiology: in this module some specific aspects about the swine reproduction physiology are treated.
d. Ethology: in this module the behavioural development and the social behaviour of the swine species is treated. Furthermore some notes about the most relevant elements for the swine welfare are given.
e. General Animal Husbandry and Genetic Improvement: in this module the main swine breeds are shown. In particular their origins and the comparative morphology are discussed.
f. Animal Feeding and Nutrition: as for other domestic animals, this module includes the most relevant aspects of swine feeding during the different productive periods; besides some seminars are held (see paragraph 11.1.3, table 8) and some short courses held by external teachers (see tables 4.2.5.a-b).
g. Animal Husbandry II *(Monogastric)*: in this module swine management is taught considering different productive phases (reproduction, weaning, growing and fattening); traditional systems and open air or organic farming are treated; students are introduced to the following topics:
   - buildings and equipment;
   - piglets at birth: number, weight, average daily gain, feed conversion, neonatal mortality and connected causes;
   - heavy and light swine: different breeding periods between weaning and slaughtering (30/150 kg);
   - sows pregnancy, feeding and management during gestation; delivery;
   - breeding systems and reproduction.
h. Parasitology and Parasitic Diseases: in these modules the following parasites and parasitic diseases of pigs are treated:
   - *Hyostrongylus rubidus* infestation
   - *Ascaris suum* infestation
   - *Strongyloides ransomi* infestation
   - *Trichinella spiralis* infestation
   - *Toxoplasma gondii* infection
   - *Babesia spp.* infection
   - *Isospora suis* infection
   - *Eimeria spp.* infection
   - *Giardia intestinalis* infection
   - *Sarcocystis* spp. infection
   - *Oesophagostomum spp.* infestation
   - *Trichuris suis* infestation
   - *Cryptosporidium (parvum and suis)* infection
   - *Metastrongylus spp.* infestation
   - *Fasciola spp.* infestation
   - *Echinococcus granulosus* infestation
   - *Taenia solium* infestation
   - *Sarcoptes scabiei* infestation

i. Anatomical Pathology I and II: regarding swine pathology, in these modules, since 2003,

selected diseases of the respiratory and alimentary tracts, central nervous system and urinary system have been teaching (see tables 4.2.5.a-b) by an external teacher from the Moredun Research Institute in Edinburgh, who received a PhD in swine pathology at the University of Barcelona; furthermore, during practical training students can analyse a large amount of viscera of slaughtered pigs with findings of acute and chronic bronchopneumonia, pleuritis, liver and kidney diseases, as well as slaughtering related organ changes.

j. *Food Hygiene/Public Health*: during teaching activities and practical training topics on pigs are treated. Students attend theoretical lessons on:
- inspective indicators for pigs welfare during the transportation and at the slaughterhouse;
- clinical ante-mortem visit and post mortem inspection on carcasses and organs to evaluate pathologies or illegal treatments;
- sample withdrawal and analysis for *Trichinellas*;
- commercial classification of carcasses.

Therefore, during their practical training at the slaughterhouses, students directly experience all the above mentioned topics.

k. *Medical Diagnostics*: within this module few information about swine clinical pathology are taught, regarding the site of blood collection (very particular for this species) and the related restraint of the animal; moreover, some haematological and biochemical peculiarities are discussed in comparison to the other main farm species currently investigated (horse, cattle, ovine, caprine).

l. *Andrology* and *Reproductive Technology*: in these modules students learn how to manage sows and boars for breeding, for semen collection and for artificial insemination.

Apart from the notions taught within official courses, every year since 2000 the Faculty has organised one or more seminars about specific topics of swine management and pathology. The main courses of this kind, held by external teachers, mainly professional veterinarians, are summarised in tables 4.2.5.a-b.

Table 4.2.5.a – Short teaching classes taught by external teachers and the seminars about swine **Total number**

EU-listed subjects	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	Total
3.a. Obstetrics		2	1				3
3.b. Pathology	1	2	1	1	1	1	7
4.b. Animal Nutrition	1	1	1		1	1	5
4.e. Animal Husbandry	1	2				1	4
Total	3	7	3	1	2	3	**19**

Table 4.2.5.b – Short teaching classes taught by external teachers and the seminars about swine **Total hours**

EU-listed subjects	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	Total
3.a. Obstetrics		12	10				22
3.b. Pathology	10	14	10	10	12	10	66
4.b. Animal Nutrition	15	15	15		4	4	53
4.e. Animal Husbandry	4	16				4	24
Total	29	57	35	10	16	22	**165**

4.2.6. Comments on the new study plan (Ministerial Decree n. 270/04)

As already said in some paragraphs above, a new study plan will start since the 2009-10 academic year, according to the MD 270/04. During this year only the first and the second year of the Degree Course will start.

Tables 4.2.6.a-c report the main differences between 509/99 MD and 270/04 MD study plans.

Table 4.2.6.a – Distribution of the total UFCs and hours in the different teaching activities

	University Formative Credits		Hours	
	MD 509/99	MD 270/04	MD 509/99	MD 270/04
Compulsory classes	252	238	6,300	5,950
Language	3	3	75	75
Informatics	3	5	75	125
Other practical work	12	30	300	750
Elective activities	15	9	375	225
Final thesis	15	15	375	375
TOTAL	300	300	7,500	7,500

Table 4.2.6.b – Compulsory classes: Distribution of the total student workload

	MD 509/99	MD 270/04
a. Total UFCs assigned	258	246
b. Total student workload (b = a x 25 hours)	6.450	6.150
c. Total hours: lectures+practice (c = d+e)	3.226	3.330
d. Total lectures and seminars (hours)	2.623	2.687
e. Total practical work (hours)	603	643
f. Total individual study (hours: f = b-c)	3.224	2.820
g. Rate: individual study / lectures+seminars (g = f/d)	1,23	1,05

Table 4.2.6.c – EU subject typologies: Comparison between 509/99 and 270/04 study plans

	MD 509/99	MD 270/04	270 – 509 Var.
1. Basic Subjects	130	150	20
2. Basic Sciences	1.085	1.050	-35
3. Clinical Sciences	1.354	1.386	32
4. Animal Production	367	389	22
5. Food Hygiene / Public Health	246	260	14
7. Language	27	27	0
8. Informatics	0	68	68
9. Other non EU-listed subjects	17	0	-17
TOTAL	3.226	3.330	104

Note: In the 509/99 study plan there were no lectures on Informatics, but only 75 hours of Self Directed Learning.

4.3. Suggestions

4.4. Annotations

Chapter 5 – TEACHING: QUALITY AND EVALUATION

5.1. Factual information and comments

5.1.1. The bodies which have responsibilities in the organisation of the teaching programme

a. The Council of the Degree Course (CDC)

Even if the formal responsibility of all teaching activities is with the Faculty Council and therefore the Dean, actually they mainly perform an action of supervision on all the Degree Courses of the FVMP and coordination among them.

All the responsibilities for organisation of the teaching programme are delegated to each Degree Course. Teaching planning is proposed and approved by the Council of Degree Course (CDC). In this context, following proposal of each teacher, the CDC approves the contents of the various teaching modules. These contents are previously verified either by the year-coordinators or by the Teaching Committee of the CDC. After this, programmes are published on the Faculty web-site.

b. The President of the Degree Course

The President acts in name of the Degree Course and she/he actually is the person responsible for all the organisation of the teaching programme. She/he keeps the contacts with all the Degree Course institutions involved in the teaching programme and with the Faculty structures which are demanded to support it. She/he even works around some administrative affairs regarding students (transfer, curriculum exchange...).

c. The Teaching Committee

The Teaching Committee of the CDC is an advisory body for all the teaching affairs. It is chaired by the President of the CDC and it is composed by all the students voted in the CDC and by an equal number of teaching staff of that same Course.

d. The Committee for practical training

The Committee for practical training of the CDC is the body which advices the President of the CDC in the evaluating "*Training Projects*" prepared by the students when they apply for their practical training. The Committee should evaluate the adequacy of the contents of the projects.

Furthermore the Committee gives its advice on any request, usually proposed by the teacher of each scientific area, about activating new agreements with external bodies for practical training. In these cases the Committee evaluates the quality and the quantities of the structures and equipment available, as well as the presence of one or more persons who can take responsibility for supervising students and the professional level of the structure. The agreement must subsequently be approved by the CDC and then by the Faculty Council. The agreement must then be signed by both the Dean and the responsible officer of the external body.

The Committee is chaired by the Vice President of the CDC and it is composed by the President of the CDC and by the four teachers responsible of the following areas:

- Internal Medicine, Prophylaxis and Avian Pathology;
- Surgery, Obstetrics and Gynaecology;
- Food Hygiene and Inspection;
- Animal Husbandry.

It must be noticed that these four areas represent the four sections established by the law for the composition of the State Board Exam Committee to access the Veterinary Profession (see paragraph 5.1.7).

e. Student representatives

Student representatives, both in the Faculty Council and in the CDC, are very active and responsible especially in showing to the President (and, if necessary, to the Dean) all the difficulties

and all the problems related with teaching, and in suggesting improvements in the teaching organisation. They have a good relation both with the students and with teachers and Faculty institutions. Their suggestions are often taken into consideration and accepted by the teachers every time possible.

The tasks of the student representatives are mainly the following.

a. To be in close contact with all the students of the various Degree Courses and of the various years in order to collect student issues. In this way they can both communicate these problems to the appropriate council and interested parties, and act as intermediaries between teachers and students in order to solve these problems.
b. To be aware of the problems of the Faculty from the perspective of the teachers by participating in the meetings of the Faculty and Degree Courses Councils.
c. To involve students at the Faculty level not only in the teaching activities, especially when these are of relevance for the students, but also in other kind of activities such as evening seminars on professional topics organised by students themselves.
d. To organise events to give students opportunities to socialise. Such opportunities are fairly rare in Italian Universities which often lack spaces dedicated to student events.

Recently students opened an Internet *forum* to improve the communication and to debate student issues. The *forum*'s address is: *http://studentivetpisa.forumup.it*

f. The Departments

Even if the formal responsibility for teaching is held by the Faculty, Departments play an important and autonomous role in supporting and organising the teaching programme, especially for the practical activities. In fact the Statute of the University of Pisa says: "*The Department (…) organises, on the basis of the indications of the Faculties and of the Degree Courses and in cooperation with them, the teaching activities related with the scientific-areas of its own competence, making available its own human and physical resources*".

The Departments connected with the FVMP (and the scientific areas represented within each department) have an almost total autonomy in taking decisions about contents, organisation and management of practical activities, both intra- and extra-mural especially for the more professional subjects. In fact, while speaking about students' practical activities, when we say "*within the Faculty*" we actually mean "*within the Departments*".

The risks connected with this dichotomy have been already discussed in paragraph 4.2.2.

5.1.2. The structures to support the organisation of the teaching programme

a. The Administrative Secretariat

The main duty of the Administrative Secretariat of the Faculty concerns the administrative and accounting management of the Faculty.

The Administrative Secretariat is additionally involved in many other duties closely linked to the organisation of teaching activities, with particular regard for the following aspects:

- gathering data from the proceedings of the Council meetings held by the Degree Courses, the Specialisation Schools and the Master's Courses;
- collaboration with the Dean in drafting the proposal for the annual Teaching Plan to be submitted to the Faculty Council;
- management of the administrative procedures for assigning teaching responsibilities;
- drafting official selection and contract announcements open to professors external to the

University;
- support activities for the Dean in drawing up the annual budget;
- management and control of teaching expenses;
- participation in Teaching Committee meetings and localization of the preliminary documentation for the agenda;
- drawing up and managing agreements with external subjects for institutional purposes and for students' practical internships;
- creation and updating of the website pertaining to the Administrative Secretariat of the Dean's office, with regard to application forms, regulations and selection announcements.

b. The Teaching Office

The Teaching Office supports students in their local administrative procedures interfacing for these purposes with the Central Administrative Offices. It also supports the Presidents of the CDC in preparing documentation for the meetings of the Councils, and helps them to prepare and archive the minutes of the meetings. Another task is to prepare all the procedures for the final thesis examinations for all the Degree Courses as well as keeping an archive of all the graduates of the Faculty.

The Teaching Office implements all the local procedures for the elections of student representatives in the various Councils (Faculty and Degree Courses).

Furthermore, the Office manages the data processing of the information on teaching modules and of teachers responsible for each module. The maintenance and update of this information is done with a centralised software for all the University of Pisa.

The Teaching Office gives the necessary support in all the administrative procedures for the State Board Examination (see paragraph 5.1.7).

c. The Coordinator for teaching

In 2002 the University of Pisa created the Coordinators for teaching role. They have been assigned to each Faculty. One of these has been assigned to the FVMP although such assignment is still temporary due to some technical problems and financial difficulties of the University.

While the Teaching Office plays a mainly administrative role in supporting teaching, the Coordinator for teaching should play a more "political" role, connected with the contents of both actions and organisation of the teaching programme.

The Coordinator is a graduated staff member, who cooperates with the Faculty and with the Degree Courses (especially with their Presidents) to improve the following activities:
- orientation of high schools students before their entrance to University;
- information and assistance for the incoming students;
- editing of the Student's Guide of the Faculty;
- support for the implementation and improvement of the contents of the Faculty web-site;
- support to the organisation of the intra- and extra-mural activities of students;
- management of the relations with external subjects for practical activities of students;
- support for teaching projects funded by external subjects;
- support for teaching assessment (see following paragraph 5.1.6)
- support for the University evaluation projects;
- monitoring of the students' careers.

d. The Student Office

In 1995 the FVMP created the Student Office, with the task to support students in all their "technical" needs. A person forming part of the Dean's Office is engaged full-time in this role. Whenever possible, the Faculty employs part-time students (paid with specific funds from the University of Pisa, or from the National Ministry) who help the activities of the Student Office. Actually this help is very useful not just because it is a job, but also because they learn the faculty organisation and working while helping other students.

The main activities of the Student Office are the following:

- distribution of documents for students' orientation and for information on Degree Courses;
- distribution of the Students' Guide;
- technical and administrative support to the intra- and extra-mural activities of students;
- management of the data base about the intra- and extra-mural activities of students;
- support for the issue of the final certification of the intra- and extra-mural activities of students;
- information about the timetable of lessons and examinations;
- support in keeping the lists of students for examinations;
- distribution of lecture notes;
- management of booking of classrooms, portable computers and audio-video teaching supports;
- management of the Faculty van bookings.

The Student Office has very close contacts with students, and is much appreciated by them.

e. The Year Coordinators

For each year course, a teacher belonging to the Degree Course is nominated Year Coordinator. Year Coordinators help the President of the Degree Course in planning teaching activities, interconnecting teachers and students, trying to solve problems arising throughout the academic year, in order to smooth any difficulties for the students. Every year, before the beginning of each semester, the Year Coordinator meets all the teachers to define the schedule of theoretical and practical training and to plan the dates when the "*in itinere*" assessments (partial exams which the student take half-way through the course) must be performed.

f. The Students' Guide

Every year, all the Faculties of the University of Pisa prepare their own "*Students' Guide*" which is a very useful tool both for the Faculty and students(contents are reported in table 5.1.2). It summarises in one booklet important information of the structures of the various Degree Courses activated inside the FVMP. A printed copy of the "*Students' Guide*" is distributed upon request to all the students of the Faculty free of charge. Furthermore it is also distributed, again free of charge, to the High School students who tour the Veterinary School during the events periodically organised by the University of Pisa to inform and to orientate prospective undergraduate students in choosing their career.

In the past the Guide was much more complete. In particular it contained rather detailed programmes of all the teaching modules, and it was directly paid by the Central Administration of the University of Pisa. A copy of the Guide was also given to all the members of the Faculty staff and sent to many third parties interested to the FVMP.

Unfortunately, because of the growing financial problems of the University, over the last few years this expense has been charged to the Faculty. Therefore the FVMP has been obliged to reduce both the contents of the Guide and the number of the printed copies (this year only 1,000). The printed copies were also reduced because, since 2005-06 academic year, the Guide is published on the web site of the Faculty: *http://clara.vet.unipi.it/claroline/document/document.php*

This saves money but has the disadvantage that new prospective students would prefer to receive hardcopy guide.

Every year, the preparation of the "*Students' Guide*" is a good opportunity for the Faculty to reflect on the changes that occurred during the years and to keep track of them.

5.1.3. Actions to ensure and to improve student welfare and the right to access tertiary education

a. Support of the University of Pisa for students with disabilities

Based on the national Decree n. 17/1999, in 2000 the University of Pisa activated a specific

Office (*Services for the Integration of Students with Disabilities*: SISD) to support students with disabilities in all their academic needs. While at that time the problem was underestimated (there were relatively few statistics on students with disabilities), since then, 210 students with disabilities of different types and severity have been supported.

Table 5.1.2 – Contents of the "*Students' Guide*" of the FVMP

Glossary of the main didactic terms
The Offices of the Faculty of Veterinary Medicine
The Library
The Departments referring to the Faculty
Composition of the Councils:
- Faculty Council
- Councils of the Degree Courses in:
  - Veterinary Medicine (secondary level)
  - Sciences and Technologies of Animal Productions (primary and secondary level)
  - Canine Breeding Techniques and Training (primary level)

Teaching Plans of the Degree Courses in:
- Veterinary Medicine (secondary level):
  - generalities of the Degree Course, objectives and job opportunities
  - admission test
  - student's workload: amount and composition
  - starting and termination dates of the lessons
  - teaching modules and their contents
  - practical training: contents and procedures
  - final thesis
  - State Examination to access the profession
  - detailed repartition of the teaching modules in the various semesters
  - teachers and coordinators for the various years and the students' tutoring
- Sciences and Technologies of Animal Productions (primary and secondary level degrees)
- Canine Breeding Techniques and Training (primary level degree)

The support and services offered by this Office are the following.

1. Tutoring services and support for learning resources: students are offered help in classroom note-taking and sourcing learning materials. This support is provided by other students paid on a part-time basis by the University. Whenever necessary, and in collaboration with the professors involved, alternative and personalised procedures for tests and examinations are devised.
2. Classroom and timetable planning: In collaboration with the teaching coordinators and the Student Office of the Faculty, plans are drawn up to identify the best solutions in assisting access to lecture halls and facilities and enabling students with disabilities to enjoy full participation in all educational and learning activities.
3. Accompaniment and transport services: for students with mobility problems, a personal assistance service is provided for transfer between the various university buildings and facilities. The service also has three dedicated vehicles, two of which are equipped with hoists. Wherever necessary, the service includes taxi vouchers that can be spent within the territory of the municipality of Pisa.
4. .Technological aids: An advisory service has been set up to provide assistance in the use of technological and electronic support tools for the disabled, in collaboration with experts of this sector. Additionally, specially equipped workstations have been installed in the teaching

laboratories and the university library facilities.

5. Support for study periods abroad: SISD provides grants for study periods abroad. In addition, the Socrates mobility programme, which offers the possibility of undertaking study abroad for periods of time, makes available integrating grants for the disabled. SISD provides assistance and guidance for students in the administrative procedures necessary in order to obtain a grant. Furthermore, students with a disability have the opportunity to avail themselves of accompaniment and personal assistance during the foreign stay.
6. Monitoring of architectural barriers: In collaboration with the University Buildings and Construction Service, SISD surveys the accessibility of all facilities and, whenever possible, promotes immediate action for removal of obstacles. A general plan for dismantling all physical building features that obstruct access is currently under preparation.

During the last nine years SISD supported 210 students. The main supports (but not all) have been the following:

- 70 students with the didactical tutoring;
- 50 students with the service of accompanying and transportation;
- 40 students with technological personal supports (portable PCs, digital recorders, video cameras and other more sophisticated supporting devices);
- 13 students with grants or with job placement.

b. How the University of Pisa improves the right of students to access University education

The standard student registration fee at the University of Pisa for the 2009-10 academic year is 1,896 euro, plus a regional tax (which is then given back by the University to the Tuscany Regional Government) of 98 euro. The University fees can be substantially reduced (up to 1,638 euro) for economically needy students. Smaller reductions (up to 258 euro) are given for educational merit. There are no reductions for the regional tax, all the students must pay it and is used by the Tuscany Region administration to provide student scholarships and other very useful student services (see below).

The framework of the procedures for the reductions for the economic condition are set in a 2001 national law. They are not really easy to understand and very difficult to implement. All the procedures can only be performed on line. The basis of all the procedure is the calculation of the standardised family income (Indicator of the Equivalent Economic Situation: ISEE) which takes into account many important parameters: the gross income per year of the family, the number of the members of the family, the number of members of the family registered to the University, the amount of the family assets: real estate, stocks, bonds, current accounts…

Students whose families have an ISEE less than 15,000 euro per year have the maximum fee reduction (1,638 euro: i.e. they pay only 258 euro of registration fee, plus the 98 euro regional tax). Students who have an ISEE higher than 56,000 euro per year cannot apply for any reduction (not even for educational merit). For students with an ISEE between these limits, intermediate (not linear) reduction is allowed.

The University is obliged to perform cross checks to ensure the fee reduction claims are not fraudulent. This is done for at least 20% of all fee reduction applications. This is not easy as in Italy we have widespread tax evasion issues.

The reductions for educational merit takes into account both the average vote and the numbers of UFCs obtained per year. Furthermore, in order to encourage elderly people to study at the University, the University of Pisa allows people older than fifty years to pay only 258 euro of registration fee (plus the regional tax). The same treatment is reserved to the employees of the University of Pisa.

The University of Pisa allows people confined to jail to take up University studies. Their enrolling fee is 150 euro. Their tutoring is guaranteed by specifically nominated teaching staff. Two of these people are in our Faculty (not in Veterinary Medicine degree).

Furthermore, every year, the "*Regional Agency for the Right to University Study*", a body of the Tuscany Regional Government, utilises the regional fee to provide support to needy students. The

support takes the form of scholarships, grants, free housing, free meals.

This agency also manages several refectories where all students can access very convenient, high quality subsidised meals (lunch and dinner seven days a week).

c. Students safety in theoretical and practical teaching

The national law n. 626/1994 provides severe rules on health and safety both in work and in teaching places. In 1994, the University of Pisa began a path finalised to closely respect this law. There is a specific central office (named "*Health and Safety Office*") which performs all the actions necessary to guarantee, according to the law, health and safety in every University activity. The evaluation of the risks is done in all the buildings of the University. Specific final reports are produced and given to the persons who are in charge of safety in each body. Since 1994 many actions finalised to remove, or, at least, reduce, those risks have been promoted.

Furthermore, the "*Health and Safety Office*" provides various and periodic compulsory training courses for University employees and students to increase awareness about the need to work in a health and safe environment. These training courses are differentiated for each category of risk. Undergraduate as well as graduate students are invited to attend these courses. For each building of the Faculty and of the Departments, there is an emergency team. In each team there is more than one person in charge of first aid and fire emergency. Each of them has been specifically trained.

A centralised fire alarm has been installed in all the buildings of the Faculty and of the Departments. Building evacuation procedures and evacuation route maps have been prepared for each building and adequately exposed; these procedures are periodically tested and updated. The University must ensure that all employees are familiar with the procedure to follow in the event of an emergency as outlined in the building's *Emergency Plan*. In every building more than one evacuation route map is posted. Fire extinguishers are available in strategic places in every building. Their yearly maintenance is compulsory and is a the responsibility of the Dean of the Faculty as well as of the Directors of the Departments.

Periodic evacuation tests are regularly carried out in every building. The goal is to evacuate every building in a few minutes from the beginning of the fire alarm. During the latest tests (performed during regular lecture hours), one single building was evacuated in 3'10". All the four buildings of the old premises of the Veterinary School in Pisa were evacuated in 6'40" after the beginning of the fire alarm.

In the laboratories, both teaching and research ones, extraction hoods and microbiological safety cabinets are periodically examined by the "*Health and Safety Office*" of the University. Furthermore for each laboratory there is an appointed safety officer. These persons have been specifically trained. Periodically (at least once a year) all the staff members, both teaching, technical and administrative, working in particularly risky environments (such as those who are exposed to a radiological hazard) are checked by the University Health Service. Students are also checked when they perform activities which could expose them to any kind of risk.

Prior to entering laboratories and beginning their clinical practice students have to be informed about risks and how to prevent accidents. In particular, teachers must make sure that students wear white coats and gloves during laboratory practice. Furthermore, treatment of chemicals is permitted

only in the fume cupboards and under the teacher's direct supervision. Chemicals of higher risk class can be manipulated only by a teacher.

Before beginning any practical work with large animals, students receive safety training, supported by two booklets ("*Equine management safety handbook*" and "*Bovine management safety handbook*") written by teachers involved in the subjects and University "*Health and Safety Office*" personnel. Furthermore all students working with large animals at the Department of *Veterinary Clinics* and other large animals must wear protecting clothes (safety shoes or boots, etc.).

5.1.4. Student tutoring

Starting from 2004 FMVP has reorganised and expanded a structured process of tutoring services for students; prior to 2004, tutoring essentially relied on the professors' voluntary goodwill.

In 2004, a specific Committee chaired by the President of the Degree Course was set up; its members included the professors who held the position of year coordinators and two student representatives. The Committee also played an important role of increasing awareness among the teaching staff of the need to address this problem. Additionally, the Faculty drew up a contractual agreement with a student concerning support for all tutoring activities.

In May 2008 the University of Pisa established new and more precise rules on tutoring services for students, with the main objective of guiding students in their educational path. The University is committed to enhancing active student participation in university life and seeks to remove all obstacles to drawing the full potential of benefit from attendance at lectures and courses, insofar as this falls within the sphere of authority of the University.

The Degree Courses are directly responsible for the organisation and functioning of the above-described tutoring system, and are in charge of setting up the rules for its implementation. The academic staff are directly involved in tutoring, which becomes an integral part of their teaching duties, and they are required to devote not less than 40 hours of their yearly teaching load to tutoring activities.

According to the University Regulations, each student is assigned to a member of the professorial staff at the time of first enrolment in the university; the professor will then provide guidance and supervision up to the student's graduation. The Faculty has decided, in this experimental phase, to assign each student to the professors of the course year in which the student is enrolled. The rationale for this decision is to allow the student to receive the most appropriate guidance on the specific aspects and problems of each course year.

During this 2008-09 academic year, the Degree Course in Veterinary Medicine has already drawn up the lists of students to be assigned to each member of the academic staff, also defining the Office Hours in which each professor will be available for individual meetings with the assigned students.

Tables 5.1.4.a-b give an overview of the arrangements concerning the assignment of students to members of the professorial staff. The arrangements also take into account the members' commitments involving other Degree Courses of the Faculty.

Table 5.1.4.a –Tutoring of students: Number of professors by numerousness and course year of assignee students

	1° year	2° year	3° year	4° year	5° year	*Off-course*	TOTAL
Professors with 5 or fewer than 5 students	3	4		1	2	3	13
Professors with 6-10 students (1)	3	5	4	4	7	3	25
Professors with 11-15 students (2)		1	2	1		3	4
Professors with 16-20 students (3)	3	1	4	3	1	6	12
Professors with over 20 students (4)			1			2	2
TOTALE (5)	9	11	11	9	10	17	56

(1) 1 professor with students enrolled in different years.
(2) 3 professors with students enrolled in different years.
(3) 6 professors with students enrolled in different years.
(4) 1 professor with students enrolled in different years.
(5) 11 professors with students enrolled in different years.

Table 5.1.4.b –Tutoring of students: Number of students by numerousness of assignments and course year of assignee students

	1° year	2° year	3° year	4° year	5° year	*Off-course*	TOTAL
Professors with 5 or fewer than 5 students	9	20		5	10	11	55
Professors with 6-10 students	24	45	29	39	64	24	225
Professors with 11-15 students		5	17	5		26	53
Professors with 16-20 students	60	20	42	39	20	43	224
Professors with over 20 students			10			87	97
TOTAL assignee students	93	90	98	88	94	191	654
Students still to be assigned	2	5	2	19	11	108	147
TOTAL enrolled students	95	95	100	107	105	299	801
Mean nr. students / professor	10.3	8.2	8.9	9.8	9.4	11.2	9.8

The mode of implementation of the tutoring system is established yearly by the Council of the Degree Course. All students enrolled in the Degree Course are assigned to tutoring professors who fulfil the duty "...of orienting and assisting students, empowering them to actively participate in the educational process, allowing them to reach their full potential from attending lectures and courses, insofar as this falls within the sphere of authority of the University institution". The assignment of students to the tutors is published on a yearly basis at the Student Office of the Faculty and is also published online.

The individual professors personally answer the queries raised by the students or, if necessary, submit the issue to Year Coordinators or to the President of the Degree Course.

Furthermore, each professor is required to carry out additional tutoring activity to provide more specific information and technical details concerning aspects connected to her/his courses. To this end, each professor is available at least one hour per week for student consultations. The designated time slot is communicated to the President of the Degree Course and made public at the Student Office and on the Faculty website.

Student tutoring lists are published on the Faculty web site at the address:
http://www.vet.unipi.it/content/mv/organizzazione/tutorato
together with an introductory letter on the topic by both the Dean and the President of the CDC.

In order to support this tutoring activity, the Faculty has decided to hire two part-time veterinary students. An evaluation of the results of this new organisation of the tutoring service will be possible during the 2009-10 academic year.

5.1.5. Student evaluation

a. How exams are normally taken in Italian Universities and at the FVMP

The factual information provided in this paragraph is not specific to the FVMP, but rather typical for all Faculties in the Italian Universities and may appear very "strange" for non-Italian academics.

First of all, the students can sit an exam as many times as they like. They are not obliged to sit a given exam at a specific date, but on the contrary they are free to choose the date from one of several exam sessions each year. However, given the compulsory attendance to classes, students in Veterinary Medicine cannot sit an exam before the relative lectures course has been officially held. This approach has been in place now for more than forty years.

At the beginning of the academic year, the Faculty posts a set of dates (sessions) for each exam: the number of exam sessions varies, depending on the lectures course, and ranges from six to nine sessions a year (these numbers are fixed by the Teaching Code of the University of Pisa.

Furthermore, a student, in agreement with the teacher, can refuse the mark and resit the same exam even if she/he already passed it, and this can be done as many times as one wishes, in the attempt to improve the exam mark. Usually teachers agree with such a decision especially if they feel that the student can really improve the mark. There is no set maximum number of times this

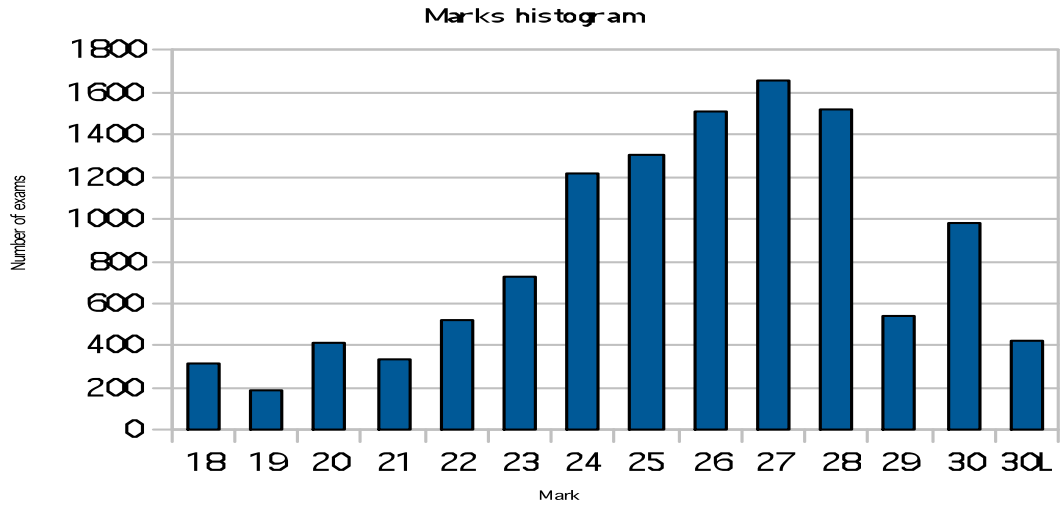
can be done.

Until forty years ago any failed exam was formally registered both on the personal booklet and in the career of the student. Since then, even if in theory this possibility still exists, it is not common practice to formally record these failures. In this way nobody really knows how many times students repeat examinations. Some teachers keep these information in their unofficial personal papers. Some years ago the University of Pisa, in order to succeed in obtaining some official information about the phenomenon of exam repetitions, introduced the rule of the registration of the failure, underlining that it was only for "*statistical purposes*". Students strongly opposed against this rule because they were afraid that it could be the first step towards formally recording exam failures. In any case the recording of failed exam for "*statistical purposes*" was not adopted by the majority of teachers. Therefore, it is basically impossible to measure in any way this phenomenon.

The distribution of exam scores of veterinary medical students during the period 2002-2008 is showed in the diagram 5.1.5.a.

The pass mark in Italian universities is 18/30. It is noteworthy to observe that low end marks (in the range below 24) are rarely issued (see the diagram 5.1.5.a, where the statistics of 12,000 exams from 2002 to 2008 in the Veterinary Medicine curriculum have been plotted): basically, students often refuse a low mark, resitting the exam hoping to score a better mark, or the teachers may suggest to the student that she/he should resit the exam to achieve a better result. Incidentally, although there are signs that this is slowly changing, this phenomenon is observed throughout all disciplines in all of the Italian Universities, not only in Faculties of Veterinary Medicine.

Diagram 5.1.5.a – Distribution of exam scores in the Veterinary Medicine Degree Course in years 2002-2008



A third problem is that, as mentioned in paragraph 4.1.3.1, an "exam" is typically composed by more than one module, and the different modules making up the exam are often quite different in content, taught by different professors and assessed differently by each professor. Even if the different modules comprising an "exam" should be sat as a one and single exam, in practice students prefer to sit each module separately. The rationale is simple: the student effectively splits the exam contents, focusing on one module at a time. At the same time teachers very often endorse this approach, it makes it easier to carry out the exams sessions, because it becomes easier to assemble the examination committee for each module rather than for the full exam. Clearly, this implies that the total number of exams for the FVMP students are not the official 26 "big" ones, but, very often, they are many more (up to 64) "little" examinations. What many student don't seem to realise is that the sum of the single parts is often bigger than the whole exam.

On top of this, if we consider optional activities and, in particular, the Professionalising Integrated Courses (PICs), the real number of examinations would increase much more. In fact, even if in theory the students can achieve the 15 UFCs of their choice by passing two or three "official" examinations, actually they have to pass many more module-examinations: from a minimum of 9 to a maximum of 15, in accordance with the optional modules chosen. This has

certainly been one of the reasons which stimulated students to choose other kinds of elective activities to PIC: either different examinations or additional practical training (see paragraph 4.1.5). Anyway, with the reorganisation of the Degree Course on the basis of MD 270/04, which will start in the next 2009-10 academic year, the PICs will practically disappear.

As a by-product of this fragmentation, it often happens that students have actually passed many modules, but this cannot appear in their official career because they have not yet passed all the other modules which allow them to record the exam. Some aggravation comes from the structure of the teaching activities: in 8 cases out of 26 modules of the same exam (see table 4.1.3.1.a) are lectured in two different semesters: in these cases the choice to split the examination is obliged.

The freedom in taking exams whenever deemed adequate, and the absence (unlike the Universities of other Countries) of any obligation to take the exam just at the end of each course, has another consequence: in many cases students attend classes for the only purpose of collecting the attendance signature, but without really studying the material as the lectures proceed. Then it can happen that the students will actually study for the examination well after they attended the class. In these cases, which unfortunately are quite frequent, the student ends up studying the subject with much more effort and virtually from scratch, lacking the interaction, coming from a proper attendance of the lectures, with the teacher and the rest of the class.

Additional consequences of this exams organisation are further discussed in the following paragraph 5.2.1.

b. The organisation of examinations at the FVMP

In principle, prior the onset of the academic year starts, the chairperson of each examination board (one for each integrated course) should communicate to the President of the Degree Course and to the Student Office all the exams dates for the ensuing academic year. The Student Office advertises these dates on the web site of the Faculty.

Since the implementation of the *Claroline* software (for details see paragraph 6.1.11, point b) teachers can personally publish the exams dates for a specific subject. In many cases, however, teachers arrange the dates from time to time, very often in accordance with the involved students. Sometimes the exam dates are changed on short notice. We observed that the Veterinary students are not particularly bothered by this informal procedure because these students are almost always present in the Faculty complex and are informed by word of mouth, reading the posters, emails or speaking with the teaching staff. This is not the case with the students enrolled in the Degree Course in "*Canine Breeding Techniques and Training*" who, for the vast majority, work and/or live far from Pisa.

c. The examinations and the "in itinere" assessments

As mentioned in paragraph 4.1.3.1, oral exams are the standard mean of assessing students in Italian Universities: the FVMP is not different, although over recent years things have started to slowly change. At the FVMP, written examinations have started to be used, often followed by an oral exam. Also, over the last ten years "*in itinere*" (during the teaching semester) written assessments have become more common. In these cases, the student knowledge on topics discussed in the previous of lectures is evaluated. Typically, positive evaluations are taken into account towards the final mark. "*In itinere*" assessments are a very good way to gradually prepare for the final exam, but they appear to have some shortcomings: only students who constantly attend lessons, and study the subject day by day, seem to take full advantage of these assessments. Unfortunately, only a limited number of students appear to be able to keep up with the pace of the course. Most students fall behind in their studies and so find themselves preparing prior semesters' exams. Furthermore "*in itinere*" assessments have the disadvantage that, falling during class time, students preparing for them attend lectures of the other subjects with less attention (if they attend at all).

Each teacher has the freedom to decide the exact modalities of her/his exams. These modalities are usually communicated to the students at the beginning of the lectures, and published both on the

Students' Guide and on the web site. Nowadays almost half of the examinations are, totally or (more often) partially, in writing. In many cases, the written part is often integrated with an oral exam.

It is common knowledge that Italian teachers, particularly those with a longer standing record as examiners, are better able to evaluate student's preparation through oral examinations. Looking at the histogram showing the distribution of marks, however, some doubts might arise regarding possible biases which may be present in an oral exam: for instance, the dip present for the mark 29 is almost certainly due to teachers' reluctance in assigning it (and to the student's disapproval in accepting it).

d. The propaedeutic subjects

In the curriculum of the Degree Course in Veterinary Medicine at the FVMP the majority (19 out of 26, Language courses excluded) of the integrated courses are propaedeutic for at least one other subject (see Table 5.1.5.a). Only 7 integrated courses are not propaedeutic to any other (see Table 5.1.5.b).

Table 5.1.5.a – The nineteen Integrated Courses which are propaedeutic to some other examinations

Propaedeutic Integrated Courses (1)	Number of bound examinations (2)
2. Animal and Vegetable Biology and Genetics	3
3. Veterinary Biochemistry and Molecular Biology	6
4. Veterinary Histology, Embryology and Developmental Disorders	8
5. Veterinary Anatomy I	4
6. Veterinary Anatomy II	4
7. Physiology and Ethology I	2
8. Physiology and Ethology II	2
9. Microbiology and Parasitology	2
10. Infectious Diseases and Epidemiology	13
11. Avian Pathology, Public Health and Parasitic Diseases	13
12. General Pathology and Physiopathology	12
13. Anatomical Pathology and Necropsies	13
14. Food Inspection	2
16. Pharmacology, Toxicology and Veterinary Chemotherapy	12
17. Semeiotics, Diagnostics and Veterinary Medical Pathology	3
19. Surgical Pathology, Surgical Semeiotics and Veterinary Radiology	3
21. Andrology and Reproductive Biotechnology	2
22. Reproductive Pathology and Veterinary Obstetrics	3
23. General Animal Husbandry, Genetic Improvement, Nutrition and Animal Feeding	3

(1) The number preceding the name of the Integrated Course is the identification number of the teaching activity.
(2) The "Number of bound examinations" is the number of exams which are blocked by the exam listed under "Propaedeutic Integrated Courses": for example, "Animal and Vegetable Biology and Genetics" blocks 3 exams.

Although propaedeuticities are compulsory (i.e. students could not sit a bounded examination before having passed all of its propaedeutic examinations), teachers very rarely check the students' career: it is the Central Students Secretary who sends back to the President of the Degree Course the records of the examination if the propedeuticity has not been respected. It appears that some checks (such as simply asking the student) by the teachers are actually carried out only when, during the exam, the candidate shows poor knowledge of the material covered in one of the propaedeutic modules.

Table 5.1.5.b – The seven Integrated Courses which are not propaedeutic to any other examinations

1. Mathematics and Physics Applied to Biological Systems
15. Industries, Food Quality Control and Certification
18. Veterinary Internal Medicine, Forensic Veterinary Medicine, Veterinary Therapeutics
20. Veterinary Surgery, Anaesthesiology and Surgical Procedures
24. Animal Husbandry, Poultry and Rabbit Science
25. Veterinary Economics, Agronomy and Forage Crops, Rural Building
26. Clinical Biochemistry and Molecular Biology

It should be noted that there are cases when rather than the whole exam, only one of the modules of the integrated course is propaedeutic for some other course. This is one of the reasons why often teachers accept that students sit the examination of their module even if the students have not yet passed the propaedeutic examination. On the other hand, this contributes to lengthen the students careers. Typically there is some sense in the way integrated courses are built, and it does not help that students study only the modules which allow them to sit other exams, rather than the whole integrated course, delaying the study of the modules which do not bear any propaedeuticity.

Table 5.1.5.c sums up how many modules have a given number of propaedeuticities. It appears from the table that the study path in Veterinary Medicine is rather forced in its steps. But, even if the idea of the introduction of propaedeuticities is to oblige students to have an adequate preparation before studying new subjects, it actually creates some problems to the students themselves and often contributes to slow down their careers.

Table 5.1.5.c – Number of modules per number of bounding propaedeuticities

Number of propaedeuticities	Number of modules
No one	13
1	27
2	5
3	5
4	12
5	2
Total	**64**

e. The electronic registration of the examinations

Traditionally, teachers used to register exam outcomes on paper slips, these slips were then gathered by a person entrusted with this task and taken to the University Central Student Office, where they were translated into an electronic format and officially registered. This procedure had a number of shortcomings: there was a bottleneck at the level of each teacher who very often forgot to send in their slips. The second bottleneck was at the level when the paper slip was electronically translated (all slips produced by the whole University had to go through only one office); to ensure that no records were lost, slips had to be numbered, dividing them into "exams sessions" The whole batch of slips belonging to a session had to be shipped together (which meant that teachers rather than sending the paper slips right after the exams typically collected a number of them to make up for a session, leading to another delay in the transmission of the results). There was an increasing number of security problems, with bogus slips getting into the system; and a considerable number

of slips had inconsistent data (like, the exam code not matching the course title, or the student registration number not matching the student name) or were barely readable. Overall this implied large delays between the examination date and the marks making their way into the student's career. These delays had a negative impact not only on the students' careers, but also on the amount of Ministry funds to the University, because the number of exams passed by the students is one of the parameters used by the Ministry for the allocation of the University funds.

To overcome these difficulties, in January 2005 the University of Pisa decided to introduce a remote electronic registration of exams marks, called *UniPOS*. Special portable electronic devices were distributed to Faculties and Departments, while all the teachers were provided with a personal electronic card to activate the device and register the exam outcome; upon registration on the device, as soon as the device is brought back to its home base, the exam mark is sent via cable to the Central Student Office and in a few hours added to the student's career. Each device stores data of all students, exams codes and names, and the examination boards members, thus minimising data inconsistency. Teachers get back (by email or optionally by internal post) a receipt once the exam marks have been added to the careers, which adds to the security of the whole approach.

Nowadays the electronic registration of the examinations is compulsory for all the teachers, even if the diffusion of the *UniPOS* at the FVMP is widespread but not complete. There are some difficulties, mainly connected to the small number of devices distributed to the teachers by the University.

5.1.6. The assessment of the quality of teaching

In 1996 the FVMP began, within the Degree Course in "*Sciences and Technologies of Animal Productions*", an experimental quality assessment process performed by the students themselves. Five years later a national law set such an evaluation as mandatory for all the Degree Courses. Starting from the 2002-03 academic year the evaluation system was introduced for the Veterinary Medicine Degree Course.

Since the amount of students' evaluations of the teaching modules is used by the Ministry as a parameter to allocate funding to the Universities, nowadays the University of Pisa stimulates the Faculties to promote this evaluation. Among many other duties, the University Office for Evaluation manages all the procedures for teaching evaluation, with the help of the coordinators for teaching and of the Presidents of the Degree Courses.

In order to have a reliable set of data for the assessment of the quality of teaching, it is important to identify the correct sample of students. In earlier attempts, the University opted for an online evaluation. The evaluation was not a compulsory task for students. This had the advantage of a low cost, and was also virtually error-free. On the other hand, it was found that the number of students accessing the online evaluation was poor, and that the results tended to be biased towards either positive or negative marks; the students sampled in this way were just the students willing to assess the quality of teaching. Leaving open the possibility to use the electronic form of evaluation for the Faculties which wanted to use it, the University turned to a paper based questionnaire courses evaluation system, distributed during the lectures, as detailed below. Clearly, in this way we are sampling a different sample of students (the students attending the lectures on a given day), and the methodology is more expensive and open to mistakes; on the other hand, the number of students assessing the quality of teaching drastically increases, covering a significant percentage of the whole student population.

a. The evaluation questionnaires: distribution and collection

The questionnaires (substantially divided in three sections) have a format which has been designed by the University Office for Evaluation: it aims at assessing not only single courses, but also Faculty's premises, organisation and services offered as a whole. Students give a mark to each

question, ranging from 1 (poorest) to 4 (best). The following table 5.1.6.a summarises the questionnaires content.

Towards the end of each semester, the questionnaires are distributed in one go to the students during one of the lectures with the largest attendance. They are anonymously filled up. The questionnaires are then sent to the University Office for Evaluation; they are processed (in outsourcing) by an external company, which memorises the results and transfers them onto an electronic support. Unfortunately the transferring of the data from paper to the electronic support is currently open to mistakes, and the outsourced processing of the data takes too much time with respect to the timeliness which would be appropriate to obtain a prompt Faculty response.

b. Questionnaires processing

With reference to the 2008-09 academic year, the number of questionnaires filled up by students is summarised in the following table 5.1.6.b.

Table 5.1.6.a – Content of the questionnaires for teaching evaluation

Section 1 – B-Questions about the Degree Course

Key	Question
B 1	Student's attendance of the lectures
B 2	Student's initial knowledge level from previous studies compared to the course request
B 3	Agreement between material in the official programme and lectures held
B 4	Usefulness of teaching material (books, teacher handouts)
B 5	Clarity and efficiency of the teacher in presenting the different topics
B 6	Teacher's ability in actively involving the students during the lectures
B 7	Study load compared to the course official number of credits
B 8	Clear advertisement of the examinations procedures
B 9	Teacher timeliness and presence at the lectures
B10	Teacher presence at open office meetings with students
BS1	Student interest towards the lectures topics
BS2	Overall assessment of the course

Section 2 – C-Questions about labs and practical work

Key	Question
C 1	Student's attendance of the tutorials and laboratories
C 2	Clarity and efficiency of the teacher in tutorials and labs
C 3	Teacher's ability in actively involving the students during tutorials and labs
C 4	Teacher timeliness and presence at tutorials and labs
C 5	Tutorials and labs teacher easiness with students
C 6	Integration and complementarity of tutorials/labs and lectures
C 7	Usefulness and complementarity of the outdoor lessons with the lectures
C 8	Clarity and efficiency of the outdoor lessons

Section 3 – D-Questions about general organisation

Key	Question
D 1	Overall study workload
D 2	Courses logistics (timetable, exams)
D 3	Advanced availability of the lectures timetable and of the exams dates
D 4	Logistics of the study areas (opening hours, available sitting places)
D 5	Logistics of the library (opening hours, available sitting places, available material)
D 6	Availability of Internet access in the different structures (number of connections, speed)
D 7	Labs logistics: adequacy to achieve the expected teaching aims (dimension, security, instrumentation)
D 8	Coordinator for teaching: ability to interact with students, to counsel and to inform
D 9	Teaching Office logistics: opening times, staff availability and willingness, effectiveness
D10	Adequacy of the practical training with respect to its professional aim
D11	Overall assessment of the Degree Course quality
Q1	Usefulness of this questionnaire (to help improving the teaching quality)

Table 5.1.6.b – Number of questionnaires filled up by students of the FVMP during the 2008-09 academic year

	First semester	Second semester	*On-course* students	Perc. 1° sem.	Perc. 2° sem.
Veterinary Medicine	304	208	502	60.6%	41.4%
STAP primary level	96	60	163	58.9%	36.8%
STAP secondary level	13	13	20	65.0%	65.0%
CBTT secondary level	93	86	344	27.0%	25.0%

The University Office for Evaluation sends back the data to the Faculty after some processing (the raw data are also available via web): for each Degree, and for each question of the questionnaires, we get the median, quartiles, average and standard deviation of the students' answers, both averaged over all different modules, and separately for each module/teacher. This allows us to get an overall picture of the Degree Courses, and also to have some feedback on each teacher.

Table 5.1.6.c – Average results for variables D1-D11 (general organisation) and Q1 in 2008-09 academic year

Key	Vet. Med.	STAP-1	STAP-2	CBTT
D1 - Overall study workload	2.30	2.61	2.69	2.75
D2 - Courses logistic	2.47	2.31	2,00	2.48
D3 - Advanced information availability	2.61	2.31	2.31	2.41
D4 - Logistic of the study areas	2.54	2.54	2.46	2.96
D5 - Logistic of the library	3.01	3.06	2.75	3.11
D6 - Availability of Internet access	2.88	2.93	2.15	3.03
D7 - Labs logistic adequacy for teaching aims	2.73	2.68	2.54	2.83
D8 - Coordinator for teaching ability to interact	3.09	2.36	2.62	2.82
D9 - Teaching Office logistic	2.41	2.23	2.50	2.58
D10 - Adequacy of the training to its professional aim	2.45	2.65	3.11	2.97
D11 - Overall assessment of the Degree Course quality	2.28	2.15	2.10	2.53
Q1 - Usefulness of the evaluation questionnaires	2.70	2.71	2.50	2.88

With reference to the 2008-09 academic year, the outcome of the evaluation is shown in the following tables. Table 5.1.6.c shows the average result for the aspects D1-D11 and Q1.

An average score would be 2.5. It is clear that some aspects are fairly positive, across the different Degree Courses, while others are rather consistently below average.

It is worth commenting the result for Q1. It appears that the bulk of the students, even if only slightly, believes that the questionnaires are indeed of some value: we stress this result because it is different to what it is claimed by student representatives both in private discussions and in public meetings.

The next tables show the outcome of the evaluation for Veterinary Medicine, for the lectures (B-variables: table 5.1.6.d), practical works and labs (C-variables: table 5.1.6.e), respectively.

Table 5.1.6.d – Average and median for B-variables (about Degree Course) in 2008-09 academic year

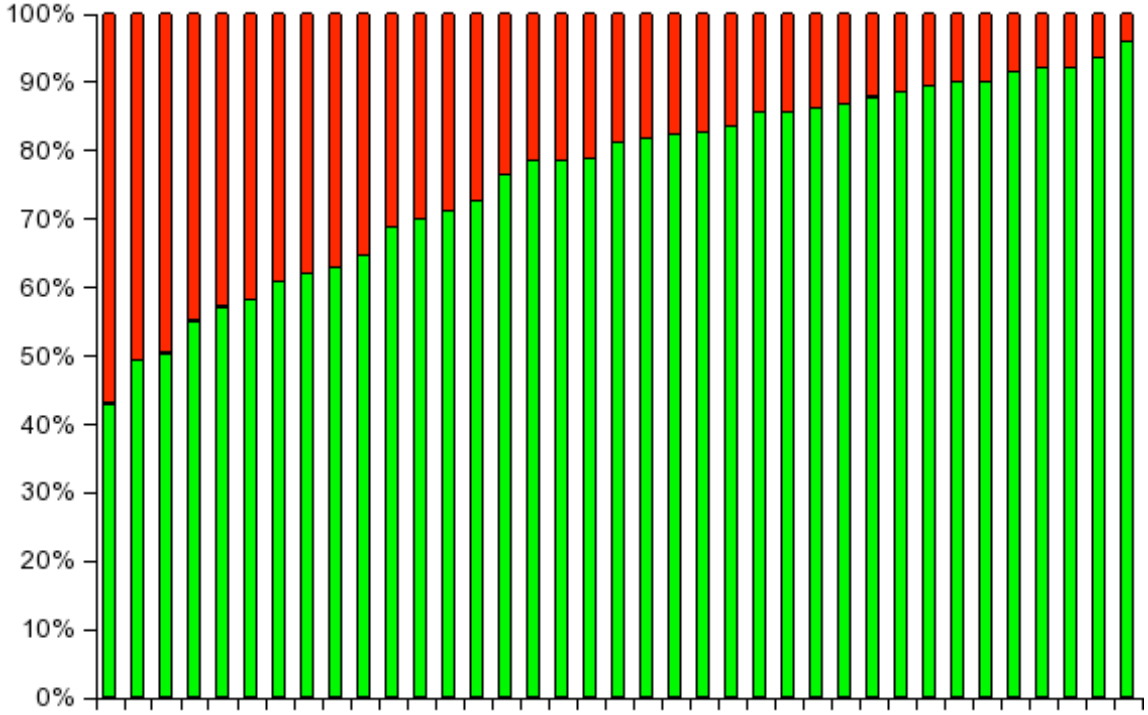
Key	**Average**	**Median**
B1 - Student's attendance of the lectures	3.37	4
B2 - Student's initial knowledge level	2.65	3
B3 - Agreement between programme and lectures	3.25	3
B4 - Usefulness of teaching material	3.02	3
B5 - Clarity and efficiency of the teacher	3.06	3
B6 - Teacher's ability in actively involving students	2.77	3
B7 - Study load compared with the number of UFCs	2.81	3
B8 - Clear advertisement of the examination procedures	3.16	3
B9 - Teacher's timeliness and presence at the lessons	3.49	4
B10 - Teacher's presence at open office meetings	3.36	4
BS1 - Student's interest towards the lectures topics	3.20	3
BS2 - Overall assessment of the course	3.07	3

Table 5.1.6.e – Average and median for C-variables (about labs and practical work) in 2008-09 academic year

Key	Average	Median
C1 - Student's attendance of laboratories	3.62	4
C2 - Clarity and efficiency of the teacher at laboratories	3.22	3
C3 - Teacher's ability in actively involving students at labs	3.00	3
C4 - Teacher's timeliness and presence at laboratories	3.39	4
C5 - Tutorials' easiness with students	3.37	4
C6 - Integration and complementarity of labs and lectures	3.17	3

The following Diagrams 5.1.6.a-b show the percentage of positive (green) and negative (red) marks for the different courses: only data of courses evaluated by at least 6 students are shown. A longer green bar means a majority of positive (3, 4) marks. Diagram 5.1.6.a is relative to aspects B1-B10, BS1 and BS2. Diagram 5.1.6.b is relative to aspects C1-C6.

Diagram 5.1.6.a – B-variables: percentage of positive (green) and negative (red) marks for the different courses



It is a fair statement to say that overall the Degree Course of Veterinary Medicine scores well in the students' assessment of teaching quality. When looking at single courses, a very small percentage (6%) scores a number of 1's and 2's larger than the number of 3's and 4's, but for the remaining 94% of the courses the number of positive marks is larger than the negative ones.

c. The utilisation of the results in an attempt to improve the quality of teaching

The answers of the questionnaires and a rough elaboration are sent to the Dean, to the Presidents of the Degree Courses and to the coordinator for teaching. The results are then used by the Faculty in an attempt to improve its organisation and services and by the President of the Degree Course (and the Dean too, if necessary) to address problems and issues related to the quality of teaching.

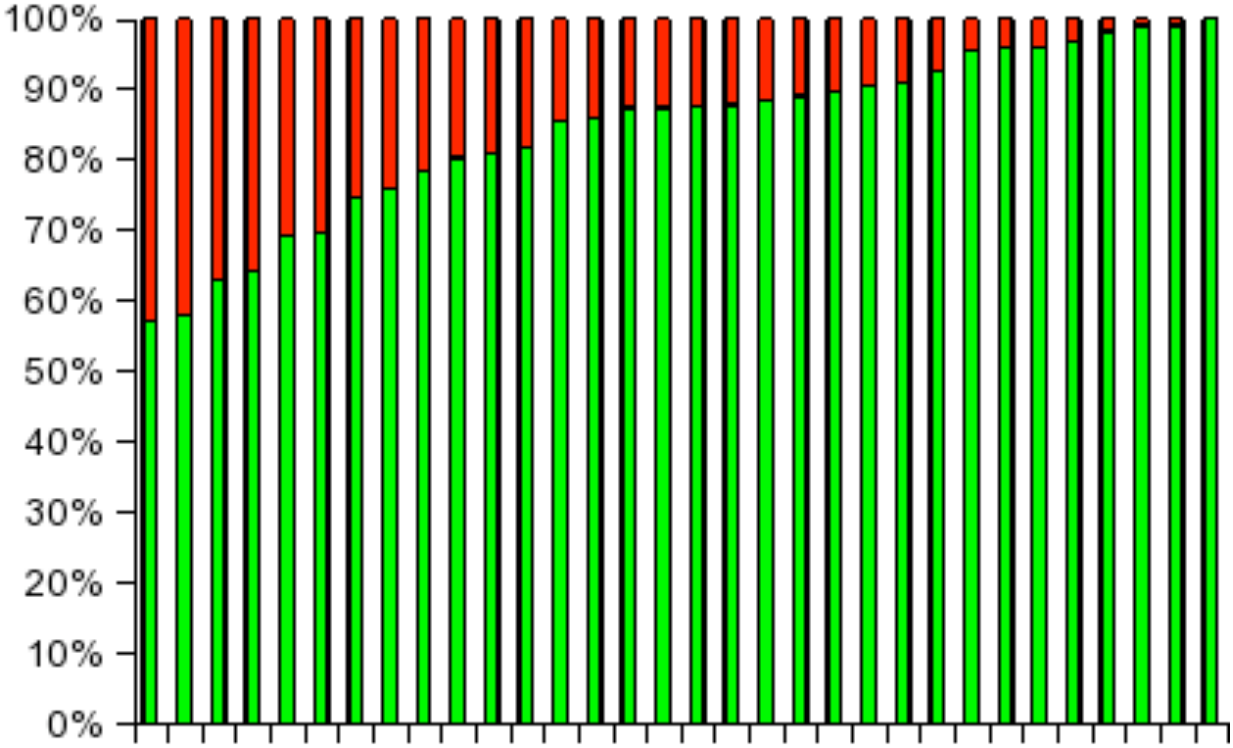
Two problems have emerged from the results of the teaching evaluations, both of which are not specific to the FVMP, but rather they are a commonplace in Italian universities:

1. A sizeable proportion of Italian professors are not ready to accept a quality assessment exercise, in particular one where they are evaluated by the students. There is some aggravation coming from the asymmetry of the process: the students carry out the assessment while being anonymous, and there is concern (and also some hard evidence) that this leads to random, if not biased, marks by the students in a few cases. Although arguably irrelevant from a statistical point

of view, the apparent lack of responsibility by the students filling the questionnaires adds weight to the criticism raised by the colleagues who oppose a quality assessment.

2. Italian universities do not have a well established feedback process: there is no real mechanism to endorse good practices or to penalise bad ones. In particular, teachers can be suspended from their teaching duties only for very serious reasons and after a proper formal trial. The Dean of the Faculty and the Presidents of the Degree Courses can only use "moral suasion" with teachers in stimulating them to improve the quality of teaching. In some cases, especially with younger teachers, it is enough to remove some problems, sometimes related to the course logistics, and immediately the quality of teaching improves.

Diagram 5.1.6.b – C-variables: percentage of positive (green) and negative (red) marks for the different courses



We should not, however, hide the fact that there are a few colleagues who, despite a negative assessment over the years, decide to take no notice of it. Unfortunately even if these are rare and isolated cases, the apparent lack of response by the University fuels the impression, voiced by the student representatives (although, accordingly with the specific question of the questionnaire, the bulk of the students seems to think otherwise) that the teaching quality assessment is an empty exercise, and that no notice is taken of the students' feedback.

Even if this opinion of the students is substantially unfounded, the Dean and the Presidents of the Degree Courses always do what is legally within their power, the problem still remains: there are cases where students do not see clear changes as a consequence of their evaluation.

We stress once more, however, that although there is space for improvement, the overall assessment expressed by the students is a fairly positive one, and a few bad cases ought not to spoil what should be regarded as a rather pleasing result for the teaching staff of Veterinary Medicine.

5.1.7. The State Examination to access the Veterinary Profession

Every year, the Italian Ministry of Education, Research, and University (MIUR) nominates a Board composed by 12 members, one Board in each University where a Veterinary Medicine Degree Course has been activated. Even if graduates can sit the State Examination in any Italian University, usually they prefer to sit in the Faculty where they graduated.

The Board is made up of eleven members which are selected by drawing one member from eleven sets of three candidates each. These sets are made up of practicing veterinarians or University professors proposed by the of professional veterinarians Licensing Board of the Province where the Veterinary Faculty is located.

The President of each Board is drawn by the MIUR still among a triple numbers of University Professors proposed by the Dean of each Faculty. Afterwards the State Examination is managed by the Central Offices of each University. Graduates pay a fee (in Pisa nowadays around 450 euro) for this examination.

The State Board Examination is both oral and practical and is divided in four professional areas:

- Internal Medicine, Prophylaxis and Avian Pathology;
- Surgery, Obstetrics and Gynaecology;
- Food Hygiene and Inspection;
- Animal Husbandry.

The trials are mainly practical.

The results of the State Board Exam are then given to the University Offices. After having passed the Exam, graduates can be registered on the provincial professional veterinarians Licensing Board and then practice as Doctor in Veterinary Medicine all over Italy. Graduating in Veterinary Medicine is not sufficient to practice as a veterinarian: registration on the provincial Licensing Board is compulsory for practicing. To practice without registration, even if graduated, is a crime.

In all the State Board Examinations (i.e. in all the Italian Faculties of Veterinary Medicine and in every year) the percentage of failure is very low. Table 5.1.7 reports the results of the nineteen sessions since 2000. It is possible to see how only in the last few years a couple of graduates did not pass the State Examination. In the last ten years the failure rate is 1.18%, and in the last three years (2007-2009) it has grown to 3.83%.

Actually this situation is quite similar to that of the State Board Examinations of most other professions, such as Medicine and Surgery, Engineering, etc. Higher failure rates (around 30%) occur only for Lawyers, Public Accountants and Agronomists.

Table 5.1.7 – Results of the State Examination to access the Veterinary Profession over the last ten years at the FVMP

	Present	Passed	Failed	Not participating	Total applying	
2000 – 1st Session	28	28			28	
2000 – 2nd Session	30	30		1	31	59
2001 – 1st Session	13	13			13	
2001 – 2nd Session	46	46			46	59
2002 – 1st Session	35	35			35	
2002 – 2nd Session	42	42		1	43	78
2003 – 1st Session	28	28			28	
2003 – 2nd Session	35	35		1	36	64
2004 – 1st Session	47	47			47	
2004 – 2nd Session	64	64			64	111
2005 – 1st Session	46	46			46	
2005 – 2nd Session	50	50			50	96
2006 – 1st Session	41	40	1		41	
2006 – 2nd Session	47	47			47	88
2007 – 1st Session	40	38	2		40	
2007 – 2nd Session	44	42	2		44	84
2008 – 1st Session	41	40	1	2	43	
2008 – 2nd Session	46	45	1		46	89
2009 – 1st Session	38	36	2		38	
2009 – 2nd Session (1)						*38*
TOTAL	761	752	9	5	766	

(1) It will be performed on 24th of November 2009.

Average failure rate over all period:	**1.18%**
Average failure rate in the triennium 2007-2009:	**3.83%**

5.2. Additional comments

5.2.0. Generalities

The quality of teaching is taken in high consideration at the University of Pisa and at the FVMP, as can be seen by the number of initiatives taken on this respect such as the possibility for students to evaluate the performance of their teachers as well as the presence of a Coordinator for teaching, the student tutors and the Student Office. The possibility for students with financial problems to have access to grants and the high level of care in student safety are good indicators of the level of quality of the teaching environment at the FVMP.

However, there are still some issues which need attention by the Faculty, and the following paragraphs provide some insight on aspects of teaching quality on which certainly our Faculty should reflect. However, it is worth remembering that all of the following problems have a "national" dimension rather than a local one, i.e. a new set of laws or decrees would be necessary to change the situation rather than a change of attitude at the Faculty level.

5.2.1. Comments on the exams sitting at the FVMP

5.2.1.1. The very difficult change in the "*Italian way*" of planning exams

It is obvious that with the "*Italian way*" of planning exams (see paragraphs 4.1.3.1 and 5.1.5), students can very easily end up delaying their degree. The number of "*off-course students*" represents a very high percentage of the students registered in all Italian Faculties: more than 40%.

This problem exists at the FVMP too. Even if the situation is (very slowly) getting better, the percentage of "*off-course students*" is still very high. As shown in Table 5.2.1.1, this percentage is still slightly higher than 37%.

Table 5.2.1.1. – Percentage of "*off course students*" since 2001-02 academic year to 2008-09 academic year

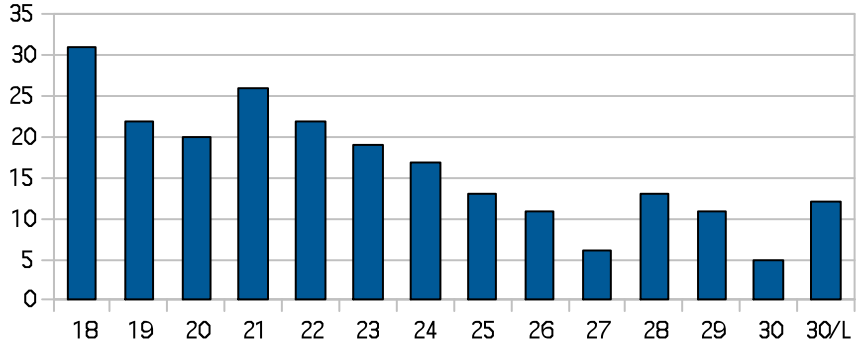
	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	**2008-09**	Average
Regular students	460	460	465	485	507	517	512	**502**	487.5
"Off course students"	416	423	423	383	329	322	315	**299**	374.5
Percentage	*47.5%*	*47.9%*	*47.6%*	*44.1%*	*39.4%*	*38.4%*	*38.1%*	***37.3%***	*43.4%*
Total students registered	876	883	888	868	836	839	827	**801**	862.1

It is very difficult to change this situation. Every attempt to change this system has always found a very strong opposition by the students, who appreciate very much the freedom of choice in sitting for examinations. Besides they are so accustomed to this way of studying that they are not able to see possible advantages of different systems.

Additionally, given that they have the possibility, students tend to wait until they feel fully prepared: the aim becomes to get a (very) high mark, rather than to pass the exam. Similarly, teachers' expectation is for good students, with a high level of preparation: and the teachers' focus is more on getting the correct mark within the high end range, rather that on a clear cut between pass and failure. The whole scenario is even worsened by a typical informal agreement between teachers and students: if the student scored a mark which means a pass, but not high enough, and decides to resit the exam, the mark is usually held "frozen", and the student can fall back to it. This is clearly a *very strong* incentive to repeat the exam over and over again.

It is very interesting to compare the distributions of all the exam marks (shown in diagram 5.1.5.a) and of a single course (Mathematics and Physics: Diagram 5.2.1.1) where the exam is in writing and, although resitting is allowed, the previous mark is not "frozen" (not even in the instance of a failure in the resit).

Diagram 5.2.1.1. – Distribution of the marks in the course of Mathematics and Physics



Notice how this distribution is markedly different from the distribution of all exams.

Finally, it does not help that the students have the impression (currently not well founded) that a higher final mark will increase student's chance in the job market after the degree.

5.2.1.2. Some other problems in passing examinations

The large delay with which students reach their final degree could certainly be linked to the organisation and management of the evaluation system of the student's knowledge. The main critical problems are the following.

1. Even if it is explicitly forbidden by a rule of the University of Pisa, not rarely exam sessions are spread all over the year, even during the lesson period; in this way students are stimulated to prepare the exams instead of regularly attending lessons, completing their preparation and sitting the exam at the end of the course. In this there is a kind of "complicity" between teachers and students: students very frequently ask for these derogations and teachers frequently accept. Anyway some efforts in trying to change this habit have been done by organizing and extending the "*in itinere*" tests, which are part of the total exam; in this way the attempt is to reduce the amount of knowledge to be prepared for each test.
2. From the diagram 5.1.5.a it clearly appears that both students and teachers have a "strange" (and certainly wrong) concept of the entire set of marks which give the positive evaluation of the student's knowledge; actually it is very hard to explain why student have more marks in the range of 26-28, and why 27 (which indicates a very good performance) is the most frequent mark; so the entire set of results clearly appears shifted towards the higher marks. In contrast with these results the diagram 5.2.1.1 shows the marks of a single propaedeutic course such as Physics and Mathematics whose relevance is sometime neglected by students (and by teachers too…).
3. The lack of a real tracking system of the careers of the students and of their progression in the degree could be overcome by a system of tutoring which is still in its early stages since it started only one year ago. It is really difficult to have, officially and in time, the progression of students in their exam passing. This is because there is a poor diffusion of the IT system (*UniPOS*) to collect the exams' results. Just a few weeks ago, on 31st of August, the Rector of the University of Pisa sent an official letter to all the teachers inviting everybody to be more punctual in the registration of exams and to make better use of the *UniPOS* registration system, which nowadays is compulsory for all the exams.
4. Beside the fragmentation of the "*Integrated Courses*" in many single modules (which means more examinations to formally pass only one examination), there is the problem that, not rarely, the formal and the actual workload of each course do not correspond. In table 5.2.1.2 the workload of all the compulsory teaching modules is reported. From these data it is possible to see how students should have to personally elaborate and learn, in the average of the nine semesters, in only one hour and twelve minutes (1.20 decimal hour) the knowledge taught in one hour of lecture or seminar. And this value is, in one third of the modules, less then one hour, with a minimum value of 0.66 (forty minutes). Clearly that it is quite impossible for the students to

respect these figures: in other words, it means that they need much more time to really learn the things taught during a module, and then to pass the relative exam.

Table 5.2.1.2 – Ratio between hours of individual study and hours of lectures and seminars in compulsory teaching modules

UFCs	Lectures	Seminars	Lab. & desk work	Non clinical animal work	Clinical work	Individual study	Individual study / lectures + seminars
255	2,506	117	363	120	120	3,149	1.20

Note: The total number of hours (6,375) corresponds to the 255 UFCs of the compulsory teaching modules (255x25 = 6,375).

5. In this context it is relevant to underline that not rarely students work at their final thesis for much more than the 15 UFCs foreseen for this by the official plan (and this is a problem existing in all the Italian Faculties). Actually students are always very interested in their thesis and generally they work at it with pleasure. Besides the practical experience done in this period is often very useful for their future job.

5.2.2. Comments on the State Examination

As already said in paragraph 5.1.1.7, the State Board Examinations appears to be more a pure formality rather than a real test of evaluation of the day-one skills. Even if students anyway fear this examination, the rate of failure is very low: much less than 1%. Actually this examination is the proof of a very peculiar situation. In fact the Chapters of the free professional Veterinarians accuse the Universities to not reduce the "*numerus clausus*" for the access to the Faculties of Veterinary Medicine and, as a consequence they charge the Faculties with the responsibility of the overcrowding of the Veterinary job market. However, private practitioners are members of the State Board Examination committee, where in fact they even have the majority within the Committee. Despite this situation, they do not perform any real selection, which may mean that they either are not capable (or afraid of) blocking students in their career, or that they are evaluating the education given by the Universities as adequate for the profession.

5.3. Suggestions

The assessment of quality teaching throughout the use of evaluation questionnaires should be strengthened to look for individuating possible critical situation in teaching process that should be solved. Another important step is to advertise all the answers of the questionnaires so that all the subjects are seen individually by everyone, staff, students and peers in other institutions. However this decision must be approved by all the teaching staff of FVMP.

5.4. Annotations

Chapter 6 – FACILITIES AND EQUIPMENT

6.1. Factual information and comments

6.1.1. The construction of the new Faculty

In the sixties, the University of Pisa decided to move the Faculty of Veterinary Medicine from the centre of the town to a suburban area, in Viale delle Piagge 2, along the Arno river. At that time the students enrolled in the Vet Faculty were very few: not more than 20-30 per year.

Less than thirty years later, the new premises began to appear inadequate to the new European requirements of the veterinary education. In fact, not only did the number of students increase considerably (prior to the introduction of "*numerus clausus"* in the 1989-90 academic year, the students enrolled were more than 250 per year), but the technical needs for the teaching (and mainly for the practical work) could not be satisfied.

During the seventies the town of Pisa expanded and the Viale delle Piagge became an important residential area, with the Faculty being surrounded by many residential buildings. Neighbours started complaining about noise and the smell produced by the animals. Then the local Municipality regulated against the keeping of large animals in the inner city context.

For all these reasons, in 1989 the University planned to build a new Veterinary Faculty near the village of San Piero a Grado, approximately 10 km away from the railway station of Pisa and from the present location of the Faculty (a 15-20-minute car trip). Because of its dimension, the project was divided in three parts:

- first part: the construction of the Surgery and Reproduction Clinics (building "A", pages 23-24, Annex VI);
- second part: the construction of the Internal Medicine Clinic, of the Veterinary Teaching Hospital and of the shelters for hospitalizing small and large animals (see Annex VI, pages 22 and 25-37);
- third part: the construction of the other Departments and of the Faculty and of all the didactical structures (see Annex VI, pages 38-39).

As already said in paragraph 0.1, the first part of the project was completed at the beginning of 2000, and the Sections of *Surgery and Reproduction* were inaugurated on 18th March 2000.

The second part of the project is being finished just in these few months (winter 2009). Although the project was completed during 2002 (on December 2002 the Pro Rector for Buildings Affairs personally came to show the project to the Faculty Council), the funding was allocated by the Council of Administration of the University only in February 2005. Since then the completion of the construction had many delays due to many administrative (and financial) problems.

When, in May 2008, the Faculty decided to accept the second EAEVE visit in December 2009,

the idea was that the premises of the second part of the project should be inaugurated no later than January 2009. Unfortunately new problems arose. In fact, the Municipality of Pisa communicated to the University that the sewer system of the area could not be finished by the agreed time. So the University had to build its own local drainage system. But, since the new premises are located

inside the important Regional Natural Park of "*Migliarino, San Rossore, Massaciuccoli*", the Province of Pisa and the administration of the Natural Park created many difficulties in the choice of the drainage system. Finally, an agreement was found at the beginning of summer 2009, but a lot of time has been wasted.

For this reason the Veterinary Teaching Hospital will not be operative at the time of the second EAEVE visit. The Faculty had a long debate on whether the EAEVE visit should be postponed. It was felt that respecting the EAVE commitment was more important and so no postponement was requested because it was felt that the EAVE committee could provide a wealth of suggestions which would certainly contribute to the organisation and functioning of the new premises.

At present, anyway, the premises of the Faculty are located in two main different locations, with a third smaller group of buildings located just in front of the new premises in San Piero a Grado.

They are:

1. the "old" Faculty's premises: in Pisa, Viale delle Piagge 2 (see Annex VI, pages 2-18);
2. the new premises in San Piero a Grado which includes "old" buildings (inaugurated in 2000) as well as "new" buildings (still to be inaugurated, and that cannot be used at present: see Annex VI, pages 22-37);
3. the old building "*Le Querciole*" and its surrounding fields, still in San Piero a Grado (see Annex VI, pages 19-21).

6.1.2. The "old" Faculty's premises in Pisa, Viale delle Piagge 2

6.1.2.0. Introduction and some specification about the premises in Viale delle Piagge

The following facilities are currently present, at the "old" location of the Veterinary Faculty in Viale delle Piagge, Pisa:

1. the Faculty's administrative and Dean's offices;
2. the majority of classrooms;
3. all the teaching facilities, except the main clinical ones;
4. the Faculty Library;
5. the main buildings of the Departments of:
   - *Animal Pathology, Prophylaxis and Food Hygiene*;
   - *Animal Production*;
6. the Sections of:
   - *Veterinary Physiology*, of the Dept. of *Physiological Sciences*;
   - *Internal Medicine* and *Pharmacology* of the Dept. of *Veterinary Clinics* (about to be moved to San Piero a Grado).

It is important to underline that, when the *Internal Medicine* and *Pharmacology* sections will join their Department in the new premises in San Piero a Grado, the Central Administration of the University of Pisa, will have to assign the facilities left vacant to all those Departments and Faculties of the University which will prove to have a need for new spaces in the area of Viale delle Piagge (most likely the Faculties of Veterinary Medicine and Agriculture).

At the date of writing, and until the imminent transfer of the *Internal Medicine* to San Piero a Grado, some clinical facilities are still present in Viale delle Piagge. However, in order to avoid repetitions and overlapping in this chapter, all the clinical facilities are described in detail in paragraph 6.1.3.

6.1.2.1. Facilities available in Viale delle Piagge for theoretical, practical and supervised teaching

The list of the eleven lecture halls available in Viale delle Piagge is shown in table 6.1.2.1.a. Because of the difficulties connected with the increased number of registered students, three years ago the Faculty built a new large hall (CC2, with 96 seats) and deeply restructured two others (CM1 and C).

Table 6.1.2.1.a – Places in the lecture halls

Hall n. Name of the hall	n. 1 Main Hall	n. 2 CC2	n. 3 E	n. 4 A	n. 5 B	n. 6 CM1	n. 7 C	n. 8 R	n. 9 CC	n. 10 CM2	n. 11 D	**Total places**
Places	143	96	92	72	72	72	50	42	42	34	18	**733**

All the lecture halls are utilised for supervised group work especially in the afternoon. When necessary, laboratories and reading rooms inside the Departments can also be used for this purpose.

All the classrooms are equipped with overhead projector (not used as much nowadays), with computer and video-projector. Two halls have microphone and loudspeakers, while the Main Hall ("*Aula Magna*") has recording equipment.

Furthermore four portable PCs, two portable video-projectors and one portable microphone device are available for the lectures. Even if in the past the Faculty's portable PCs were heavily sought after by the teachers for lecturing, nowadays many of them prefer to use their own PCs for this purpose. For this reason the computer of most halls (currently without monitors and usable only in connection with the video-projectors) are not very up to date (they were "recycled" when the Computer hall n. 1 was renewed): they are mainly used for "emergency".

All the classrooms, except halls "R" and "D", have a cabled network connection.

At present the area inside the Library has a wi-fi connection, which can be utilised by all the students and by the University staff. But the University is working to realise the project to extend the wi-fi connection to all the areas of the Faculty mainly utilised by students.

The Faculty owns a 9-seat van, which is used for extra-mural teaching.

Table 6.1.2.1.b – Premises for practical work: number of laboratories places for students' use

Number Laboratory	n. 1 Anatomy	n. 2 Necropsies	n. 3 Microscopy 1	n. 4 Microscopy 2	n. 5 Chemistry	n. 6 Haematology
Places	25	25	30	20	40	12

Number Laboratory	n. 7 (1) Computer 1	n. 8 (2) Computer 2	n. 9 (3) Computer 3	n. 10 (4) Pets's behav.	**Total places**
Places	4+1 (+8)	18+1 (+2)	6	2	**183+2 (+10)**

(1) The number of places refer to the number of computers available (plus the Master one); actually the number of seats is twice the number of computers (so that 2 students can use the same computer, if necessary).

(2) The number of places refer to the computers available (plus the Master one). This room has been recently enlarged (see next point f). In this period the Faculty is buying 2 new computers.

(3) The computer room n. 3 is provided with 6 computers with OS Open Linux.

(4) At present the *Pets' Behavioural Consulting Centre* is located within the Section of *Veterinary Physiology*. Two students at a time can attend behavioural consultations.

a. Anatomy dissection room

In the anatomy dissection room, students, under the supervision of teachers, practice by themselves to dissect fresh organs, carcasses or cadavers obtained from slaughterhouses or from the clinical Department of the Faculty. In this way students can better understand the morphology and the topography of the organs of domestic animals and verify hands-on the explanations given

during the theoretical lectures. With regard to osteology and myology, a discipline which is taught entirely by practical exercises, students have access to horse bones, joints and ligaments and to a set of the most important specimens of the other species.

Myology is taught also providing students with fresh animal carcasses (usually sheep) for methodical dissection The practical work on the locomotive system terminates in the first half of the first semester; the dissection room is then open one day a week to allow students to revise bones and models of muscles of horse limbs.

The dissection room can hold about one third of the students who are then subdivided into groups of 6-7 students/group working autonomously according to the professor's instructions (on a previously set topic) and under the supervision of a member of the teaching staff. Students are provided with disposable gloves and dissection instruments. The room has a large freezer which, however is not large enough to cover all the requirements of the dissection room; consequently the recently enlarged and rebuilt refrigeration room of the necropsy room is also used. The waste of the animal material is performed disposed with the materials from the necropsy room.

b. Necropsy room

The necropsy room and related laboratories are structures of the Department of *Animal Pathology, Prophylaxis and Food Hygiene* and are routinely used for diagnostic, research and teaching purposes. The necropsy room can accommodate approximately 30 students and it is equipped with the following instruments:

- 3 cadaver dissection tables;
- 2 freezers;
- 1 biohazard hood for microbiological sampling;
- 1 electric carcass hoisting system;
- 1 live video-projecting system;
- 1 digital scale;
- post-mortem instruments including buckets for tissue formalin fixation and large buckets for discarded tissue.

Additional dissection tables are placed outside the necropsy room and moved inside when necessary. The post-mortem cold store is external to the necropsy room and has a volume of 36.3 cubic meters.

Separate changing rooms for students and personnel, as well as an emergency shower room and tissue sampling laboratory are contiguous to the necropsy room. This latter laboratory is provided with a biohazard hood for fixation and sampling of fixed tissue. Two security storage cabinets for formalin fixed tissue storage are also present.

The live video-projecting system allows a higher number of students to observe a post-mortem examination since video recording and voice comments by the teacher can be transmitted to lecture halls "A" and "C". The audio system also allows each student to ask questions to the teacher in the necropsy room and receive answers and close-up image details. This device can allow the participation of a student audience of up to approximately 140 people.

c. Microscopy rooms

The Microscopy room n. 1 is mainly used for practical activities of Veterinary Histology, Anatomy, General Pathology and Anatomical Pathology.

This room is equipped with:

- 20 microscopes;
- 20 sets of histological slides;
- 20 sets of microscopic anatomy slides;
- 1 microscope connected to a video-camera by which the slides can be projected on a screen;

- 1 video-recorder;
- 1 projector for digital images, which can be connected with a lap-top computer.

The teachers use this room during the course to explain the structural features of the different tissues, of the various stages of embryo development and the microscopic anatomy of the organs. Students have the chance, both during and after the course, to use the microscopy room, twice a week for the entire academic year (except for the month of August). They can review the histology and microscopic anatomy slides. In this way, under teacher supervision, students learn to recognise normal tissues and organs by looking at the slides by themselves and their own pace. The teachers have also digitalised the images of all the specimens made available on the Faculty web site:

http://clara.vet.unipi.it

This same microscopy room is also utilised by the teachers of Pathology (General Pathology and Anatomical Pathology). During the General Pathology course students, with the help of the teachers, can individually examine histopathological and cytological slides referring to the main degenerative alterations, pathologic pigmentations, acute and chronic inflammatory reactions, and the appearance of epithelial, mesenchymal and discrete round cell tumours. The students are supported by the teachers in visualising and comparing the different histopathological aspects with the theory learned during theoretical lessons. In the Anatomical Pathology courses the students, always under teachers' supervision, examine histopathological specimens of the main degenerative and inflammatory alterations of the different apparatuses of domestic animals.

The Microscopy room n. 2 is used for practical activities of all other subjects: Biology, Botany, Zoology, Parasitology, Microbiology, Virology, Physiology, etc. This room is equipped with:

- 12 microscopes;
- 9 stereo-microscopes;
- 1 microscope connected with a video-camera to project samples on a TV set;
- 2 TV sets;
- 1 video projector for digital images which can be connected with a computer.
- modular structures which can be dismantled for Botany's training.

In addition, all the laboratory equipment necessary to perform practical lessons is available.

In this laboratory, used during the entire academic year, practical lessons mainly of the first years are performed. For each practical lesson the support staff prepares the material requested by each teacher. Prior to the start of each practical lesson teachers explains, by using audiovisual tools, the analytical procedure and distributes to each student the tracks to follow in manipulating biological samples in accordance with the various methodologies proposed by using different types of the available microscopes.

Since this laboratory cannot contain more than 20-25 students, it is mainly used for the less crowded courses. More crowded courses use microscopes inside the Chemistry laboratory.

d. Chemistry laboratory

This 40-seat laboratory was built at the end of year 2004. The practical lessons performed here deal with many subjects: Chemistry, Food Chemistry, Genetics, Biochemistry, Physiology, Andrology, Microbiology, Virology, Parasitology, etc. This laboratory is equipped with:

- non-refrigerated bench centrifuge;
- refrigerated centrifuge for eppendorf;
- non-refrigerated centrifuge for eppendorf;
- spectrophotometer UV-VIS;
- photometer for colour and phenols determination;
- photometer for iron determination;
- photometer for copper determination;
- densitometer;
- 2 precision balances;
- pH meter;
- refrigerator;

- 2 security storage cabinets for organic solvents;
- 3 extractor hoods;
- 1 laminar flow hood;
- apparatus for distilled water production;
- 2 multi-seat microscopes (n = 5);
- 3 stereo microscopes;
- 4 microscopes;
- video projector.

In addition, all the laboratory equipment necessary to perform practical lessons are available, together with all disposable materials necessary for routine laboratory activities.

This laboratory is used for the entire academic year. Prior to each practical lesson the support staff prepares the material requested by each teacher; so that each student can perform all the "steps" required for evaluating biological samples. The results obtained during the sample evaluation are processed by statistical analysis and subsequently discussed. The fact that this laboratory can accommodate about 40 students has drastically reduced the number of practical lessons repetitions.

As the Chemistry Laboratory is larger than both Microscopy Rooms, and because it has 2 multi-seat (n=5) microscopes and other single microscopes, some of the more crowded practical lessons which need to use microscopes are performed here.

e. Haematology laboratory

In the old buildings in Pisa we still have an active Clinical Haematology and Biochemistry laboratory, which is equipped with haematology and dry chemistry instrumentations for the clinical service. Once the san Piero a Grado facilities are complete it will be transferred. There are also two microscopes one of which is connected to a video screen, so a group can observe cytological and haematological preparations. This laboratory is used for practical work for students of the fourth year and for the trainees in clinical pathology (laboratory diagnostics).

f. Computer rooms

As better detailed in paragraph 6.1.2.3, thanks to the ECDL funding, the FVMP succeeded in both changing the 13 seven-year old computers of the room n. 1, and to buy 11 new computers for the room n. 2. All the computer rooms are used for lecturing. In all the other hours the rooms are always available for the students to use for their own works. Computer rooms n. 1 and n. 2 are used also for performing the ECDL tests. They are also available both for ECDL and Informatics self learning by the students.

During the last weeks Faculty decided to enlarge the computer room n. 2; this enlargement will allow to increase the number of the computers available in this room up to 20 (plus the master one). At present all the structural works have been already done, and 8 computers have been transferred from the room n. 1 (where currently there 4 computers plus the master one). The Faculty is waiting for the accreditation of the (already promised) 2009 ECDL funds to buy 10 new computers; in this way, the two computer rooms will have 12 plus 20 computers available for students, plus 2 master ones.

g. Pets' Behavioural Consulting Centre

Inside the Section of *Veterinary Physiology* of the Department of *Physiological Sciences* we have, since 2004, a Pets' Behavioural Consulting Centre. The Centre is open three days per week and its aim is to prevent and resolve behavioural problems of dogs and cats.

The prevention of behaviour problems consist in:

a. pre-adoption consultation, helping people to choose the species, breed, age and sex more suitable for their lifestyle and aim;

b. post-adoption consultation, for owners who have just adopted a puppy/kitten or an adult dog/cat and need advice in order to behave correctly and establish a good relation with their pet;
c. organisation of puppy parties and puppy classes: meetings of puppies and owners aimed at socializing puppies to other dogs and giving owners advice regarding the right way to educate their puppies.

Behavioural consultations are carried out by veterinarians post-graduated in "*Behavioural Medicine of Companion Animals*", aided by dog trainers in realizing the prescribed therapies. The facilities available for this activities are:

a. a consultation room (about 15 squared metres). On demand two students at a time (students of the Masters organised by the Department of *request Sciences* and students of the Degree Courses in *Veterinary Medicine* and in *Canine Breeding Techniques and Training*" are admitted to attend the consultation. All the consultations (with the authorisation of the owners) are video recorded with a system of 4 video cameras placed in different points of the room (including the ceiling). Videos and reports of the behavioural cases are kept in a data file available for the students.
b. two fenced areas, within the enclosure of the Faculty, respectively of 50 squared metres and 300 squared metres. In these areas the behavioural therapies prescribed during the consultations are carried out.

6.1.2.2. The Museum of Veterinary Anatomy

The Museum of Veterinary Anatomy of Pisa was established in 1860 to support the teaching of anatomy for the students of Veterinary Medicine. The Museum still performs its main functions, since most of the preparations in the Museum are constantly used by teachers for education. The Museum now can show more than two thousand artefacts belonging mainly to domestic animals, although those belonging to the horse stand out in number and degree of sophistication of details.

Collections can be grouped as follows:

- *collections of individual organs* fixed in formalin and preserved in alcohol; these account for the majority of the specimens in the Museum and are the ones most frequently used by professors during lectures;
- *collections of foetuses, newborns and individual organs from malformed subjects*;
- c*ollections of skeletons and joints*, complete or in parts, such as the dental alveolar arches used for the study of dental wear to identify the age of horses and bovines;
- c*ollections of hollow organs* of the digestive system, of the respiratory system and the genital-urinary system; these organs have been inflated, dried and mounted to preserve their shape, size and natural proportions. They are very important from the teaching point of view;
- c*ollections of placentae*, some of which show the foetal circulation;
- c*ollections of limbs* that shows the skeletal and muscular support and their tendinous

insertions, ligaments, vasal and nerve formations;

- c*ollections of reproductive systems* of different species where the various organs are maintained in their anatomical continuity; these specimens are extremely useful for the study of this system;
- c*ollections of specimens on the vascularisation of the* head where, in addition to vasal injection and partial dissection of the muscles, partial removal of pieces of bone has been performed to show the parts underneath;
- c*ollections of pieces obtained from the dissection of the head-neck-thorax complex kept in its whole*, formed from the largest specimens. These are also extremely important from the teaching point of view as they illustrate the main organs of the thorax and neck and their reciprocal relations.

Details about the contents of the Museum of Veterinary Anatomy are reported in Annex IV.

A number of *phantoms* (anatomy models: see Annex IV, page 16) of the main domestic animals are also available and kept inside the Museum of Veterinary Anatomy. These animal models, made of plastic material, are characterised by the possibility to be disassembled and re-assembled. This peculiarity is very important as it allows students to better understand the topography of organs of the splanchnic cavities.

6.1.2.3. The Faculty ECDL Test Centre

In 2000 the University of Pisa decided to launch the European Computer Driving Licence (ECDL) Project in favour of all the students. National and local funds are destined to both Faculties and students. Students whose Degree Course provides for compulsory ECDL can have a free card to access the tests. Furthermore special funds are provided for the Faculties who decide to organise an "*ECDL Test Centre*" under the rules and the control of the ECDL National Agency.

In 2003 the FVMP decided to open an "*ECDL Test Centre*". Year by year the Faculty "*ECDL Test Centre*" has improved its activity: during 2008 the examinations performed through it were 2,628 and, at present, it is the second in the University of Pisa by number of examinations performed, just behind the big *ECDL Test Centre* of the Humanistic area.

Normally the Centre performs two sessions of examinations per week, and it operates in favour of all the students of the University of Pisa. In 2008 more than 55% of the tests were sat by students arriving from Faculties of the University of Pisa other than the FVMP.

Unfortunately the University of Pisa is currently debating about the opportunity to reduce its ECDL activities. Anyway, through this very high activity the Faculty gained funds to the electronic devices available for students. In fact, thanks to these funds, not only the Faculty was able to change 13 seven-year old computers (then recycled in the classrooms to support video for the lessons), but it could open another computer room with 11 new machines. Furthermore the Faculty opened another small computer room with six Linux Operating System computers. Finally, just in these weeks (as already said in paragraph 6.1.2.1, point f) basing on these funds, the FVMP enlarged the computer room n. 2 up to 20+1 posts.

6.1.2.4. The Centralised Laboratory Animal Centre

In 2000, inside the Faculty in Viale delle Piagge, a Centralised Laboratory Animal Centre

(CLAC) was set up as an off-centre facility for laboratory animal use and breeding for the entire University. According to the national law n. 116/1992 (on protection of animals in experimental use), in 2000 the University of Pisa established a set of rules on the use of experimental animals; since then the Veterinary Faculty has been provided with specific rules on how all these animals have to be maintained under an accredited animal care and use programme.

In 2003 the CLAC was accredited by the National Ministry of Public Health for housing of small rodents (hamsters, rats, mice, guinea pigs, gerbils), rabbits, birds, dogs, cats, micropigs, lambs, and fishes. Furthermore, in 2004, the CLAC has been also authorised by the Municipality of Pisa for the breeding of rats, mice and guinea pigs. For the well-being of experimental animals a Veterinarian was hired purposely to control animal health and well-being in all the experimental procedures.

From 2003 until present an average of 100 animals per year has been housed in the CLAC as models for experimental protocols. Researchers from the Faculty of Veterinary Medicine and from other Faculties utilise the CLAC. The experimental protocols have to be previously submitted to the University Animal Ethics Committee which evaluates whether or not:

- the scientific goals of the research justify the use of animals;
- the species and the number of animals requested are adequate;
- the sedation or anaesthesia procedures are appropriate;
- less invasive procedures are available.

6.1.3. New premises in San Piero a Grado

6.1.3.0. Introduction

The new premises of the Department of *Veterinary Clinics* are located in San Piero a Grado. In addition to the offices of the teaching, administrative and technical staff, these buildings contain also all the clinical facilities necessary to perform teaching and research in clinical sciences, as well as the facilities for external consultations of medical, surgical and reproductive cases for all common domestic species.

The older part of the Clinical Department in San Piero, inaugurated in the year 2000, has been continuously active since then for consultation of small and large animals and for hospitalisation of horses in barns and paddocks. A foaling unit (with 24-hr emergency service) has also been active since 2005. The new buildings have been ready for several months but cannot be used as of yet due to lack of a sewage systems (see above for an explanation). They will be inaugurated before the end of the year 2009, and will greatly improve the clinical activities (it will be possible to activate the Veterinary Teaching Hospital) as there will be more room for consultations, laboratories and hospitalisation of both large and small animals.

6.1.3.1. The problem of commuting between the old and the new premises (from Viale delle Piagge to San Piero a Grado)

As already mentioned, the new premises are within the Regional Natural Park of "*Migliarino, San Rossore, Massaciuccoli*", approximately 10 km south-west from the present FVMP, and 2 km south from the small town of San Piero a Grado. Reaching the new premises by car is relatively easy: a new tract of freeway allows to reach them from the old Veterinary School avoiding most of

the city traffic in less than 20 minutes.

Unfortunately the same is not true by bus. In fact the premises are not alongside the most frequent bus routes. At present there are only six trips per day from Pisa to the new Faculty and back. Furthermore at least two of these cannot be utilised by the students because they cannot fit with the timetable of the teaching activities. Also, on some of the routes the bus only reaches the town of San Piero a Grado, which means that the students must walk for almost a mile to reach the Faculty along a rather busy dangerous road.

Contacts have been taken with the Bus Company to increase the number of trips, but at the moment there are too many problems especially connected with the uncertainty of the number of students who will take the bus. In fact only part of the 4th year students and all of the 5th year students need to go almost every day to the new premises. Most commuting students get organised by themselves and do "car pooling", in order to be more flexible both in arriving and in coming back.

Certainly the problem will find its solution when all the Faculty will move to San Piero a Grado. In fact the number of people (not only students) and the continuity of the presence will create the economic suitability to increase the number of bus routing to the new Faculty. Anyway the Faculty will continue to try to find solutions which can reduce the disadvantages for the students.

Another problem which creates difficulties to the students who spend all the day in San Piero a Grado is the lack of a cafeteria within the premises. The nearest cafeteria is around half a mile from the Department, (quite a long walk especially if it rains, which means that a car is needed). Furthermore, even if the price of the meal is fixed thanks to an agreement with the University, it is not as cheap as the price at the University cafeteria in downtown Pisa. Furthermore, currently, because administrative problems, cafeteria is closed and it is not really clear when it will open again. The nearest grocery shop is in the centre of San Piero a Grado. For these reasons the majority of the students either bring their own lunch or buy snacks and a coffee from the vending machines.

6.1.3.2. Facilities available in San Piero a Grado for clinics and hospitalisation

The number of animals which can be hospitalised at the Department of *Veterinary Clinics* is summarised in table 6.1.3.2. The table refers to the whole Department in San Piero a Grado, both to the old buildings and the new ones (see Annex VI, pages 27-30 and 34-37, plus 13 wooden boxes).

Table 6.1.3.2 – Places available for hospitalisation and animals that can be accommodated

	Species	**N. places**
Regular hospitalisation	Cattle	They can be hospitalised in horses' boxes
	horses	33 in boxes and 60 in external paddocks (1)
	small ruminants	They can be hospitalised in horses' boxes
	pigs (2)	They can be hospitalised in boxes
	Dogs	30
	Cats	30
Isolation facilities	farm animals and horses	4
	small animals	10 dogs and 10 cats

(1) In the near "*Le Querciole*" area (see paragraph 6.1.5) there are other 5 boxes and 6 paddocks (se paragraph 6.1.5.1).

(2) The Dept. of *Veterinary Clinics* is within the territory of the Regional Natural Park of "*Migliarino, San Rossore, Massaciuccoli*". The Park's regulation forbid the breeding of pigs, because their environmental impact. The land on which the Department has been built is a small section of a much larger area owned by the University of Pisa (see paragraph 6.1.6).

In the project for the third part of the new Faculty separate small and large ruminants barns are planned (see paragraph 6.1.12).

Dog kennels have an indoor and an outdoor area; 10 out of 30 have both heating and air conditioning and 20 out of 30 are only heated. Similarly, 10 out of 30 cat cages have both heating and air conditioning while 20 out of 30 have only heating. In the area of Pisa the weather is quite mild, and does not reach extreme conditions: the average temperatures are 10-12 °C degrees

(freezing temperatures are rarely reached) in winter and 30-32 °C degrees in summer.

Equine boxes are either wooden (13) or brick: 24, each with an external area. Four boxes are used as isolation facilities, and 6 have both heating and air conditioning.

6.1.3.3. Premises for animals

At the Department of *Veterinary Clinics*, 20-50 normal, healthy mares and jennies are housed, mainly in large paddocks, for breeding and as embryo recipients. Students are allowed to learn clinical examination procedures on these animals. All the other facilities for rearing and maintaining normal animals available to the Faculty for teaching purposes are described in the paragraphs 6.1.5 and 6.1.6.

6.1.3.4. Facilities available in San Piero a Grado for theoretical, practical and supervised teaching

The premises used in San Piero a Grado for lecturing are summarised in table 6.1.3.4.a.

All these lecture rooms are equipped with slide and overhead projectors, microphone and loudspeakers; halls n. 1 and 2 are cabled between them, so it is possible to have the students of the two lecture rooms follow the same lecture. Furthermore, they are cabled with many of the other clinical premises, and it is possible to show clinical activities, such as surgery, directly in the two lecture rooms. Hall n. 3 is located at 2 kilometres from the Clinic Department, inside the structures of the University Farm.

Table 6.1.3.4.a – Premises for lecturing in San Piero a Grado

Hall num. Name of the hall	n. 1 Small animals	n. 2 Large animals	n. 3 (1) University Farm	**Total places**
Places	45	38	70	**153**

The hall n. 3 is located inside the University Farm, 2 km far from the Department of *Veterinary Clinics*.

The premises used in San Piero a Grado for clinical work and students training are summarised in table 6.1.3.4.b.

Table 6.1.3.4.b – Premises for clinical work and students training in San Piero a Grado

small animals	n. consulting rooms n. surgery rooms	10 3
equine and food animals	n. consulting rooms (1) n. surgery rooms	4 1

The table refers only to the buildings in San Piero a Grado, both to the old ones and the new ones.
(1) Including the covered stock area close to the wooden boxes.

As shown in table 6.1.3.4.b, all the premises used for clinical works can be served as sites for clinical training of students arranged in small group, ranging from 2 to 5 students each.

Table 6.1.3.4.c – Premises for group work in San Piero a Grado

Hall Name of the hall	n. 1 Study room in the library	n. 2 (1) Study room (wi-fi connected)	n. 3 Computer seats (cable connected)	**Total places**
Places	10	24	2	**36**

The table refers to the whole Department in San Piero a Grado, to both the old and the new buildings.
(1) In the study room there is a wi-fi connection too, that can be used by the students with their own PCs.

The premises used in San Piero a Grado for group work are summarised in table 6.1.3.4.c. The ones for practical and supervised teaching are summarised in table 6.1.3.4.d.

Table 6.1.3.4.d – Premises for practical work (wet labs) in San Piero a Grado

Number Laboratory	n. 1 Room for practical training	n. 2 Clinical Biochemistry	n. 3 Clinical Haematology	n. 4 Clinical Cytology
Places	20	3	2	10

Number Laboratory	n. 5 Pharmacology & Toxicology 1	n. 6 Pharmacology & Toxicology 2	n. 7 Pharmacology & Toxicology 3	n. 8 Pharmacology & Toxicology 4	**Total number**
Places	6	6	6	4	**57**

At the Department of *Veterinary Clinics* practical work takes place mainly in the clinical rooms (see table 6.1.3.4.b) as well as in the diagnostic laboratories (see paragraph 6.1.3.7). As an example, in the laboratories of clinical chemistry, clinical haematology and cytology, groups of 3, 2 and 10 students, respectively, can do practical work.

For large animals, practical work during the fourth year, students receive training on safety, supported by a booklet ("*Equine management safety handbook*") written in cooperation between the teachers of the involved subjects and the personnel of the University "*Health and Safety Office*" and edited by the University. All students working with horses and other large animals must wear protecting clothes (safety shoes or boots, etc.).

For small animal practical work the students receive information on how to handle dogs and cats during clinical procedures in the propaedeutic and surgical procedures courses. These concepts are also repeated at the beginning of their practical training period.

The room assigned for practical training and reported in table 6.1.3.4.d in column 1 can be used for any kind of wet lab including clinical and laboratory practical work, and can be used to accommodate a larger number of students. In the three laboratories (Clinical Biochemistry, Haematology and Cytology) there are fume hoods for different types of hazards (only chemicals, high quality, microbiological). All these devices are periodically examined by the "*Health and Safety Office*" of the University. For each laboratory there is a person (generally a technical staff) responsible for safety. These persons have been specifically prepared. According to the national law n. 626/1994 about health and safety both in work and in teaching places (see paragraph 5.1.3 point c), all the structures can be verified at any time by the competent local Public Health Authorities.

6.1.3.5. Clinical services: organisation and equipment

The clinical activities within the Department are organised in six services:

1. Small animals surgery, anaesthesiology and diagnostic imaging: 6 members of teaching staff, 5 members of medical staff and 3 members of technical support staff;
2. Small animals internal medicine, general and specialistic: 7 members of teaching staff, 5 members of medical staff and 2 members of technical support staff;
3. Small animals reproduction: 2 members of teaching staff, 1 member of medical staff and 1 member of technical support staff;
4. Large animals clinics: 6 members of teaching staff, 2 members of medical staff and 2 members of technical support staff;
5. Chemical chemistry and haematology laboratory: 3 members of teaching staff, 2 members of

medical staff and 3 members of technical support staff;

6. Pharmacology and Toxicology: 4 members of teaching staff and 2 members of medical staff.

Within the Department of Veterinary Clinics, clinical support is provided to each service in a number of different rooms. The rooms dedicated to each activity are listed in details below:

Small animals anaesthesia, induction	1 room
Small animals anaesthesia, recovery	1 room
Small animals ultrasonography	1 room
Small animals radiology	1 room
Small animals intensive care	1 room
Small animals andrology laboratory	1 room
Large animals radiology	1 room
Large animals anaesthesia, induction & recovery	1 room
Large animals embryo transfer laboratory (equine)	1 room
Large animals andrology laboratory (equine)	1 room
Clinical chemistry and haematology laboratories	3 rooms
Pharmacology and toxicology laboratory	2 rooms

All the abovementioned consulting and surgical rooms (Table 6.1.3.3.a) are fully equipped, except for the large animals radiology room which, in waiting for equipping it, is used as a consulting room.

The most important devices and equipment belonging to the Department of *Veterinary Clinics* are the following:

- one Computer Assisted Tomography unit;
- three X-ray machines (one handle for large animals);
- five ultrasound machine (two equipped with Doppler; three handle for small and large animals);
- one tower for laparoscopy and one for flexible and rigid endoscopy;
- two surgical microscopes;
- five anaesthetic machines (three with breathing system);
- four multiparametric monitoring systems for anaesthesia;
- one phase contrast microscope equipped with heated stage and fluorescence;
- one microbiological laminar flow hood;
- two stereomicroscopes for embryo manipulation;
- one electroretinograph;
- one slit lamp;
- one applanation tonometer;
- one indirect ophthalmoscope;
- three high grade microscopes for cytology and haematology, two of them equipped with an external video for lecturing to small groups of trainees or students;
- three bench centrifuges and one floor centrifuge for high volume load or for blood transfusion products;

- 3 cell-counter using impedance technique and one veterinary laser cell-counter;
- two fibrinometers for coagulation assays;
- three UV-VIS spectrophotometers with continuous cell flow and two UV-VIS spectrophoto-

meters with single cell cuvette for wet chemistry;
- one spectrophotometer for dry chemistry;
- two instruments for reading urine strips;
- two stat analyzers one of which portable;
- one ELISA plate reader;
- one special refrigerator for blood transfusion products;
- three freezer at -25°C and one at -80°C;
- three thermostatic water baths set at different temperature (37°C, 56°C or 20°C);
- two high temperature stoves;
- automatic system for protein electrophoresis;
- one Computer Assisted Sperm Analyser.

Unfortunately, the Computer Assisted Tomography and Computer Assisted Sperm Analyser are currently out of order. The Department is evaluating the opportunity either to repair or to change this equipment, and it is looking for funds to do this. Anyway, another Computer Assisted Sperm Analyser is available in the Section of *Veterinary Physiology* of the Department of *Physiological Sciences*, and it is at colleagues' disposal.

Having two clinical chemistry and haematology laboratories (one in Pisa and one in San Piero a Grado) poses a financial issue whenever upgrading the equipment becomes necessary. Once the two labs will merge together it is already planned to have more specialist and automated instrumentation.

6.1.3.6. Computerisation of clinical activities

Since 2001 all patients (small and large animals) visited at the Clinical Department have a numbered medical record with all the clinical data. These medical records are kept in filing cabinets and can be retrieved using owner's name or the number of the medical record. The database indicates species, breed and some key words regarding apparatus and clinical disease. Since 2008 there is a fully computerised system for appointments and medical records, currently utilised for small and large animals. Now, when the patient and its owner arrive, they are registered with a medical record number. In each consulting room, in the laboratories and in the diagnostic imaging area there is a PC from which the medical record can be retrieved and filled in by students under supervision, with general clinical examination and more specialist or laboratory data. There is a specific software also for the management of the equine artificial insemination and embryo transfer activity. Students are involved in all clinical activities, supervised by teaching staff assisted by PhD students, post-docs, and other non-staff member veterinarians.

When the patient leaves, all data about the clinical procedures and laboratory examinations done are available to the administration for invoicing purposes. Rates charged for clinical services are established by the Council of the Veterinary Clinical Department, in order to maintain rates compatible with those applied by private practitioners.

A detailed description of the software implemented by the Department of Veterinary Clinics is shown below.

Utilizing the FileMakerPro software a database has been developed for the management of the entire clinical activity in the Department of *Veterinary Clinics*. This software also represents a useful tool for teaching, clinical research and management of external clinical services provided by the Department.

The software has been set-up "in-house" by an Assistant Professor of the Department with the aid of a IT expert; that is to say, the project and its implementation have been developed entirely

within the Department, thus allowing very substantial cost saving as well as continuous modification and updating according to the needs of the Department.

The name used for the network, still in evolution, and for the database is "OCIROE", named after the daughter of Chiron, a nymph of Greek mythology, who was transformed into a horse.

The database, which can be consulted by remote access, is hosted on a server managed by FileMaker Server. Access is reserved to authorised staff, who have a personal account and password.

Personal computers enabled to connect to the network are located at reception, in each consulting room, in the surgery section, in each laboratory and in the administrative section.

From the initial menu, the following sections of the database can be accessed:

a. *Appointments*: this section is available to plan appointments for consultation, surgical procedures and diagnostic imaging for all veterinary resident doctors affiliated to the Department. The initial menu allows access to the various different planning menus.

b. *Clinical Records*: this section manages the basic clinical records of each animal and the various records concerning specialist tests (clinical analyses, horse clinical medicine, mammary oncology, orthopaedics, surgery, anaesthesiology, neurology, cardiology, nephrology, ophthalmology, and dog reproduction). The initial menu of this section gives access to the records the user wishes to examine, and the various specialty records can be accessed from the basic clinical record. Plans are under way to develop an oncological and behavioural record.

The basic clinical record contains the signalment of the patient, with its complete and detailed history, also reporting which specialty consultations have been carried out during the year. The specialty records then indicate the results of the various investigations performed.

The clinical record also includes the liability waiver statement signed by the owner (for clinical procedures, clinical tests, surgical procedures, anaesthesia, and euthanasia), the death certificate, the expense budget and the detailed expenses for animal care that will be billed to the client.

Linked to the clinical record are the following documents: the report containing an account of the drugs used in anaesthesiology, which should be written in the official registry of accounts of drugs utilised; and a list of all the prescriptions issued for each patient. The file is set up to allow the print-out of prescriptions.

A software programme that will manage all the animals to be housed and hospitalised in the forthcoming Veterinary Teaching Hospital is currently under development.

c. *Laboratory diagnostics*: this section manages all the samples sent to the laboratory, from their registration in the lab to the print-out of results. Each sample, at the moment of its registration in the database, is assigned a lab code automatically generated by the system, which unequivocally identifies the sample. When the clinical record number is inserted into the registration procedure, all the data of the patient are included in the file.

The registration record shows the details of the lab tests requested; additionally, the lab registration record gives access to numerous other specific files (haematology, wet-chemistry, dry-chemistry, bone marrow and lymph node, cytology TWB BAL, blood groups and Coomb's, urinalysis and faeces, external tests and examinations, histology and histopathology).

The results of tests performed are entered into the various files. These include PDF files showing the findings of haemograms and of serum protein electrophoresis runs and the significant microscope pictures derived from cytological evaluation.

d. *Diagnostic imaging*: the results of ultrasound scans and radiological tests are managed in this section.

e. *Transfusion Centre*: this section manages blood donations carried out within the Department. Donations are used exclusively inside the Department for the needs of patients using this facility.

The database makes it possible to plan donor rotations and to update the availability and check the expiry date of the various blood products obtained and stored. This means that each blood product can be traced from the time of collection, throughout storage and up to its final destination in the pathological recipient.

f. *Pharmacology and Toxicology*: the results from tests and analyses conducted in the

Pharmacology and Toxicology Laboratory are managed in this section.

g. Administration: the administrative staff can use the clinical record number to call up an online list of laboratory tests requested, clinical procedures performed, the expense accounts referring to treatments and the items or health care consumables used which will be charged to the owner. A specific file showing the price list for all the external services offered by the Department is under construction; this will enable the administration to have an automatic visualisation of the overall expenses composed of the different cost items (medical procedures, lab tests, drugs, consumables), thereby considerably simplifying calculation of the costs that should be included in the bill.

6.1.3.7. Diagnostic laboratories for clinical support

The Diagnostic laboratories for clinical support available in the new premises in San Piero a Grado are presented in this paragraph. Other clinical support services are anyway available in the Department of "*Animal Pathology, Prophylaxis and Food Hygiene*". Details are reported in paragraph 6.1.7.

a. The Clinical Biochemistry and Haematology laboratory Service

This service supports the laboratory diagnostic activity requested from the other *Services* affiliated to the Department of *Veterinary Clinics*. It is able to perform most of the haemato-biochemical exams generally used in the clinical management of cases of the species of common interest (dog, cat, horse, and cattle). The service is also able to manage the other specialised exams thanks to agreements with a number of national and international reference laboratories. On demand, also specific investigations in particular animal species are available.

As already reported in paragraph 6.1.3.5, the laboratory is equipped with:

- three bench centrifuges and one floor centrifuge for high volume load or for blood transfusion products;
- 3 cell-counter using impedance technique and one veterinary laser cell-counter;
- two fibrinometers for coagulation assays;
- three UV-VIS spectrophotometers with continuous cell flow and two UV-VIS spectrophotometers with single cell cuvette for wet chemistry;
- one spectrophotometer for dry chemistry;
- two instruments for reading urine strips;
- two stat analyzers one of which portable;
- one ELISA plate reader;
- one special refrigerator for blood transfusion products;
- three freezer at -25°C and one at -80°C;
- three thermostatic water baths set at different temperature (37°C, 56°C or 20°C);
- two high temperature stoves;
- automatic system for protein electrophoresis.

This Service provides consultation and interpretation of the results deriving from basic and specialised haemato-biochemical exams thanks to the specific knowledge of the graduated staff affiliated to this Service. Furthermore, blood transfusion is also provided thanks to a number of blood transfusion devices and products, which are important for the management of oncology, haematology and some emergency cases. The service, which features among its staff members graduates in Veterinary Medicine or Biological Sciences, also provides teaching and supervision for the traineeship of students enrolled in several Degree, Specialisation, PhD, and Master courses affiliated to the FVMP.

b. The Andrology and Embryo Transfer laboratories

The Andrology laboratory, in the old building of San Piero a Grado is currently used for the evaluation of semen samples of small and large animals, both for clinical purposes (andrological exams, artificial insemination etc.) and research. Within the new facilities, the space will be

remarkably increased as there will be one laboratory to be used only for small animals (canine) and one laboratory to be used only for large animals (equine). Once the new large animals andrology lab will be fully functioning, the plan is to obtain the authorisation by the Tuscany Region to officially produce cooled and frozen equine semen.

The Embryo Transfer Laboratory already has the Regional authorisation to collect and transfer embryos, and has been active since the opening of the new facilities in 2000. This activity, although on a lower scale due to lack of spaces, was already ongoing in the old Faculty in Viale delle Piagge during the 90s. As an example, in 2006, 2007 and 2008, 91 flushing from 24 donors, 77 flushing from 31 donors, and 112 flushing from 40 donors were performed, respectively.

c. The Pharmacology and Toxicology laboratories

The Laboratory of Veterinary Pharmacology and Toxicology supports the veterinary clinic activities providing consultations on drug-related problems including adverse effects, interactions, therapeutic monitoring and testing of the sensitivity of bacteria to different antibiotics. Furthermore, the laboratory has the capability to assess, diagnose, and manage poisoned and overdosed animals.

The *Clinical Pharmacology Service* provides the therapeutic drug monitoring of several drugs to ensure that the medications are taken properly and to search for any potential drug interactions ensuring that patients optimise their health when using drugs and avoiding the complications and adverse side effects that can accompany the taking of medications. The unit also assists the clinician in the selection of empiric antimicrobial therapy for infections.

The Laboratory utilises several method of susceptibility testing including microdilution MIC testing, disk diffusion and the Etest Interpretation of testing results (S, I, or R) is based on guidelines developed by the Clinical Laboratory Standards Institute (CLSI). Selection of antimicrobials to be tested is made in collaboration with clinicians.

The unit is also committed to training future healthcare practitioners with the skills necessary to select, prescribe and manage medication therapies. Furthermore, the unit is active in Continuing Professional Development. Presenting at seminars, lectures, grand rounds, workshops and publishing scientific articles are just some of the ways we serve to improve the level of practice skills for today's healthcare practitioners.

The *Clinical Toxicology Service* assesses and provides advice on poisoned patients supported by a dedicated clinical toxicology database. The service manages telephone enquiries from healthcare providers concerning the management of patients with acute poisoning. The unit also performs the service of diagnostic toxicology by different analytical methods (HPLC, ELISA, Electrochemical) on biological samples from poisoned animals. The analyses performed include pesticide, heavy metals, contaminants, drugs.

6.1.4. Immediate future changes: the Veterinary Teaching Hospital

The most important future change for the Clinical activities and related teaching will be the inauguration of the new buildings where the Veterinary Teaching Hospital will be located. We hope that these facilities will be available at the time of the EAEVE visit. The structure of the new facilities is quite simple and consists in a main building (2 floors: see Annex VI, pages 25-26) which represents an expansion of the structure of the Department of *Veterinary Clinics* operating at present, and the premises devoted to the hospitalisation of both small and large animals.

The first floor of the main building is dedicated to offices for teachers and researchers, administrative staff and meeting rooms, while the ground floor is totally dedicated to activities devoted to clinical teaching (Veterinary Teaching Hospital) and research. A large rooms represent the main entrance and the reception of the Hospital from which it is possible to access to 3 small animal waiting rooms (2 for dogs and one for cats). The south side of the ground floor is composed by 7 large laboratories (4 Pharmacology and Toxicology Laboratories, 3 Clinical Biochemistry and Haematology Laboratories) and one large teaching room (see table 6.1.3.4.c) equipped with 10

surgical tables and devoted to practice of student on surgical and reproductive techniques performed on excised internal organs or cadavers.

The north side of the ground floor is composed by 6 small animal consulting rooms (one devoted to cats), one large animal consulting room, equipped with a stock, and one large animal radiology room. A small animal intensive care unit is available, composed of a hospitalisation room providing several dog and cat cages and an intensive care room.

Finally, still in the ground floor of the Hospital, 2 bedrooms, several bathrooms, changing rooms and showers are available. An internal circuit camera system connects the intensive care unit and the horses and small animal boxes with the 2 bedrooms. The same system allows the veterinarians and students involved in the clinical activities to see hospitalised animals on line from every hospital PC or from home.

The facilities were built in Tuscan style, as requested by the Natural Park authority. This aesthetic conformation is not in contrast with the functionally of the hospitalisation facilities which consist of 4 horses and 4 small animal units (see table 6.1.3 and Annex VI, pages 27-30 and 34-37) and in a central area with some service buildings. In two of the 4 horse units is possible to hospitalise other species of large animals.

One of the horse units is devoted to stallions producing semen either for research or teaching. We are also able to ship chilled and frozen semen to private veterinarians. In this unit 2 isolation boxes are available. Another one of the horse units is devoted to intensive care, including a foal unit. This premise is fully air-conditioned and features a system to suspend mares during parturition or to help horses unable to stand, as well as 2 isolation boxes.

The 4 small animal units are identical with the exception of the heating system (see paragraph 6.1.3.2) and consist of a T shape structure where the major axis is formed by 10 dog boxes (5 on each side, divided by a central service area), each provided with an external small paddock. The minor axis consists of two rooms, the first one dedicated to the hospitalisation of cats in individual cages, and the second one with a treatment room for the animals of each single unit.

The central area of the hospitalisation facilities is dedicated to different services as consultation rooms or laboratories as:

- centre for dogs and horses semen production;
- dogs treadmill and behavioural laboratories,
- renal dialysis unit;
- kitchen and dining room, changing rooms and bathrooms available for people involved in the clinical and hospitalisation activities;
- storage rooms;
- frozen rooms (-25°C).

The Veterinary Teaching Hospital is going to:

- add the "Diagnostic Pathology Unit" to the units already operating in the Department of *Veterinary Clinics*;
- open the Hospital for consultations from 8 am until 5 pm;
- hospitalise both small and large animals (horses) 365 days per year; in the case of horses, this hospitalisation is already active since 2001;
- ensure the availability of budgeted clinicians 24 hours a day, 365 days a year, in case of emergency;
- stipulate contracts with private Vets (on the basis of a public competition) both for assistance to hospitalised animals during the nights and the week-ends, and for specific clinical activities; these contracts are necessary because the number of budgeted clinicians is not sufficient to cover all of shifts that will ensure a service 24 hours per day, 365 days a year.

For the management of the Veterinary Teaching Hospital the following organs and bodies are foreseen: a President and an Assembly, responsible for the politics of the Hospital; a Sanitary Director and a Management Committee, responsible for the management of the Hospital; and a Trustees Committee, which will include a Veterinary Professor with experience in European Veterinary teaching and a representative of the local Veterinary Licensing Board, responsible to annually evaluate the activities of the Hospital. A first draft of the Regulations of the Veterinary Teaching Hospital is available in Annex V.

6.1.5. The building "Le Querciole" and its area in San Piero a Grado

The building "*Le Querciole*" (see Annex VI, pages 19-21), near the town of San Piero a Grado (basically across the road from the new premises of the Department of Veterinary Clinics), was an old farm and it is owned by the University and assigned to the Departments of *Animal Pathology, Prophylaxis and Food Hygiene* and of *Animal Production*. The building has been partially renovated in 2002.

6.1.5.1. <u>The Section of Food Hygiene</u>

The ground floor of the farm "*Le Querciole*" is utilised by part of the Section of *Inspection and Food Hygiene* of the Dept. of *Animal Pathology, Prophylaxis and Food Hygiene*. It is composed by five office rooms, one small library-meeting room and three laboratories, whose characteristics are specified below.

- Laboratory of Food Chemistry: in addition to some basic lab devices, the laboratory is equipped with one chemical hood, one thermostatic water bath, one tissue homogeniser, one bench-centrifuge, one Rotavapor, one steam flow distiller, two tissue digesters, one UV-VIS spectrophotometer, one high temperature stove.

- Laboratory of Molecular Biology: the laboratory is equipped with a chemical hood, a laminar flow hood and a working bench for nucleic acid electrophoresis. It is directly connected with washing and steriliser room, which is equipped with one distiller, one ultra-pure water producer, one stove, one

dishwasher, two sterilisers. In the hall connecting the laboratory to the other rooms there is a -80°C freezer and the closets for the storing of acids, bases and flammable substances.

- Laboratory of Immunochemistry, general protein-related techniques and cell cultures. In addition to some basic lab-procedures devices, the laboratory is equipped with one ELISA reader, one Nanodrop spectrophotometer, one semi-dry electroblotter, several equipment for protein electrophoresis and other kind of electroblotting, two shakers, one stove, one bench-centrifuge, two PCR thermocyclers and one real time PCR thermocycler. The cell culture area is isolated by a glass-aluminium structure and is equipped with one laminar flow hood, one refrigerated centrifuge, one microscope, one CO_2 incubator and one thermostatic water-bath.

Each laboratory is provided with refrigerators and/or freezers. Reagents-storing closets are located in the hall that separates the Immunochemistry laboratory with the lab of Food Chemistry.

6.1.5.2. The Section of Animal Production

The first floor of the building "*Le Querciole*" is utilised by some researchers of the Department of *Animal Production*, mainly utilised by the Poultry and Rabbit Section. On this floor there are office rooms, a library-meeting room, a laboratory for Avian reproduction. The library hosts principally poultry and rabbit journals and books. It is also used by students for searching bibliography and as a study area. The laboratory is intended for the evaluation and cryopreservation of poultry semen (cock, pheasant, drake). It is equipped with a thermostatic water-bath, one refrigerated centrifuge, one UV-VIS spectrophotometer, one heating magnetic plate with digital thermo-regulator, one refrigerator and instruments for artificial insemination in avian species.

In the area around the farm there are many structures, owned by the Dept. of *Animal Production*. These includes 30 aviaries to breed some poultry species (mainly chickens, ducks and pheasants) in natural condition of light and temperature; other open-air pens are used also for housing stabling few birds of other poultry species: goose, guinea-fowl, turkey. The number of animals fluctuates between 300 and 600. In a building near the main one there are rooms used to storage and incubate eggs coming from the poultry breeders kept in the poultry farm of the Department. The small hatchery is equipped with 3 set-machines and 2 hatching machines and it is strictly linked with the poultry farm and the laboratory. It allows researches in avian reproduction as well as periodical stages and practical training of students.

Furthermore there are 5 boxes for horses and 6 paddocks.

In a separate room there is a high speed horse treadmill. The treadmill is used mainly for detections of poor performances and for nutrition research in racehorses by the researchers of the Dept. of *Animal Production* in collaboration with two other Departments: the Dept. of *Veterinary Clinics* and the Section of *Veterinary Physiology* of the Dept. of *Physiological Sciences*.

Another paddock is currently used for sheep. Currently there are 5 ewes used for research and for teaching.

A small building is used for rabbits. About 50 cages are used for traditional rabbits breeding, whereas a small paddock with 10 large cages is used for organic breeding.

For details about the teaching use of these premises see paragraph 7.1.4.

6.1.6. The University Farm

The new premises of the Department of *Veterinary Clinics* in San Piero a Grado are embedded in the much bigger Interdepartmental research's structure (the *Interdepartmental Centre for Agro-Environmental Researches*) which has an extension of around 1,700 hectares, and which itself is totally embedded inside the protected area of the Regional Natural Park of "*Migliarino, San Rossore, Massaciuccoli*". Apart from its research activities, the Interdepartmental Centre performs also many agricultural and zootechnical activities; 700 out of 1,700 hectares are covered by forest (specialised maritime pine forest and mixed woodland), whilst the remaining area is composed of agricultural land with varying soil characteristics (sandy, medium loam, clayey).

The Interdepartmental Centre plays an important role as the University Farm for both the Faculties of Veterinary Medicine and Agricultural Sciences.

a. The animal husbandry activities of the University Farm

Close to the Department of *Veterinary Clinics* (around 2.5 km), University Farm has a free stabling cowshed for the raising of dairy cows of the Friesian breed and a cowshed for beef cattle of the *Pisana* breed, an endangered species.

The herd of dairy cows is represented by 144 *Holstein Friesian* dairy cows. Animals are fed and monitored for reproductive activity using a computerised pedometer system.

The cattle of the *Pisana* breed counts 130 animals in total: 98 cows, 2 bulls and 30 calves for fattening. The rationale for raising this particular breed resides in the programme designed to maintain the genome of local breeds threatened with extinction. This programme is promoted by the Region of Tuscany through the Regional Agency for Development and Innovation in Agriculture (ARSIA). Over the past few years an embryo transfer programme has achieved the goal of enlarging the small remaining number of these animals which, in 2003, numbered fewer than 200 heads in the whole of Tuscany.

From the productive point of view, the aim is to obtain high-quality meat with the use of hay and feed of plant origin produced on the farm in order to obtain greater added value. The milk obtained from these cows is classified in the category of high quality milk, which is marketed in the Region of Tuscany. In order for milk to achieve this classification it must conform to minimum quality requirements established by a specific Ministerial Decree: such requirements pertain to fat (≥3.5%) and protein (≥3.2%) content, as well as conformity to hygiene and health and safety rules referring to somatic cell content (which must be below 300,000 units per ml of milk, and bacterial load (which must be below 100,000 units per ml of milk).

Qualitative improvement of milk is incentivised via a system of differentiated quality-dependent payment for the milk. Bonuses are awarded if the minimum required protein and fat content is exceeded or if bacterial load and somatic cell content are below the specified limit. Penalties arise in the opposite cases.

The animal husbandry activities of the University Farm include a flock of roughly 1,200 sheep of the *Massese* breed, owned by a private entrepreneur with whom the University Farm has undersigned an agreement. According to the agreement the owner has the right to pasture the sheep during the winter period on some plots of land belonging to

the farm, in exchange for payment of an annual fee. The terms of the agreement also involve making the animals available for the University Farm's teaching and experimental activity.

Sheep rearing is an activity that fits well into the University Farm's activities, supporting the following functions:

- enhancement of soil fertility and conservation of the agricultural environment;
- cultivation of forage species with low chemical and mechanical input requirements;
- conservation of an adequate percentage of humus in soil by adopting the practice of digging crop residues and manure into the soil.

Thus free range or semi-free range sheep rearing contributes to maintaining a good degree of biodiversity among the crops grown, and at the same time constitutes an important aesthetic element for safeguarding the landscape.

b. The opportunities offered by the University Farm

The opportunities that the University Farm can offer to research and teaching activities of the FVMP have increased in importance over the years, as a result of business choices adopted by the management of the University Farm, oriented to continuous improvement and innovation of production chains, especially the animal ones, in which the targets have been food safety, quality, environmental sustainability, social commitment. The results obtained have qualified the University Farm as a "reference model" for researches and professional training courses, acknowledged by public bodies and institutions of excellence.

An important role in determining the business policies and the consequent activity planning, has been played by the teachers of the FVMP participating to the University Farm Committee, both as political choices expressed in the management as well as in technical and operative support, favouring the options which are more functional to the teaching needs of the Faculty.

Along this improvement pathway, still in progress, the University Farm has developed and restructured the animal productions, especially the bovine breeding, for beef and milk production.

Regarding the group of *Pisana* cattle, it has been reorganised in an integrated production cycle of fresh meats, qualified for the high hygienic standards as well as for the organoleptic qualities of the product. Furthermore these animals are reared in a very high level of animal well-being and with low environmental impact production choices. The University Farm also commercialises the meat produced directly to the consumer.

With regard to milk production, direct selling of raw milk to consumers was started in 2008, with the aim to take advantage of excellent management skills and high hygienic standards provided by personnel working at the farm, as well as to offer a continuous and direct relationship with consumers. Hygienic requirements in fact impose the observance of most restrictive limits in the field of milk production. Achievement and maintenance of the hygienic standard require the application of a specific management system including *Good Farming Practices* and *Good Manufacturing Practices* in milking, milk collecting, handling and selling.

Overall, the livestock chains managed by the University Farm, also thanks to the structural and management improvements recently realised, offered new opportunities to the Faculty, both in the field of research and in the teaching activities. The sectors which received the greatest benefits from the productive improvements have been:

- *Food hygiene*: higher level of milk hygiene, application of veterinary public health and food safety measures, application of official control criteria, labelling and presentation requirements of food products, consumer communication.
- *Infectious, bacterial and parasitic diseases*: pathologies prophylaxis and care, prevention of zoonoses, application of veterinary public health requirements.

- *Clinics of large animals*: diagnosis, therapy and prevention; veterinary obstetrics and reproduction.
- *Animal husbandry*: environmental management, feeding; economic management.

c. The students' practical activities in the University Farm

A private practitioner has been hired for many years to take care of routine health checks as well as artificial insemination of the dairy cows and heifers. This practitioner actively cooperates with the Departments of *Veterinary Clinics* and *Animal Production*, pointing out interesting clinical cases and often personally participates to the practical teaching activities of the FVMP, taking students with him and supervising also some of them for their thesis experimental work.

Inside the farm, students are involved in periodical stages of apprenticeship for artificial insemination, pregnancy diagnosis, parturition, as well as for nutritional management techniques. During the practical training of Obstetrics and Gynaecology students learn to perform gynaecological examinations, pregnancy diagnosis, insemination techniques, and so forth. Moreover the farm offers the occasion to demonstrate and evaluate body condition score of single subjects, to ascertain the nutrition protocols, as well as to discuss issues in management of a dairy-herd and in mammary and milk hygiene (for details see paragraphs 4.1.6.3 point c, and 4.1.6.7).

There are some difficulties in planning and organising the above teaching activities because of the decreasing number of University Farm's staff involved in animal care. The problem is further complicated by the fact that the majority of students are inclined to work with pets and not farm animals.

In order to improve the organisation of the training and to stimulate students' participation, over the last three years the FVMP activated, with some positive results (and with an increase in costs), a resident tutor-service: a new-graduate student, skilled in the buiatric field, is entrusted with the task of organising and supervising students in this duty.

Students are also involved, under the guide of the farm tutor and of the veterinarian hired by the Faculty, in practical work in the field of Animal Feeding and in Animal Husbandry.

<u>Animal Feeding and Nutrition</u>

In this field of practice students:

- learn the feeding techniques performed for the different categories of animals present in the farm;
- perform the sensory evaluation of the quality of feeds distributed (silage, fodder and feedstuff) and sample them;
- observe the techniques of preparation and administration of rations and, in particular, of *total mixed ration*;
- prepare milk for calves;
- learn how to evaluate the nutritional status of cows according to the Body Condition Score (BCS);
- collect data useful to evaluate the animal requirements and to define the composition of the ration. After that, students verify if the ration satisfies the animal requirements and then express an assessment with eventual suggestions to improve the ration.

<u>Animal Husbandry</u>

Milking cows

In this field of practice students:

- milk the cows and perform diagnostic tests for mastitis;
- handle udders and try to identify alterations in the gland structure;
- perform the morpho-functional assessment of milking cows;
- perform the assessment of the spaces devoted to animals: control of the litter, of the feeding area and of the movement area;
- move fully-grown animals to their areas;
- perform the evaluation of the breeding plans, including the choice of the semen for each cow on the basis of morphological and productive features;
- assist during artificial insemination as well as during parturition;
- provide early care to calves, milk supplying and weaning.

Beef cattle

In this field of practice students:

- perform the morpho-functional assessment of the nursing cows and calves;
- monitor the animals reared in open air, with a particular attention to the calves in the early days after the birth, especially evaluating the maternal capacity and the likelihood that calves receive sufficient milk for their growth requirements;
- move the weaned calves to the fattening boxes;
- perform the assessment of the fattening status of calves and the identification of their maturity suitable for slaughtering.

6.1.7. Diagnostic laboratories within the Department of Animal Pathology, Prophylaxis and Food Hygiene

6.1.7.1. The Infectious Diseases laboratory

The laboratory of Infectious Diseases of the Department of *Animal Pathology, Prophylaxis and Food Hygiene* provides diagnostic services on request by the medical and surgical clinics of the Faculty of Veterinary Medicine and by private veterinary clinics. Tests are available for the diagnosis of the major infectious diseases of domestic animals and poultry both farming and wild. On specific request, epidemiological investigations and diagnostic tests for particular animal species can be done.

In the laboratories of the Department, academic graduated staff and technicians as well as PhD researchers and post-doc students perform virological tests and bacteriological diagnostic techniques using direct procedures (examination and bacteriological culture, virus isolation, PCR, identification of antigens by immunoenzymatic technique), or serological diagnostic techniques mainly through ELISAs, immunofluorescence, complement fixation test, seroagglutination and microagglutination test.

The field of microbiology also provides a diagnostic service for microbiological analysis of food for human and for livestock animals.

6.1.7.2. The Parasitological Diseases laboratory

Within the Department of *Animal Pathology, Prophylaxis and Food Hygiene*, the Parasitological Diseases laboratory provides the following diagnostic services.

1. Unit of parasitic serology

Serology service for *Leishmania*, *Toxoplasma*, *Neospora*, *Babesia canis*, *Babesia caballi* – *Theileria equi* antibodies (IgG) detection by IFAT and *Toxoplasma* IgG and IgM detection by MAT.

2. Unit of molecular diagnosis

PCR-based testing for diagnosis of *Leishmania*, *Toxoplasma*, *Neospora*, *Babesia canis*, *Babesia*

caballi – Theileria equi infections.

3. Unit of mycology

Fungal culture and identification, antimycogram (by microdilution and agar diffusion tests) of yeasts and moulds of veterinary interest.

4. Unit of general parasitology

Diagnosis of *Dirofilariosis* (*Dirofilaria immitis* and *D. repens*) by using mainly the modified Knott method and immunoassays for *Dirofilaria immitis*; copro-parasitological service for the diagnosis of protozoa and helminths (stained faecal smears; flotation test, using low and high specific gravity solutions; Baermann method; sedimentation; faecal cultures for infective stage 3 gastrointestinal strongyle larvae to identify genera; faecal cultures for *Coccidia oocysts* to identify species; modified McMaster methods; immunoassays for *Giardia* and *Cryptosporidium*), evaluation of the anthelmintic-resistance, identification of helminths isolated from animals; stained blood smears for the search of emoprotozoa.

5. Unit of entomology

Identification of parasitic arthropods of veterinary importance.

6.1.7.3. The Anatomical Pathology and General Pathology Laboratories

The laboratories of Anatomical Pathology and General Pathology of the Department of *Animal Pathology, Prophylaxis and Food Hygiene* support the diagnostic laboratory activity concerning post-mortem examination, histopathology and cytopathology of domestic and wild animals.

Carcasses of different animal species are submitted for post-mortem examination from the Clinics of the FVMP, private clinics and practitioners, as well as owners of companion animals, horses and small ruminants. Post-mortem examination is also performed on wild animal species, such as foxes, hares, deers, etc., which have been captured on the basis of regional programmes of health control.

Histopathological examination is performed on formalin fixed tissue shipped from the Clinics of the FVMP and from veterinary clinics and hospitals of all Italian regions. Diagnostic investigations include the application of routine histological methods, as well as histochemistry and immunohistochemistry when necessary or requested. Particular emphasis is given to surgical oncology, dermatopathology, equine endometrial biopsy, neuropathology and neuromuscular pathology.

The Neuropathology Laboratory is one of the few labs in Europe which developed a panel of histoenzymatic analysis of frozen muscle samples for diagnostic and research purposes. The lab receives muscle biopsies taken from dogs, cats and horses with neurological conditions from Italian and European (mainly Spanish and English) diplomates of the European College of Veterinary Neurology. In this unit Veterinary Medical staff follows the traineeship of students enrolled in several Degree, Specialisation, PhD, and Master courses affiliated to the FVMP, as well as applicants of the Veterinary Pathology Training Programme required for the ECVP Board Examination. The Department of Animal Pathology is a registered residency training centre in veterinary pathology

The use of the necropsy room for diagnostic purposes

The use of the necropsy room for diagnostic purposes is organised on a weekly roster which involves the pathologists of the Department of *Animal Pathology, Prophylaxis and Food Hygiene*. Diagnostic activity is performed on domestic and wild animals. Diagnostic activity related to avian species is consistently performed by teachers of avian pathology. The necropsy room is also routinely used for teaching activity, including exam sessions of anatomical pathology, necropsy and avian pathology. Research activity in the necropsy room and related laboratories is also performed by pathologists, parasitologists and infectivologists of the Department.

6.1.8. Slaughterhouse facilities

As the FVM does not have its own slaughterhouse, the Faculty has established formal agreements with three slaughterhouses where practical training sessions are regularly planned and performed during the Meat Inspection courses. Students, divided in small groups (maximum 12 students per group), attend part of the teaching directly at the slaughterhouse following the actions of official veterinarians under the guidance of university teachers: all the plants have the continuous presence of both official and internal (private) control system.

Bovine slaughterhouse: "*Associated Slaughterhouse*" owned by the Company "*San Miniato Limited*", EU code **1676M**, in the town of San Miniato, 40 km from Pisa (a 45-minute trip from the Faculty). This is an associated bovine, swine, and ovine slaughterhouse, also licensed for religious slaughtering. Students gain experience on bovine slaughtering and, upon request, the religious one. This slaughterhouse has a volume of a small/medium plant. The web site is:
http://www.consorziomacelli.com/index.php

Swine slaughterhouse: "*Italpork Swine Slaughterhouse*", EU code **702 MS, 9-1775 L**, in the town of Borgo a Buggiano, 40 km from Pisa (a 45-minute trip from the Faculty). This is a private swine and, since 2002, bovine slaughterhouse with a volume of 2,000 swine per week. The slaughterhouse is connected with a cutting and processing plant.

Poultry Slaughterhouse: "*Luigi Abati Poultry Slaughterhouse*", EU code **556M, 556 S**, in the town of Montespertoli, 62 km from Pisa (a one hour trip from the Faculty). It is a vertical poultry slaughterhouse with a volume of a small/medium plant (chickens, turkeys, quails, guinea fowls).

Students have to practice either in these or in others slaughterhouses during the extra-mural practical training following the activity of the Official Veterinarians in the Local Sanitary Units (Section of Food Inspection) chosen by the students among the selected ones in Tuscany for this kind of practice.

Furthermore students can perform practical training in other slaughterhouses under the control of the Official Veterinarian of the Local Sanitary Unit chosen by the student for the external training accordingly with the "*Training Project*" (see paragraph 4.1.6.8).

6.1.9. Foodstuff processing units

6.1.9.1. Food Hygiene

Practical training in food hygiene is also performed in food processing plants through formal agreements with the FVMP. Students, divided in small groups (maximum 12 students per group), attend practical demonstrations of the processing plant veterinarians under the guidance of university teachers: all the plants adopt both official and internal (private) control systems.

1. Meat and meat products

a. Italpork Limited: it is a meat processing plant linked to the swine/bovine slaughterhouse, EU code **702 MS, 9-1775 L**, in the town of Borgo a Buggiano, 40 km from Pisa (a 45-minute trip from the Faculty). There is a cutting plant where students experience the hot cutting of carcasses, the different kind of cuts and the processing plant with the production of *salami*, ham and fresh sausages. The Company adopts a modern management approach to the commercial and hygienic quality of the products.

b. Salumificio Benvenuti Limited, EU code **1225/C**, in the town of Santissima Annunziata, 25 km from Pisa (a 45-minute trip from the Faculty). A processing plant of 3,000 square meters, built following EU sanitary requirements and provided with the most advanced equipment. The plant produces typical Tuscan *salami* using a fully computerised control of the entire workflow of production and an active internal quality control. The plant produces various types of Tuscan *salami*, lards, bacon, sausages, ham and cocked typical products.

2. <u>*Milk and cheese*</u>

a. Central milk factory of the Provinces of Florence, Pistoia and Livorno: in Florence, 80 km from Pisa (a 1 hour and 10-minute trip from the Faculty). A modern Company at the forefront in the production and marketing of milk and its derivatives. Students experience the processing, the managing of the commercial and hygienic quality of any single product and the lab tasks. The Company produces commercial milk (fresh, fresh high quality, UHT, special milks); cream, butter, cheeses (*ricotta* cheese, *mozzarella* cheese, *stracchino* cheese, *mascarpone* cheese), puddings and ice-creams.

b. Milking room attached to the breeding "Cooperative Agricola Emilio Sereni Limited", in the town of Borgo San Lorenzo, 105 km from Pisa (a 1 hour and 40-minute trip from the Faculty). It is a milk collection plant where students experience the hygiene standards necessary for milking and the management of the milk before it is processed.

c. ALIVAL Limited, in the town of Porcari, 30 km from Pisa (a 50-minute trip from the Faculty). Here students experience the production of cream cheeses with a stringy texture such as *mozzarella* cheese and *ricotta* cheese. Students understand the protected classes of products , IGP (Protected Geographic Indication) and DOP (Protected Trade Name). In the nineties ALIVAL instituted a "group policy" dedicated to these market targets.

3. <u>*Fish*</u>

a. Panapesca, near the town of Montecatini Terme, 45 km from Pisa (a 50-minute trip from the Faculty). This is a leading Company in Italy in producing, processing and marketing frozen fish products. The Company's motto is "*We take care of everything, from catching the fish to preparing it for the costumer: from the sea to the dining table*". Here students experience a plant which takes care of every step in the process chain:

- from capturing the fish with its own factory ships and fishing boats
- managing third party fishing fleets work exclusively for the Company;
- processing the products in its own production units;
- marketing the final product.

The Tuscany plant is one of the most important units in Italy for frozen fish, fish products processing and final distribution.

b. Arbi, in the town of Monsummano Terme, 45 km from Pisa (a 50-minute trip from the Faculty). This is a medium size fish and fish products processing plant with an interesting variety of products (from frozen fillets to ready-made fish based sauces) and processing technologies. In this plant students experience the processing of fish products at the *Arbi* laboratory as well as the internal quality control system.

Students can also perform practical training in other slaughterhouses under the control of the Official Veterinarians of the Local Unit of the National Health System, within the framework of the extra-mural work which students can choose (which must however be approved by the Faculty: see paragraph 4.1.6.8).

6.1.9.2. Animal Feeding

The FVMP has an agreement with the Cooperative "*Progeo*", one of the most important feedstuff producer in Italy. *Progeo* produces feedstuff for several species such as ruminants, horses, pigs, poultry and game (partridges, pheasants, hares, etc.), and is also a national leader for the production of organic feedstuff. At *Progeo* our students, during the classes of the *Feed Industry* module, can observe its complete production lines from evaluation of the incoming raw materials, performed via Near Infrared Reflectance Spectroscopy (NIRS, for the rapid determination of the main chemical parameters of feed) and chemical analysis, to storage, grinding, mixing, pelletizing, extrusion, packaging and shipping.

For many years *Progeo* has played an important practical educational role both for the willingness of its staff to collaborate with the FVMP as well as for the type of industrial organisation (manufactures standard feed as well as medicated, organic mixed feed production for ruminants, poultry, pigs, pets and others). Several hundred chemical and microbiological parameters in feeds can be determined in its well organised laboratories. Particular care is given to the feedstuff quality aspects and to lab analysis (PCR, gas-chromatography, chemical and microbiological).

6.1.10. Waste management

Italian laws about waste are very severe, particularly with regard to any kind of "special" waste. The University of Pisa has a policy of waste management which fully respect our laws. In particular, in the University in Pisa the animal carcasses, the relative portions and all the industrial scores produced are managed in conformity with law n. 254/2003 and art. 24 of law n. 179/2002. In fact these materials are classified as "*waste that has to be collected and disposed of applying particular precautions to avoid infection risks*" on the basis of code C.E.R. 18.02.02.

All the "special" waste produced by the activities of the Faculty are gathered by specialised external firms. Thus the disposal of "special" waste, and, in particular, animal material, is very expensive and totally paid by the Departments, with a Faculty contribution.

According to the type of waste (liquid or solid) and category (toxic-chemical waste, potentially infectious biological waste, chemotherapists, cadavers, carcasses, organs and by-products of animal origin, and excreta) specific procedures are followed. Each type of waste requires:

- an appropriate stocking system normally localised close to or within the production site (laboratory, unit, section);
- a temporary depot site within the Faculty premises;
- final disposal which is currently assured by a specialised firm.

The sanitary waste materials with infectious risk, identified with the codes CER 18.02.02 and 18.01.03, are disposed of by a certified firm, according to a special agreement with the University of Pisa. They are destined to final elimination through an authorised incinerator.

Table 6.1.10 shows the total amount and the relative expenses of animal waste disposed of by the Department of Animal Pathology, Prophylaxis and Food Hygiene in the period 2006-2008. Additional comments can be found in paragraph 7.1.3.

Table 6.1.10 – Animal waste disposed of by the Department of *Animal Pathology, Prophylaxis and Food Hygiene* in the period 2006-2008

	Quantity (kg)	Expenses (euro)	Average price (euro/kg)
2006	7,408	9,156.29	1.24 euro/kg
2007	7,298	9,088.73	1.25 euro/kg
2008	7,411	10,657.98	1.44 euro/kg
Average	7,372	9,634.33	

6.1.11. Web facilities at the FVMP

At the time of writing this SER, web facilities at the FVMP are undergoing a major restructuring, moving from a single web server with a rather static configuration, to two new web servers, splitting teaching material (course programmes, notes for students, etc, as detailed below) and institutional material (i.e. material related to the Faculty, Departments, their government bodies, etc.). The idea is to adopt for both new servers a CMS (Content Management System) structure. A CMS allows a much more interactive and dynamical way of keeping the online material. This is maintained and updated by the person who produces the material.

a. Institutional web server

At present the FVMP is using the *Drupal* CMS as the institutional web server. Among other things, this CMS has a granular privileges structure for page creating, uploading and editing. A granular privileges structure means that it is possible to pinpoint the correct access rights for each registered user, from whole categories of pages down to the single document: as a consequence, it is in principle straightforward to implement a "*duties matrix*", i.e. a matrix of "*who is responsible for what*". This web server is meant to include material related to the Faculty, to the Departments referring to the Faculty, and to the Degree Courses.

Once the transition is over, this web server will hopefully provide users with access to information about the various structures and offices; it will run a News section (including a special section for available positions and for seminars); it will also provide users with access to the minutes of the Faculty Council and of the Councils of the various Degree Courses.

b. Teaching web server

The FVMP decided to acquire a web server dedicated to the teaching material using an e-learning CMS (named "*Claroline*"). This CMS is very intuitive and easy to use, both for teachers (who are meant to upload the material) and for students. To make things even easier, students can access the restricted sections of this site using the same credentials used for all other restricted operations on the University central facilities (such as when they access their career database).

At the time of writing, all the 64 compulsory modules of the Veterinary Medicine curriculum are online (overall, 226 courses are registered on this site, including some elective modules and the modules of the other Degree Courses, Specialisation Schools and PhD Programmes), with some 15,000 access/month to the online material, and more than 1,800 registered users. These last two numbers include students of the other two Degree Courses.

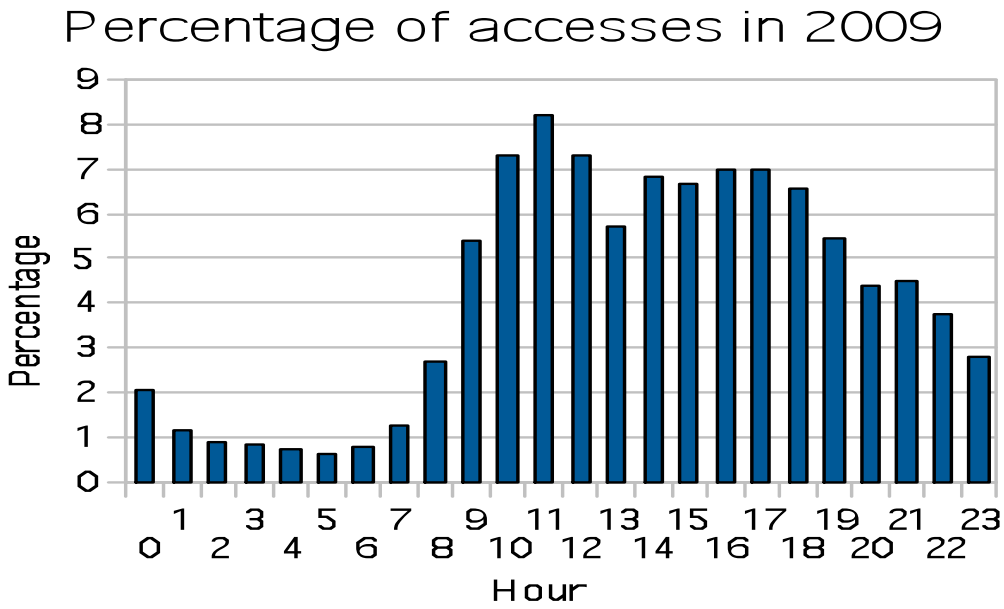
The site is clearly also used as a teaching support even outside the lecture hours: figure 6.1.11 summarises the hourly breakdown of accesses (as a percentage of all accesses).

It is also worth mentioning what students look for on the teaching site. To this end, it is first necessary to explain how the web site is organised. All courses are structured in sections, which are shown below with the percentage of accesses they generate:

1. "*Documents and links*": 48%. Typically, this section contains a copy of the lecture notes;
2. "*Announcements*": 19%;
3. "*Agenda*": 9%. Typically this section contains the course schedule and the exams timetable;

4. "*Course description*": 8%. Typically this section contains some general information about the course, such as the study programmes, the bibliographic support, etc.;
5. Others sections: 16%.

Figure 6.1.11 – Percentage of accesses during the 24 hours



Although the numbers are encouraging and we did witness some progress on the staff efforts to improve the site since the project started, we should mention that there is still much work to do. Many courses still provide less material than one might hope for. In any case, the students seem to appreciate this website, and there is good feedback. On the same web server a web conference module is available, although it has not been used very much for teaching.

At the time of writing, there is some limited public wi-fi access both in Viale Le Piagge and in San Piero. The students (and the staff) can hook up to the wi-fi using their University credentials. The area covered at the moment is around the libraries, but there is a plan, by winter, to cover all the areas where students have access.

6.1.12. Future changes at the FVMP: the completion of the Faculty in San Piero a Grado

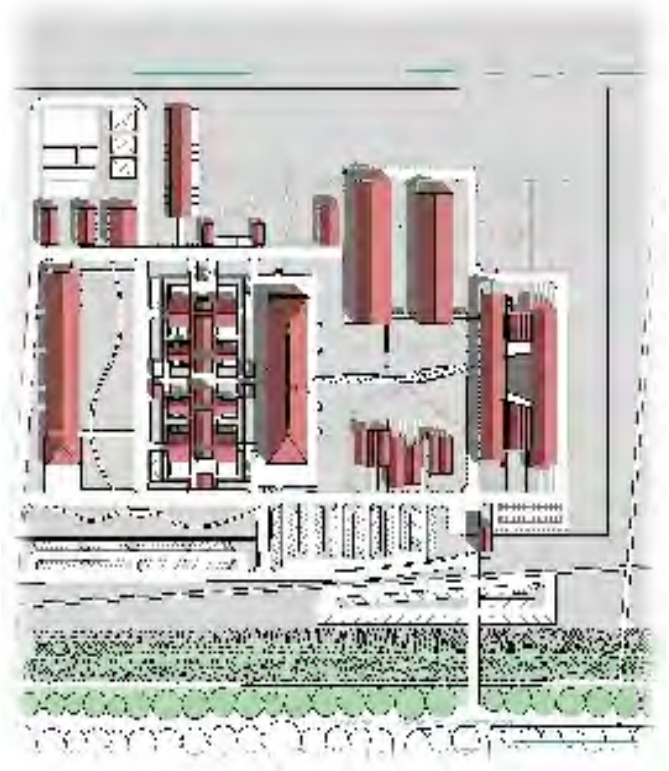
As already mentioned in paragraph 0.8, in September 2008 the FVMP and the Administrative Board of the University of Pisa approved the definitive project of the third and final part of the new Faculty of Veterinary Medicine in San Piero a Grado. At present the agreement is that the project will be reviewed only for new needs that could appear before the start of the construction[5].

The project (whose maps are included in Annex VI) foresees the construction of the following buildings:

1. a classroom-office building;
2. a practical teaching building;
3. the Department of *Animal Pathology, Prophylaxis and Food Hygiene*;
4. the Department of *Animal Production* and the Section of *Veterinary Physiology*;
5. a building with thirty equine boxes and with room enough to move there the treadmill currently located at the "*Le Querciole*" farm;

[5] The final project was approved when the Departments referring to the Faculty were four. After the closing down of the Department of *Veterinary Anatomy, Physiology and Biochemistry* the distribution of the premises among the remaining Departments must be reviewed based on the new situation.

6. a building with shelters for poultry;
7. a building with shelters for rabbits;
8. a shelter for small ruminants;
9. one hayloft;
10. the Centralised Laboratory Animal Centre;



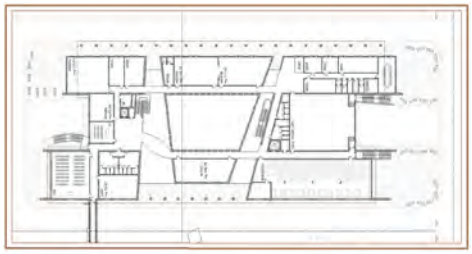
11. the student's canteen and the cafeteria;
12. the porter's desk and lodgement;
13. a technical building for reagents.
14. a technical building for gas bottles;
15. an open air area for poultry and other birds aviaries.

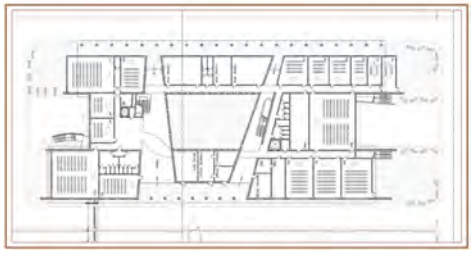
The estimated global cost for this third part of the project is around 32 million euro. To partially fund this operation, the Administration of the University of Pisa has already decided to sell the buildings of the old premises of the Faculty, in this way obtaining around 12-14 million euro from the sale of these buildings.

1. The Teaching Pole

The Classroom-office building will host:

- the Dean's office;
- all the Faculty's offices for the administrative, teaching and technical services;
- the Faculty Library;
- the Museum of Veterinary Anatomy;
- 20 lecture halls, with a total of 1,323 places, distributed as follows:
  - 5 lectures halls with more than 100 places each (with a total of 764 places);
  - 4 lectures halls with 50-99 places each (with a total of 284 places);
  - 4 lectures halls with 25-50 places each (with a total of 142 places);
  - 7 lectures halls with less than 25 places each (with a total of 133 places)
- 2 Computers rooms with 120 places (80+40);
- a Chemistry laboratory with 40 places;
- a Microscopy laboratory with 45 places;
- a Microbiology laboratory with 45 places;
- 3 study rooms for the students with 180 places;
- premises for services.





2. The practical teaching building

This building will host all the teaching activities which need to use animals and animal material. In particular:

- a necropsy room, with 6 necropsy tables small animals and 2 for large animals, which can host a total of approximately 40 students; the room will be provided with a tackle to move large animals;
- an anatomy dissection room, with 9 dissection tables for around 50 students;
- two walk-in freezers;
- a small slaughterhouse for poultry and rabbits;

- an incubation room;
- a laboratory for feed analysis;
- premises for services.

Furthermore, the construction of a feed factory and a new dairy farm near the University Farm (2.5 km far from the new premises of the Faculty) is also part of the building plan; in fact these structures could be very useful not only from the teaching point of view, but also to reduce the costs for feed and to raise the value of the milk produced by the University Farm. It is expected that the management of these two facilities will require the involvement of subjects external to the Faculty. In fact the Natural Park as well as the local breeders association should be interested in participating.

On the other hand, because of the constraints imposed by the Natural Park, the plan for the construction of a small teaching slaughterhouse for ovine and bovines has not been approved.

3. The Department of Animal Pathology, Prophylaxis and Food Hygiene

In the Department of *Animal Pathology, Prophylaxis and Food Hygiene* there will be:

- 31 offices with a total of 46 places, distributed as follows:
  - 16 for only one person;
  - 15 for two persons;
- a meeting room;
- 26 laboratories, distributed as follows:
  - a Bacteriology laboratory;
  - two Biotechnology laboratories;
  - two Chemistry laboratories;
  - two Food Microbiology laboratories;
  - an Infectious Diseases laboratory;
  - two Molecular Biology laboratories;
  - a Parasitology laboratory;
  - a Pathology laboratory;
  - a Virology laboratory;
  - a Third Class laboratory;
  - other 12 laboratories;
- a room for freezers;
- premises for services.

4. The Department of Animal Production and the Section of Veterinary Physiology

In the Department of *Animal Production* and in the Section of *Veterinary Physiology* there will be:

- 49 offices with a total of 53 places, distributed as follows:
  - 45 for only one person;
  - 4 for two persons;
- three small meeting rooms;
- 17 laboratories, distributed as follows:
  - two biochemistry laboratories;
  - a meat analysis laboratory;
  - a milk analysis laboratory;
  - a molecular biology laboratory;
  - four physiology laboratories;

- other 8 laboratories;
- a room for freezers;
- premises for services.

5. The other buildings for animals

In the buildings for animals there will be:

- 30 boxes for horses;
- a room for the treadmill;
- a large open air area (around 8,800 square meters) for paddocks;
- a building with shelters for poultry;
- a building with shelters for rabbits;
- a shelter for sheep;
- an open air area with aviaries for poultry, ducks, pheasants and other birds (around 1,360 square meters);
- premises for support.

6.2. Additional comments

a. The disadvantages of a fragmented Faculty

The FVMP has the absolute necessity to complete as soon as possible the new premises in San Piero a Grado. In fact the Faculty has the full consciousness that the separation of the faculty in two locations can not be tolerated for a long time: the clinicians in San Piero a Grado and the other components of the Faculty in Pisa, both completely autonomous in their structures. The only opportunity for all staff to meet should be the formal meetings of the Councils of the Faculty and of the Degree Course. In the long run this situation could lead to a substantial fragmentation between these two "souls" of the Faculty. The FVMP cannot accept this risk.

b. Efforts to reduce the disadvantages of the students in reaching and staying in San Piero a Grado

Even if the connections with San Piero a Grado will certainly improve when the transfer of all the Faculty will be complete, the FVMP must make a bigger effort to improve the timetable of the buses. From the 2009-10, the Faculty is studying how to better fit in the starting and ending time of lessons with the buses timetable.

It is also important to reduce the discomfort students experience by not being able to purchase meals nearby. The problem is not easily solved. The only short term (partial) solution which could slightly improve the situation, could be the installation of a vending machine for some kinds of fresh foods

c. Adequacy of the buildings in general for undergraduate teaching

In San Piero a Grado the buildings are very new, and they appear to be adequate for practical teaching, even if the two halls for theoretical teaching are really very small. Anyway a full improvement of seats will be possible when the third part of the Faculty will be built.

In Pisa the building are substantially adequate, especially from the point of view of the teaching halls and of the available equipment. The situation of the laboratories is less satisfying as these have been built fifty years ago for a much smaller number of students. Subsequent adaptations certainly improved the situation, but never in an efficient and definite way. Furthermore, any adaptation is seen as provisional, as we wait for the move to San Piero.

d. Adequacy of the equipment in general for undergraduate teaching

The quality of the equipment used for clinical activities and practical teaching in San Piero a Grado is substantially adequate for undergraduate teaching, although specialised equipment must be

improved.

In the premises in downtown Pisa the FVMP in these last years made relevant efforts to bring all the equipment in support of teaching up to current standards. At present they could be considered substantially adequate. The problem will be their maintenance (see the following point).

e. Maintenance of buildings and equipment

Buildings in San Piero a Grado are very new and they will not need structural maintenance for a certain number of years. Anyway, the cleaning and repairing of the animal facilities, as well as the maintenance of the large green areas (around 7,100 square metres) all around the Department, are under the responsibility (and under the budget…) of the Dept. of *Veterinary Clinics*. Furthermore, in order to contain costs, the personnel required to manage and to maintain structures and instruments is kept to the minimum level required.

Part of the equipment of the Department of *Veterinary Clinics* is rather old or rapidly going out of date, and it would be desirable to replace it. The purchase of new instruments is very difficult due to the lack of funds. In particular the Department of *Veterinary Clinics* (or, in the next future, the Veterinary Teaching Hospital) has an urgent need to finance either the repair of the Computer Assisted Tomography and the Computer Assisted Sperm Analyser or the purchase of two new units.

In the same way the equipment in the premises in Pisa is beginning to need maintenance, and the problem of its maintenance is starting to appear evident. In the near future the FVMP will have to spend a relevant part of its budget to maintain the functionality of this equipment.

6.3. Suggestions

More funds are necessary to upgrade the existing equipment located in the Clinics and laboratories and to buy new equipment for teaching. We are always looking for support from private companies with which to establish special agreements for the use in our premises of current instruments for basic or advanced veterinary laboratory services. For instance, our clinical chemistry and haematology laboratory is using a few devices obtained at special conditions from the Company marketing them.

The researchers of the different scientific areas and particularly those of the Clinics have to try to develop new research projects, particularly international ones, to retrieve the necessary funding to further upgrade the existing equipment, which can also be used for teaching activities, particularly utilizing the numerous cooperation links between the FVMP and other Universities.

Another important point is the need to increase the number of teaching and support staff in the future in order to optimise the use of the new facilities in the Veterinary Teaching Hospital.

6.4. Annotations

Chapter 7 – ANIMALS AND TEACHING MATERIAL OF ANIMAL ORIGIN

7.1. Factual information and comments

7.1.0. Introduction

The article n. 8 of the national law n. 116/1992 about the protection of animals used for experimental or scientific purposes (in application of the EU Directive n. 609/1986), establishes that "*…the National Ministry of Health authorises experiments for teaching purposes only in case of absolute need and whenever it is not possible to utilise other demonstrative systems*". The University of Pisa, by means of its Animal Ethical Committee, decided to not authorise these kinds of experiments, opting for the use of alternative methods in teaching[6].

The Faculty of Veterinary Medicine followed the University approach. Therefore, experiments with animals for teaching purposes are not performed in its courses. Healthy animals are either only showed to students; when handled animals are never in a suffering/stressed condition. Any kind of veterinary treatment is performed only on sick animals, and it is finalised only to cure and improve their health. These cases are also used for teaching purposes.

7.1.1. Anatomy

For the practical training in anatomy fresh and stored material is generally used.

a. Fresh material

Cadavers, carcasses and organs are either obtained from slaughterhouses located nearby the Faculty or from animals submitted to the Department of *Animal Pathology, Prophylaxis and Food Hygiene* for necropsies. To avoid post-mortem modifications, the material obtained from slaughterhouses is promptly showed to the students.

It must be highlighted that it is impossible to obtain some organs of the digestive and nervous systems from ruminants, as they must be destroyed to avoid any risk of degenerative illnesses of the nervous system (BSE and Scrapie). Also, teaching material from equines is not easy to obtain because slaughtering of this species is not very common in the area around Pisa and the number of horses is always very limited. For these reasons fresh material used for practical training in macroscopic anatomy includes viscera from swine, ovine and bovine (for the organs not at risk), chicken and fish. Occasionally cadavers of pets come from the Department of *Veterinary Clinics* for necropsy examinations.

Table 7.1.1 shows an analytical report, for each specie, of the number of cadavers, carcasses and organs used in each of the last two academic years. As it is possible to see, the amount of practical works in Anatomy is fairly standardised through the years.

[6] In the early fall 2009, the Ministry of Health asked the Rector of the University of Pisa to explain the rumours of a non authorised use of animals in a teaching course in the Faculty of Natural Sciences.

Table 7.1.1 – Animal material used for Anatomy practical training

	Pigs		Sheep		Cows		Chickens		Fishes	
	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007
Cadavers	15	13					14	15	30	30
Carcasses			10	10						
Heads	14	13			6	5				
Livers	14	12	14	15						
Lungs	14	14	14	13						
Kidneys	14	16	15	15						
Spleens	20	19	22	20						
Heart	20	20	22	20						
Stomachs	15	14	12	12						
Pre-stomachs			12	10						
Gut	14	13								

Dogs are only occasionally dissected (1-2 per year) because they are usually affected by some pathology and almost always already utilised for practical works in Pathology.

b. Stored material

Skeletons and bones of horses and other domestic animals are available to study osteology, arthrology and sindesmology (there are 12 whole series of horse bones). An atlas obtained with images of the same bones, prepared by the anatomy teachers, is available on our website: *http://clara.vet.unipi.it*

Animal material is also used to prepare histological slides for practical training. In the microscopy room there are 20 whole series of slides obtained from viscera and tissues that students can examine by themselves or under teacher supervision during the academic year.

Since 2008-09 academic year, even if the slides of histological images have been computerised and therefore available on line, each student must demonstrate to have attended the microscopy room for 30 hours of:

- Histology: 9 hours;
- Systematic and Compared Anatomy I: 9 hours;
- Systematic and Compared Anatomy II: 12 hours.

Animals, skeletons and organs are showed in the Museum of Veterinary Anatomy (see paragraph 6.1.2.2 and Annex IV). They are dried or formalin fixed and stored in alcohol. Furthermore, a number of *phantoms* of the main domestic animals are also available in the Museum. These animal models are made of plastic material, and can be disassembled. This peculiarity is very important to allow the student to better understand organ topography of the splanchnic cavities.

Teachers show the training aids of the Museum of Veterinary Anatomy during theoretical lesson. Students can examine the material of the Museum during the academic year under the supervision of a teacher.

7.1.2 Physiology

The practical work in Physiology consists in practical sessions where students can acquire competences about the main organs and apparatuses whose physiology has already been described during the theoretical lessons.

1. Examination of ocular fundus in dog and rabbit

After a brief revision of the eye's anatomy and physiology, and of the importance of vision in different animal species, each student is invited to perform an eye exam with a direct ophthalmoscope. Subjects are dogs and white rabbits. The retina, the choroids and the sclera are evaluated, and the ocular fundus is observed. Some reflexes on the eye are checked. During the same practical work students are informed about how to correctly approach and restrain a dog.

2. Practical work with animal samples

a. Semen: fresh rabbit semen evaluation: spermatozoa concentration, motility, morphology. Students assist the collection of semen from rabbits by artificial vagina. Then they:
- perform evaluation of spermatozoa concentration by Thoma-Zeiss and Makler camera;
- evaluate motility of spermatozoa and morphology, after fixation on slides, with an optic microscope;
- evaluate the integrity of sperm membrane by eosin-nigrosin stain, Hypo-Osmotic-Swelling test (HOS test).

b. Milk: students perform an evaluation of the titratable acidity (NaOH and Phenolphthalein), pH, total proteins (Steinegger), lactose (Benedict reactive).

c. Urine: students evaluate urine density (refractometer), pH (litmus paper), semi quantitative testing of the urine with multiparameter strips, microscope exam of the sediment.

d. Blood: evaluation of the red and white blood cells concentration by using the Thoma-Zeiss' camera; preparation, coloration and reading of a blood smear slide (dog, rabbit, sheep, poultry) to identify the leukocyte formula; determination of the haematocrit with micromethod; determination of the erythrocyte sedimentation rate; evaluation of the average globular volume; reading of the blood pressure with a sphygmomanometer (on human).

3. Ethology

Audiovisual aids are used and the whole class is involved in.

a. Dog:
- students observe and perform the technique of how to approach a dog correctly: during the practice session they are taught how to get close to an unknown dog avoiding actions which may lead to undesirable reactions by the dog;
- students learn the essentials of dog training: how to teach a dog basic commands;
- preventive behavioural medicine: how to give owners advice on how to obtain a balanced behavioural development of puppies; importance of socialisation and habituation.

b. Horse:
- outline the ethological training of horses.

7.1.3. Pathology

Table 7.1.3 shows the number of necropsies made over the past three years by the teachers of the Department of *Animal Pathology, Prophylaxis and Food Hygiene* both inside the Faculty (the major part) and outside.

Practical training of necropsy techniques is performed on carcasses of companion animals collected from the Department *of Veterinary Clinics* and from private veterinary clinics of the neighbouring Provinces of Tuscany (Pisa, Livorno, Lucca, Pistoia, Massa Carrara, and Florence,

20-80 km far from Pisa). Wild animals, such as hares, foxes, wild boars, and wild ruminants are also examined and students are involved in following practical activities on these species. Work on these animals is followed by a multidisciplinary approach which involves many sections of the Department of *Animal Pathology, Prophylaxis and Food Hygiene* in order to perform parasitological, bacteriological and virological investigations on samples.

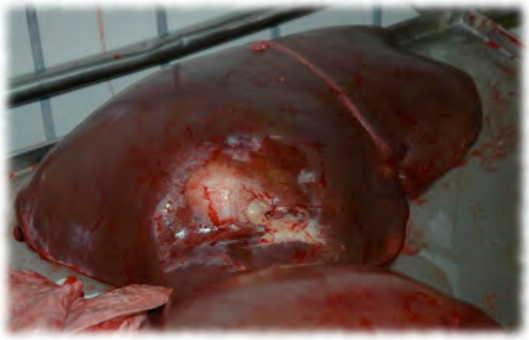
Table 7.1.3 – Number of necropsies over the past three years

Species		Number of necropsies			Average
		2008	2007	2006	
Food-producing animals	cattle	3	3	4	39.0
	small ruminants	36	26	6	
	pigs	17	14	8	
	other farm animals				
Poultry		150	153	158	165.3
Rabbits		12	12	11	
Equine		12	10	11	11.0
Companion animals birds and exotic animals	dogs	203	178	128	
	cats	127	110	75	273.7
	birds	217	151	17	128.3
	foxes	120	140	180	
	other wild animals (1)	50	62	85	221.3
	exotic animals (2)	5	6	6	
	fishes	6	4		
Viscera analysed by the students (kg)		1,910	1,850	1,880	1,880.0

(1) Badgers, one deer, hares, mouflons, nutrias, porcupines, roes, wild boars.
(2) Alpacas, chameleons, one ferret, one leopard, iguanas, one kangaroo, one lion, monkeys, one turtle.

Students are also encouraged to follow the diagnostic work on sick animals presented for clinical exams at the Clinics of the FMVP, which eventually die or are euthanised upon owner's request and then submitted to post-mortem examination. In equine neonatology, the collaboration between equine clinicians and pathologists is well appreciated by the students, who are required to record the post-mortem examination by taking pictures and write a draft of the post-mortem report.

Anatomopathological training is also performed on pathological organs of food production animals collected from regional slaughterhouses. Approximately 2,000 kg of pathological organs are obtained every year for practical training, as well as for the examination sessions. Collected organs include lungs, heart, thyroid, liver, kidneys, spleen, and occasionally intestine, tongue, skin and mammary glands of different species such as cattle, sheep, pig, horse and goat.



The most significant and representative samples of diseased organs are also preserved by use of reduced concentrations of formalin fixative (Klotz solution). By this procedure, training students can safely handle and study specimens not routinely encountered during their training period. All the collected material is also used for preparation of histological slides for the laboratory work of students. The histological slides are stored in a histology slide collection available to students for consultation. According to the teaching tradition

of our school, it is our opinion that the student training with pathological organs deriving from local slaughterhouses is extremely useful so as to learn to recognise the different diseases which can occur in food production animals.

As already shown in paragraph 6.1.10, the amount of animal waste disposed of by the Department of *Animal Pathology, Prophylaxis and Food Hygiene* is fairly constant thought the years as shown in table 6.1.10 for the period 2006-2008. It is important to notice that there has been a steep increase in the price (already high) of the cadaver disposal: +15.48% in the last year. For this reason, especially in the case of small animals (and in particular dogs) many clients prefer to dispose of the cadaver by themselves.

Table 6.1.10 – Animal waste disposed of in the period 2006-2008

	Quantity (kg)	Expenses (euro)	Average price (euro/kg)
2006	7,408	9,156.29	1.24 euro/kg
2007	7,298	9,088.73	1.25 euro/kg
2008	7,411	10,657.98	1.44 euro/kg
Average	7,372	9,634.33	

7.1.4. Animal Production

Students perform practical training regarding morphological evaluation, nutrition, breeding and genetics, on live animals coming from the University Farm, the Department of *Animal Production* farm and from private farms willing to receive students for practical training in accordance with the Faculty conditions. All these farms are located in the countryside in the surroundings of Pisa.

Students can perform practical training in Animal Husbandry at the following University sites:

1. the University Farm, with 144 *Holstein Friesian* dairy cows and 130 *Pisana* cattle (98 cows, 2 bulls and 30 fattening calves), an endangered local breed for beef production which is currently being saved from extinction by a regional conservation programme;
2. the poultry farm of the Dept. of *Animal Production*, located in the area of "*Le Querciole*", where 300 chickens, 100 ducks and few other poultry species (one family of geese, guinea-fowls, turkeys and pheasants) are reared in an extensive system. Students come to this farm where they perform practical work supervised by the poultry course teacher. The practical lesson comprises the following.

   - Students are familiarised on how to catch and handle a live bird that can have a nervous or calm temperament. For this purpose each student handles a different bird (a chicken, a guinea-fowl, a pheasant, a Muscovy duck, a Mallard duck and a goose). At the same time students see and touch the live bird the different kind of feathers and observe the particular morphological characteristics of each species and gender. They also realise how heavy or light a bird can be. For some student it is the first time they see a live guinea-fowl or a pheasant.
   - Students are shown and perform the dorso-abdominal massage to collect poultry semen for artificial insemination. They also try the insemination technique.
   - The different breeds of poultry housed in the poultry farm are shown to the students. They learn how to recognise a female or a male, an egg producing breed or a dual

purpose breed, the particularities of each breed, how a healthy bird looks like and how it behaves.

- The incubation and hatching process is also shown to the students. The critical steps and the parameters that must be kept under control to obtain a successful hatch are highlighted. Students also perform the egg candling at two different stages of incubation and learn how to recognise eggs from different species.

3. On the same premises, 180 rabbits, including 20 does, are reared for teaching and research purposes.
4. In the same Department, at "*Le Querciole*" building, four horses are utilised for treadmill test practise. Here the racehorses are tested, mainly for detections of poor performances and to check nutritional condition. These studies are performed by the Department of *Animal Production*, in cooperation with the Department of *Veterinary Clinics* and with the Section of *Veterinary Physiology*.

The most important <u>private farms</u> for student practical training in Animal Husbandry are the following:

1. *Stassano farm* (approximately 50 km from the FVMP: a one hour trip), occupies about 400 ha, has a closed intensive breeding cycle with 500-600 sows. They produce heavy pig for the Parma DOP (protected trade name) Consortium and for an important supermarket chain;
2. *Torre a Cenaia farm* (approximately 20 km from the FVMP: a 30-minute trip), which covers an area of 500 ha; here 18,000 pigs are reared every year for fattening. They are all entirely destined to the Parma DOP Consortium. The nursery is located in Brescia (a town in Northern Italy, 250 km from Pisa) where the piglets remain for the first 3 months, after which they are moved to the *Torre a Cenaia farm* where they are raised for the following 6 months. These pigs are of rigorously certified Italian origin and are raised according to Parma Quality Institute rules. In the farm there is a biogas centre which is fed by a mixture of compost from agricultural cultivation together with compost from pigs, which annually produces up to 8 million kilowatts with zero carbon dioxide emission;
3. *Brunella Pulidori's farm* (approximately 35 km from the FVMP: a 40-minute trip) is an outdoor *Cinta Senese* farm. *Cinta Senese* is a local swine endangered breed. The herd, located on an hilly area of 11 ha, has a population of six productive sows. The sows are kept in separate pens inside a large area. The piglets are weaned at about 65 days of age. The pigs are slaughtered at 120-150 kg at the age of 18-24 months. The number of pigs slaughtered per year is approximately 50, with variations accordingly with market requests. The farm started biological farming as per the CEE Regulation 1804/99 and makes its own *salami* and ham applying traditional procedures.
4. *Mr. Ricchi's poultry farm* (30 km far from FVMP), where Isa-Brown Warren laying hens are reared under an intensive system in 3 high-rise layer houses. These houses are approximately 150 metres long and may contain as many as 90,000 laying hens. Hens are housed on slanted wire-mesh floors. Nipple drinkers serve as the hen's source of water and the feed is transported through the house via an auger system in feeders. As the eggs reach the end of

each level, automatic collectors place the eggs into plastic egg handlers. Plastic egg handlers which carry the eggs directly to the egg processing facility via a large overhead belt (around 100,000 eggs/week). Then eggs are graded and packaged to be sold as fresh product (*Ovoricchi* label). Discarded eggs are pasteurised to produce egg products: liquid refrigerated yolk egg, albumen egg and whole egg. A machine cracks the egg shells and separates the yolk from the albumen. This machine will process 18,000 eggs per hour.

5. *Mr. Pampaloni's rabbit farm* (35 km far from FVMP), where 400 does and 15 males are reared and give birth to about 1,500 rabbits per month for meat production. Assisted reproduction is adopted and artificial inseminations are performed 4 times a week on 25 females each time. The farm has a small slaughterhouse where three-month old rabbits weighing 2.5-2.7 kg are processed. In this farm students observe and sometimes perform, together with the farmer, artificial insemination techniques and learn the management of a rabbit farm.
6. *Mr. Ori's farm* is inside the area of the University Farm, approximately 12 km from the FVMP: a 20-minute trip. Here 1,200 sheep are reared for milk production and feed off the pasture area (inside the Regional Natural Park of "*Migliarino, San Rossore, Massaciuccoli*") during the morning, and are housed in the sheepfold in the evening. The sheepfold is subdivided in these sectors:
   - where sheep stay during the night and where they receive hay;
   - where lambs are reared until the slaughter age (30 days); in this area sheep stay with their lambs only for one week after the birth, then they go to the pasture in the morning and stay with the lambs only during the night;
   - with the milking machine where sheep are milked two times per day;
   - where milk is collected in a refrigerated tank.

   In this farm students can observe the rearing system of sheep and lambs, observing the lambs' morphology and their growth rate, in the meat production perspective. During milking, students handle udders to evaluate their morphology, and verify the milking process and the different milk emission phases.
7. *Mr. Salvadori's farm* (approximately 11 km from the FVMP: a 20-minute trip), is a 300 hectares organic farm inside the Regional Natural Park of "*Migliarino, San Rossore, Massaciuccoli*", where 100 beef cows are reared. Two-thirds of the land are grassland for grazing and one-third is used to grow cereals and beans for fodder. In 2002, after a period of conversion, the farm became entirely organic and certified by the "*ICEA TOSCANA*" inspection label. The farm rears 100 cows and 3 bulls of Limousine beef cattle, and a group of *Pisana* cattle. The rearing system is the so-called "*cow-calf line technique*": Limousine and *Pisana* cattle born inside the farm are fed organically and live outdoor. The farm is constantly monitored by the local breeders association. Beef is processed in the farm's butchery: a shop was opened inside the farm in 2001, where beef carrying the "Pisa's Bovine Meat" quality denomination is sold. The beef is vacuum-packaged in individual portions and family-size packs. The farm is subdivided in three sectors:
   - sector where cows stay during the night or during the rain, and where they receive hay and *total mixed ration*;
   - sector where cows are reared in the pre-partum period and during the post-partum period, for 1-2 weeks, with their calves;
   - sector where calves are reared after weaning until the slaughter age: this sector is subdivided in boxes with an open air area.

   In this farm students can observe the organic rearing system of cows and calves and:

- they have to describe beef cattle conformation, perform the morpho-functional assessment of cows and evaluate the fattening status of veal and their suitability for slaughtering;
- they have to consider the cows groups and their reproductive management: number of females per bull, age at the first parturition, time between two parturitions, etc.;
- they can monitor the calves in the early days after birth to notice the maternal capacity and the likelihood to receive enough milk;
- students participate when weaned calves are transferred to the fattening boxes.

8. *Razza Latina stud*: a private horse breeding stud located near San Rossore (approximately 5 km from the FVMP: a 15-minute trip). This is a farm with stallions, mares and adult thoroughbred usually utilised in horse races. All horses may pasture in the factory's green fields. In this stud every year a group of 30-40 selected yearlings are attended and evaluated for morphological correct growth and adequate nutrition. At the end of the period (about 10 months) the selected yearlings are forwarded at the yearlings qualified international sales. Here students can observe foals morphological growth and possible pathologies sometimes due to lack of minerals or vitamins. They consider different feed levels and suggest (after a complete evaluation with the teachers) adequate feed integrations during the different growth periods. They also verify quality and quantity of hays and grazing pasture in springtime.

9. *I Mandorli horse breeding*: located near the little town of Pontedera (approximately 50 km from the FVMP: a one hour trip). This is a private thoroughbred horse breeding and fecundation centre for crossbreds and trotters (with which in Italy it is possible to practice artificial insemination). Here students can find more than 50 thoroughbred mares. They can observe and control all pregnancy periods and moreover control the monitored delivery. They can verify period of forecast delivery, difficulties during pregnancy, time of pregnancy, health of newborn and mare, vigour and energy of the foal. Usually they can observe passive immune transfer evolution and control eventual failure of passive transfer by the use of colostrum densimeter. In this period they can also observe the preparation of a colostrum bank by collection of short amounts of selected colostrum from all mares immediately after delivery. Finally they can verify the genetic criteria of crossbreeding selection and fecundation.

7.1.5. Food Hygiene / Public Health

7.1.5.1. Food Hygiene

Practical training in Food Hygiene includes the use of animals and material of animal origin. However, due to the characteristics of this practical training, it is quite difficult to quantify the number of animals or the weight of the animal origin material examined by the students.

Practical training closely connected with the teaching activities: students attend a field activity

at each slaughterhouse (bovine, swine, poultry), divided in groups (maximum 12). They experience the ante-mortem and post-mortem visit on all the daily slaughtered animals and related organs and carcasses: this means about 50 bovines, 200 swine and 1,000 or more poultry.

During the activity at the fish market students experience inspection and surveillance on hundreds of kilograms of different species of fish and fish products. During the activity at the processing plants (cutting and processing meat and fish plants, milk processing plants, cheese factories) students can examine large amount of raw materials, intermediate and processed/final products.

Practical extra-mural training: the student, according to their work programme, which is undersigned by the internal and external tutors, do their practical training working under the supervision of the Official Vet in the food plants controlled by the Local Sanitary Units (LSU: the local section of the National Health System). Depending on the type of food plants controlled by the LSU and on the work programme, each student performs practical activity with different numbers and species of animals or quantity of animal origin material: it is difficult to quantify the number of animals and animal material that the students come in contact with during 63 hours of this activity.

7.1.5.2. Public Health

The handling of animals in the practical training of Veterinary Public Health includes visits to the public kennel and other training activities in external institutions, including Experimental Zooprophylactic Institutes (IZS) or local offices and laboratories of the National Veterinary Service.

- Public kennel: groups of students (maximum 25 students per group), accompanied by the teacher, visit the public kennel of the Municipality of Pisa where they meet the veterinarians of the Public Veterinary Services who guide them through and discuss major issues concerning the management of the kennel and of captured free-roaming stray dogs and cats. Students are invited to discuss the management and activities of the public kennel, and the other activities concerning urban veterinary hygiene.
- Laboratories and activities at IZS or at Agencies of the National Veterinary Service: the students guided by the veterinarians of the National Service, carry out activities involving animals and sample collection (e.g. vaccinations and blood sampling according to infectious disease prophylaxis programmes); Veterinary Public Health activities such as urban veterinary hygiene).

7.1.6. Consultation and patient flow services

7.1.6.1. Consultation

The clinics are open for 49 weeks during the course of the year, Monday through Friday. Consultation hours are Monday through Thursday from 8.30 am to 5.00 pm, and Friday from 8.30 to 14.00 in San Piero a Grado, while in Pisa consultation hours are Monday through Friday 8.30 to 14.00. Patient's consultations are scheduled by appointment but, during consultation hours, emergency care is also provided. In San Piero a Grado the services of surgery, reproduction, internal medicine, diagnostic imaging and the laboratory of clinical chemistry are functioning routinely, while at the old premises in Pisa only small animals internal medicine consultations are being done, while awaiting the relocation in the new facilities in San Piero a Grado.

7.1.6.2. Patient flow

The number of animals visited at the Faculty for all disciplines combined (medicine, surgery, reproduction, etc.) is summarised in Table 7.1.6.2.a.

Table 7.1.6.2.b reports the number of animals (milk and beef cattle) available at the University Farm in the past three years.

Table 7.1.6.2.a – Number of cases: a. received for consultation; b. hospitalised in the Faculty clinics, in the past three years

Species		Number of cases						Average of each		Global average (a) (1)
		2008		2007		2006				
		a. Received for consultation	b. Hospitalised in Faculty	a. Received for consultation	b. Hospitalised in Faculty	a. Received for consultation	b. Hospitalised in Faculty	a. Received for Consultation	b. Hospitalised in Faculty	
Food producing animals	Bovine (2)	33+0		34+1		29+1		33.7		33.7
	Ovine, caprine	1		1		1				
	Porcine									
	Other farm animals									
Poultry								1.0		1.0
Rabbits				3						
Horses		243	99	164	80	301	90	248.7	102.3	248.7
Donkeys		12	12	11	11	15	15			
Companion animals and exotics	Canine	3,201		4,218		3,683		4,529.0		4,529.0
	Feline	931		832		716				
	Ferrets			1						
	Tortoises			1		1				
	Ostrich			1						
	Skunk			1						
	Chinchilla			1						

(1) Since all hospitalised animals are anyway visited, they are also counted as "received for consultation".
(2) The first number refers to the bovines seen at the University Farm; the second one to the bovines seen at the Department of *Veterinary Clinics*.

Table 7.1.6.2.b – Number of animals available at the University Farm in the past three years

	2008	2007	2006	Average	Sept. 2009 (1)
Animals available at the University Farm	262	239	214	238.3	144+130

(1) The first number refers to the milk cows; the second one to the beef cattle (inventories at December 31st).

7.1.7. Vehicles for animal transport

The Faculty, at the moment, does not have a vehicle for transportation of healthy or sick animals. Until the year 2006 the FVMP owned a 20-year old truck which was used for transporting farm animals and equines, but when it broke down again it was impossible to repair it due to the high cost as well as the worsening financial problems of the Faculty.

In absence of a Department or Faculty trailer or van, transport of horses to and from the Department of *Veterinary Clinics* are organised as follows:

1. private horses are transported by the owners;
2. horses and donkeys belonging to public organisations (*Institute of Equine Improvement*, *San Rossore Farm*, *State Forestry Corp*) are transported by a big van owned by Institute of Equine Improvement;
3. two contracts have been stipulated with private professional transporters for transportation of horses belonging to the Department or private horses transported for teaching purposes. This transport is quite common for teaching activities.

7.1.8. On call emergency service

The emergency service is structured as follows:

1. *equine* patients (mainly for dystocia and foaling), usually referred by colleagues, can be admitted 24 hours a day by contacting the mobile telephone number of the member of teaching staff on duty.

2. *small animals* emergency service is provided during consultations hours. The implementation of a 24-hr emergency small animal service has been hampered so far by administrative problems posed by the University (whose bureaucrats do not accept that PhD students could be given the responsibility of running University premises by themselves at night) as well as by the fear of negatively affecting the good relations that the Faculty has with local practitioners some of which also offer 24-hr emergency small animal service and who would dislike competition from the Faculty.

7.1.9. On farm teaching and outside patient care

7.1.9.1. Mobile clinic

A mobile clinic is not currently available. If consultations from local farms are requested, teaching staff and some students use their own vehicles. It is not the politics of the Department of *Veterinary Clinics* to perform clinical activity outside the Faculty area. In Italy, the number of professional veterinarians is very high in comparison with the animal population; in Tuscany, where the number of farm animals is very low, the presence of on-farm service by the clinicians of the FVMP is seen by the private surgeons as unfair competition. Damaging the relations between external veterinarians and the Faculty could compromise the availability of clinical cases referred by the professionals Vets to the surgeries of the Faculty.

When there is either an emergency or a particular situation in the cattleshed of the University Farm, some students accompany the teacher of the Faculty or the professional Veterinarian who is called to solve the problem.

7.1.9.2. Other on farm services and outside teaching

For clinical training purposes students have access to several external facilities, belonging either to the University of Pisa, the Region of Tuscany or private subjects. At the University Farm (see paragraph 6.1.6) students of the fourth and fifth year, divided in small groups, learn how to palpate and inseminate cows, provide assistance when cows calve and learn how to perform clinical examinations of healthy and sick animals, always supervised by the Faculty teaching staff or by the farm veterinarian.

The *San Rossore Farm* (in the past owned by the President of the Italian Republic and now transferred to the Tuscany Region and managed by the Park of "*Migliarino, San Rossore, Massaciuccoli*"), houses the Regional Institute for Equine Improvement. In its stud about 40 stallions and 10 Donkey Jacks are housed during winter, whilst during the breeding season the number is reduced to about 20 animals, part of which are used for chilled semen production. This facility is about 14 km from the Department of *Veterinary Clinics* and is recognised by the Region of Tuscany as an official centre for cooled and frozen equine semen production; this activity is performed in close cooperation with, and under the supervision of the Department's staff. All students, divided in small groups, have the possibility to collect and evaluate a semen sample and learn how to prepare an insemination dose.

Furthermore, the Faculty has an agreement with a private equine breeding centre (*La Piaggia*, in the town of Staffoli, approximately 32 km from the FVMP: a 50-minute trip) where there are 80-100 mares foaling and about 150 mares being inseminated every year. In this farm students may spend the night in order to assist parturition, assess foal health and, in the morning, participate to all the activities, such as clinical examinations of mares and foals, therapy to the animals, oestrous cycle management, semen collection from the stallions and artificial insemination.

A longstanding relation and partnership exists between all the Italian Veterinary Faculties and the Veterinary Corps of the Italian Army (see paragraph 0.1.6). Every year, in June, the Veterinary Military Centre based near the town of Grosseto, 140 km south of Pisa (an one hour and 50-minute trip), organises a 2-week campus, offering to a number of students of all the Italian Faculties (between 4 and 8 students per each Faculty) the chance to attend all the equine activities and do

some supervised equine practice in this Centre.

The number of patients seen by the students on outside teaching during the past three years is shown in table 7.1.9.2.

Table 7.1.9.2 – Number of patients seen on outside teaching in the past three years.

Species		Number of patients			Average
		2008	2007	2006	
Food-producing animals	cattle				0.7
	small ruminants			2	
	pigs				
	other farm animals				
Poultry	n. of flocks	1	3	3	2.7
Rabbits	n. production units			1	
Equine		101	98	102	100.3

7.1.10. Other information

The following agreements for partnerships in managing animals have been signed with public and private subjects.

1. The Regional (Tuscany) Association of the Guide-Dogs for Blinds

Students are involved in performing clinical examinations on the dogs, with the goal to exclude from the training animals with orthopaedic or ophthalmologic diseases. In particular students have the possibility to perform on animals a complete orthopaedic exam, to participate to anaesthesia and to evaluate radiographic films for hip and elbow dysplasia. With regard to ophthalmic examinations students perform a basic visit and suggest the differential diagnosis and then assist the clinical staff in their final evaluation.

Students are especially encouraged to do the Schirmer tear test, the basic neuro-ophthalmic examination and the assessment of the adnexa and the eye with a direct ophthalmoscope and a Finoff transilluminator (Finoff transilluminator and a 30 D lens are also used for fundus evaluation).

2. The Local Fire Brigade

The Veterinary Faculty of Pisa has entered into an agreement with the Regional Command of the Fire Brigade of Pisa, which involves rescue assistance by dogs engaged in civil protection and emergency relief action (search and rescue operations for missing persons trapped under debris or on the surface). Students take part in the routine clinical tests performed on the animals (prophylactic vaccination and treatment against parasites) and in surgical procedures that may become necessary in the case of pathologies arising during the dogs' working activities. Students can participate, on a voluntary basis, in the dog training activities undertaken at the Command of the Fire Brigade in Pisa.

In the framework of this agreement, the Command has set up a large debris-strewn plot on a piece of land owned by the Command itself and located adjacent to the Faculty, where dogs can be trained by simulations of search and rescue operations in a wide variety of environmental conditions.

Students are involved in performing clinical examinations as well as in assisting faculty staff when a consultation about clinical examination of performance of some of these animals is requested, and also whenever clinical assistance on working dogs is needed.

3. The Municipality of Pisa

In 2008 an agreement was signed with the Municipality of Pisa and with the Local Sanitary Unit (the local section of the National Health System), on matters concerning urban hygiene. The

agreement provides for the establishment of an "Animal Affairs" Office at the Faculty; the activities of this Office are due to start in the forthcoming month of December. Students enrolled on the course of Veterinary Medicine or on the other Degree Courses of the Faculty will have the possibility of acquiring experience as front office operators, after attending a purpose-designed training course, to be activated in the forthcoming month of November.

The information to be supplied by the "Animal Affairs Office" operators will concern regulations pertaining to ownership of pets and other animals in the urban environment (canine registry, recognition of colonies of felines, etc.).

Students are also involved in the surgical control of reproduction of feline colonies (see paragraph 4.1.6.3 point b); currently the Department of *Veterinary Clinics* has the commitment by the Municipality to spay one hundred female cats before the end of the year.

4. The Italian Association for Bird Protection

Students are involved in the ophthalmologic evaluation of injured wild birds, especially birds of prey (since 2009). Students are encouraged to handle these particular animals and to perform a basic visit, focusing their attention not only on ophthalmic diseases but also on other pathologies that the birds could have. During the visits students get in touch with the staff of the local section of the Italian Association for Bird Protection and some of them decide to start to work as volunteers in the centre located in Livorno, a town close to Pisa.

7.1.11. Ratios

7.1.11.1. General Indicators about animals available for clinical education

The number of animals available for clinical education is synthesised in table 7.1.11.1. The relative ratios from R11 to R17 are reported below. The additional ratio R12bis has been calculated to also take into account the equine consultations performed outside the Faculty.

Table 7.1.11.1. – Synthesis of the data necessary to calculate the ratios from R11 to R17

Figure	Typology of data	Value
A	No. of students graduating annually (in the last five years)	87.8
B	No. of food producing animals seen at the FVMP	33.7
C	No. of individual food-animal consultations outside the Faculty	0.7
C1	No. of individual equine consultations outside the Faculty	100.3
D	No. of herd health	9
E	No. of equine cases	248.7
F	No. of poultry/rabbit cases (animals at "*Le Querciole*")	580
G	No. of companion animals seen at Faculty	4,529.0
H	No. of poultry (flocks) / rabbits (production units) seen	2.7

$$\textbf{R11:}\ \frac{\text{No. of students graduating annually (A)}}{\text{No. of food producing animals seen at the Faculty (B)}} = \frac{87.8}{33.7} = \frac{1}{0.38} \Rightarrow \textbf{Denominator: 0.38}$$

$$\textbf{R12:}\ \frac{\text{No. of students graduating annually (A)}}{\text{No. of individual food-animal consultations outside the Faculty (C)}} = \frac{87.8}{0.7} = \frac{1}{0.01} \Rightarrow \textbf{Denominator: 0.01}$$

$$\text{R12bis: } \frac{\text{No. of students graduating annually (A)}}{\text{No. of individual food-animal and equine consultations outside the Faculty (C+ C1)}} = \frac{87.8}{101.0} = \frac{1}{1.15} \Rightarrow \text{Denominator: } 1.15$$

$$\textbf{R13: } \frac{\text{No. of students graduating annually (A)}}{\text{No. of herd health (D)}} = \frac{87.8}{9} = \frac{1}{0.10} \Rightarrow \textbf{Denominator: 0.10}$$

$$\textbf{R14: } \frac{\text{No. of students graduating annually (A)}}{\text{No. of equine cases (E)}} = \frac{87.8}{248.7} = \frac{1}{2.83} \Rightarrow \textbf{Denominator: 2.83}$$

$$\textbf{R15: } \frac{\text{No. of students graduating annually (A)}}{\text{No. of poultry/rabbit cases (F)}} = \frac{87.8}{580} = \frac{1}{6.61} \Rightarrow \textbf{Denominator: 6.61}$$

$$\textbf{R16: } \frac{\text{No. of students graduating annually (A)}}{\text{No. of companion animals seen at Faculty (G)}} = \frac{87.8}{4{,}529.0} = \frac{1}{51.58} \Rightarrow \textbf{Denominator: 51.58}$$

$$\textbf{R17: } \frac{\text{No. of students graduating annually (A)}}{\text{No. of poultry (flocks) and rabbits (production units) seen (H)}} = \frac{87.8}{2.7} = \frac{1}{0.03} \Rightarrow \textbf{Denominator: 0.03}$$

7.1.11.2. General Indicators about necropsies available for clinical education

The number of necropsies available for clinical education is synthesised in table 7.1.10.2. The relative ratios R18, R19 and R20 are reported below. The additional ratios RX1, RX2 and RX3 have been calculated to take in to account also of the necropsies of birds, of other species (mainly wild and exotic animals) and of viscera analysed by the students.

Table 7.1.11.2. – Synthesis of the data necessary to calculate the ratios from R18 to R20

Figure	Typology of data	Value
A	No. of students graduating annually (in the last five years)	87.8
I	No. of necropsies of food producing animals + equines	50.0
J	No. of necropsies of poultry/rabbits	165.3
K	No. of necropsies of companion animals	273.7
L	No. of necropsies of birds	128.3
M	No. of necropsies of other species (mainly wild and exotic animals)	221.3
N	Kg of viscera analysed by the students	1,880.0

$$\textbf{R18:}\ \frac{\text{No. of students graduating annually (A)}}{\text{No. of necropsies of food producing animals + equines (I)}} = \frac{87.8}{50.0} = \frac{1}{0.57} \Rightarrow \textbf{Denominator: 0.57}$$

$$\textbf{R19:}\ \frac{\text{No. of students graduating annually (A)}}{\text{No. of necropsies of poultry/rabbits (J)}} = \frac{87.8}{165.3} = \frac{1}{1.88} \Rightarrow \textbf{Denominator: 1.88}$$

$$\textbf{R20:}\ \frac{\text{No. of students graduating annually (A)}}{\text{No. of necropsies of companion animals (K)}} = \frac{87.8}{273.7} = \frac{1}{3.12} \Rightarrow \textbf{Denominator: 3.12}$$

$$\text{RX1:}\ \frac{\text{No. of students graduating annually (A)}}{\text{No. of necropsies of birds (L)}} = \frac{87.8}{128.3} = \frac{1}{1.46} \Rightarrow \text{Denominator: 1.46}$$

$$\text{RX2:}\ \frac{\text{No. of students graduating annually (A)}}{\text{No. of necropsies of other species (M)}} = \frac{87.8}{221.3} = \frac{1}{2.52} \Rightarrow \text{Denominator: 2.52}$$

$$\text{RX3:}\ \frac{\text{No. of students graduating annually (A)}}{\text{Kg of viscera analysed by the students (N)}} = \frac{87.8}{1,880.0} = \frac{1}{21.41} \Rightarrow \text{Denominator: 21.41}$$

7.1.12. Other species

A number of wild and exotic animals are submitted yearly to the Department of *Animal Pathology, Prophylaxis and Food Hygiene*. Most of these come from hunting while a lower number comes from zoological gardens and wild fauna shelter centres. Wild animals, such as hares, foxes, wild boars and wild ruminants are submitted to the Department from hunters and provincial and regional administrations to investigate the main diseases of the wild fauna circulating in Tuscany with a particular interest to zoonotic diseases. Other exotic animals, mainly turtles and *psittacidae*, are submitted (about 30-40 each year) from retailers, small farms or private individuals.

Work on exotic animals includes both clinical exams on live animals and autopsies. Necropsies of these animals are performed using a multidisciplinary approach which involves many sections of the Department of *Animal Pathology* in order to perform parasitological, bacteriological and virological investigations on samples.

During the course of *Zoology*, students learn the main morphological and physiological features of molluscs, crustaceans and fishes of veterinary interest. In particular, differences between cartilagineous and bone fish are focused, using taxonomic keys useful for the identification of different fish species.

Since the 2008-09 academic year, basic concepts of fish nutrition have been exploited in the course of *Animal Feeding and Nutrition*. In particular, differences between the energy, protein and lipid metabolism in comparison to mammals, have been considered. In addition, the nutritional requirements of the main marine and freshwater species, such as *Sea bas* (*D. labrax*), *Gilthead Sea*

bream (*S. aurata*), *Trout* (*O. mykiss*) and *Salmon* (*S. salar*) have been described. All these species are commonly raised in Italy and in the Mediterranean. The goal of the lectures is to give a valid overview related to the fish nutrition to those students who could pursue a career in fishfarming related activities.

7.2. Additional comments

7.2.1. Changes since year 1999

Many changes have occurred following the previous 1999 EAEVE visit. First of all, the new facilities of the Department of *Veterinary Clinics* in San Piero a Grado have been completed. The first set of buildings was inaugurated in 2000, and since then the new premises have become the main reference for consultations in small and large animals medicine both referrals and first opinion cases. Although this first set of buildings should have housed the surgical and obstetric sections alone, it was decided to share consultation rooms and part of the offices with the colleagues of the Section of Internal Medicine, in order to provide students with a better quality of teaching, and clients with a complete clinical service.

Nevertheless, as the medical colleagues still have their offices and a part of their laboratories at the old premises in Pisa, a minor part of the medical activity has been maintained in Pisa. The main reason for this choice has been the will to continue to offer a clinical service in the city of Pisa, thus increasing both the small animals patient flow, and the occasions for the students to participate to clinical activities. This medical service will be interrupted as soon as the second set of buildings, already completed, will be handed over to the Faculty. This was expected for June-August 2009 but it appears it will be delayed to November-December 2009.

7.2.2. The animal caseload

Compared with the period of the first EAEVE visit in 1999, the opening hours of the surgeries have been increased considerably, doubling from 20 to 39 hours/week. The caseload has also increased throughout the years, as it can be seen from the factual information, and there is the possibility that it will further increase when the second part of buildings (and the Veterinary Teaching Hospital) will be active, as in these new facilities there will be the possibility to hospitalise small animals, activity that has not been possible up to now, and to increase the hospitalisation of large animals. Isolation facilities will also be available.

However, the production animal caseload, especially ruminants and swine need to be further increased. The low number of cases is also linked to the declining number of such animals in the Tuscany territory: cattle and pig breeding units are today concentrated in Northern Italy, while in Tuscany only typical productions from local breeds (*Chianina* cattle, *Pisana* cattle, *Maremmana* cattle, *Cinta Senese* swine), often in extensive breeding, may be economically viable. Moving farm animals to the Department and back may implicate problems of infectious diseases spread. However, more efforts in attracting cases from the surrounding area, or the creation of a mobile clinic could be looked at.

7.2.3. The changes in organisation

Since the EAEVE visit in 1999, many aspects of the organisation have changed. Today the activity is more rational, beginning with a central computerised system (see paragraph 6.1.3.6) which manages the appointments for medicine, surgery, anaesthesia, obstetrics, and diagnostic imaging, and with a centralised administration. In San Piero all patients' clinical data are memorised in an electronic database and medical records can be retrieved and filled in from every consulting room. Sterilisation facilities and pharmacy are also centralised, except for the drugs needed for the equine activity, located closer to the visiting stocks and the boxes.

At the facilities of San Piero a Grado, medical staff works in shifts to guarantee the presence of a specialist in surgery, medicine and reproduction during consultation hours. The diagnostic imaging service and clinical chemistry laboratories are also available during opening hours. Some consultations or specialist examinations are performed by external practitioners with whom the Department has established an agreement. The surgical rooms operate normally three days a week, unless there is an emergency.

Together with these changes in facilities and organisation, students have been involved in the clinical activities in a more extensive and organised way. In a rotation system in medicine, surgery and obstetrics, the students are encouraged to admit patients, retrieve history and clinical data, fill medical records, and perform clinical examinations. At the end of this initial approach, they are involved in planning other exams or specialised procedures.

A single clinical case is daily assigned to each student and, at the end of the day, the case is discussed with the teaching staff. As it was happening at the time of the last visit, nowadays in most cases the owner is present during the clinical examinations of her/his pet, thus reducing the possibility for the student to practice as most clients object to students performing complicated procedures on their animals. This situation will certainly change with the hospitalisation which will be available in the very close future.

Anyway, the present situation provides students with a possibility to learn how to interact with the clients. To reduce possible owner complaints, clients are now encouraged to sign an informed consent that authorise the students to do supervised *hands-on* activities on the animals. With the presence of an induction and recovery room for anaesthesia, dogs presented for surgery are now usually left by the owners in the Clinic early in the morning and collected in the afternoon or at the end of the procedure. This extends the possibility for the students to handle and manage cases. This possibility will be further increased when the second part of the buildings, with the facilities for dogs, cats and large animals hospitalisation, will be operative. To better exploit the possibilities given by this activity, in the new buildings two rooms have been set up where students and clinicians can rest during the night.

The situation is quite different regarding horses, because mares are hospitalised as embryo recipients and donkeys as research animals (based on an official funding contract with the Region of Tuscany). As previously mentioned, a quite important number of mares, in a number between 20 during the fall and winter, and 60 during the equine breeding season, and 12 jennies are continuously housed in the numerous paddocks (12 small paddocks, adequate for hosting 3 mares each, and 4 big paddocks, adequate for hosting 20 animals each) of the Department of *Veterinary Clinics*. This quite high number of animals represents an excellent training for students because every day some of them may experience a variety of problems. This means that students may see, study and manage all basic horses problems related with either locomotory, digestive, respiratory or

cardiovascular systems as well as skin or ocular problems. Moreover the majority of these mares are owned by the Department itself and this makes it easier for students to manage recipients. In particular, students are responsible for every treatment needed both for reproductive management and medical-surgical problems. Students always make the first admission clinical examination of mares as well as in case of any illness symptom. Students have to take care of the reproductive management of recipients, including rectal palpations and ultrasonography of the reproductive apparatus. Within the embryo transfer activity (see paragraph 6.1.3.7 point b) performed at the Department of *Veterinary Clinics*, about 5,000 transrectal palpations and ultrasonographic evaluations of ovaries and uterus are performed every year. About 75% of these, on recipients mares, are done by the students of the fourth and fifth year, and in particular by those who have chosen to prepare their final thesis in equine reproduction.

Another important opportunity for students to learn a lot and to do *hands-on* activities is the hospitalisation of problem foals. A problem foal needs continuous assistance, usually for 2-4 days, until the resolution of the problem or the death of the foal. Problem foals have been hospitalised in the foal unit of the Department since 2005 and students, organised on 12 hours rotation, have the task of their continuous (24-hr) assistance.

One of the suggestions of the previous EAEVE visit was to increase the number of services and specialisations. Through the years a number of teachers have focused on specialist activities, some of them obtaining a European College diploma, while practitioners with special interests have been involved in clinical activities of the Department, both for small and large animals. A number of different (specialist) Services have been established, in the effort to better organise the different types of activities (medicine, surgery, diagnostic imaging, clinical pathology, etc) while differentiating small and large animals. Each Service has its representative in a Management Committee which has the duty to organise the activities at the Clinic and to suggest instrumentation to be acquired.

This is one of the weak points of the clinical activity: although a number of instruments have been acquired, many are getting old or still are not yet available. Another weak point is the number of clinicians available, which including teaching staff, graduate students and non-permanent contract practitioners, is rather low considering the potentialities of the new facilities. One of the worst situations appears to be that concerning horses: despite the large number of animals managed daily, as previously reported, and despite the active presence of 4 clinicians specialised on equine reproduction, there is no full time clinician in charge of horse general and orthopaedic surgery, whilst only one clinician, who is very busy with the clinical activity in small animal (and who also has sanitary responsibility of the Department), provides an equine medicine service. This situation is partially managed by stipulating agreements with private Veterinarians who provide surgical and medical assistance to the equines housed at the Department.

7.2.4. The relations with external practitioners

The clinical premises of the future Veterinary Teaching Hospital are new and appear to be functional and of excellent quality. Regarding instrumentation, the clinics and their laboratories are well equipped, although some important equipment are not yet available (i.e. Computed

Tomography and Magnetic Resonance Image). Overall, the expertise of the clinical staff is of a high standard even if, at present, there is a need of European level specialists in some clinical fields. For this reason some external clinicians with special interest in specific disciplines (i.e. echocardiography, equine surgery, homeopathy, behavioural medicine) are engaged by the Department of *Veterinary Clinics* in order to improve the extent of services and the quality of teaching. In Tuscany, including the local area, there are other structures and services of high level with regard to the quality of service and equipment. Some of these private clinics offer 24-hour emergency service, even if they are conscious that this activity is an economical loss, only useful to keep or gain clients.

Although not yet European specialists, several clinicians (members of the teaching staff of the Faculty) are well known in the area for their expertise in different fields, as demonstrated by the fact that about 60% of all the cases are referrals, ranging from 50% (small animals) to 90% (horses). The referral cases are mainly related to: haematology and transfusion service, clinical oncology, gastroenterology, dermatology, ultrasonography and eco-doppler, orthopaedics, endoscopy, laparoscopy, ophthalmology, small animals and equine reproduction, equine medicine and neonatology.

Certain reproduction assistance services, such as artificial insemination and embryo transfer activity, are authorised by the local regional authorities. Different diagnostic services of the Faculty (e.g. anatomo-histopathology, cytology, microbiology, parasitology, veterinary toxicology) are also available to external practitioners.

The policy of the Faculty is to increase the number of referral cases in order to avoid competition and conflicts with local practitioners. However, there is a need to maintain first opinion cases in order to provide students with basic training on routine cases. Students can do some extramural practical training in a small number of selected small and large animal clinics.

7.3. Suggestions

7.4. Annotations

Chapter 8 – LIBRARY AND LEARNING RESOURCES

8.1. Factual information and comments

8.1.1. The Library of the Faculty of Veterinary Medicine

In 1997 the Library of the Faculty of Veterinary Medicine, first opened in 1955, was formally transformed in a Centre for Library Services by the Rector Decree n. 01/1924 dated 17/11/1997, and became completely autonomous from the administrative point of view.

The 230 m^2 wide Centre is located near the Main Hall of the Faculty, and has two tiers:

- **ground floor**: m^2 50, the Director's office, administration, serials and bibliographic information;
- **first floor**: m^2 180, two reading rooms, which are at the same time storage rooms for books (the monographs room) and journals (periodicals reading room), each with 40 reading places, a multi-media room, with 3 computers, a television and a video cassette recorder; document delivery service.

Since 2002 the Library has a modern anti-shoplifting system: consequently it is an open shelves library where everybody can access the bibliographic materials; only graduation and PhD thesis are stored in closed stacks, in observance of the Italian copyright law.

The Faculty Library is one of the 16 Centres for Library Services of which the Library System of the University of Pisa is composed; previously the Academic Library System was split in about 150 small libraries without any coordination.

The current situation consists of 16 centralised libraries, where staff and economic resources have been concentrated, very strongly coordinated by the chief of the whole system and his staff: the university catalogue, the electronic journal and databases, personnel distributions, as well as contacts with other Italian library systems are centrally managed; every year our centralised staff collects the most important statistical data and then publishes a survey of all the libraries. Currently, it is possible to access online to *2008 Report about Libraries*. The web address where data of all the single libraries are reported by the Central Service is the following:
http://biblio.unipi.it/biblioteche/container.php?sezione=informazioni&pagina=report2008

Through this library, the users of the Faculty of Veterinary Medicine can access the services of the 16 University Libraries online. Therefore, they have full availability of the following university bibliographic heritage.

Table 8.1.1. – Data about the Library System of the University of Pisa

	2007
Linear meters of bibliographic materials	62.063
Total volumes	1.882.678
Monographs	1.097.199
Monographs in OPAC (On line Public Access Catalogue)	893.735 (81%)
Total paper periodicals	23.693
Current paper periodicals	5.423
Full text electronic journals	19.421

Books and journal collections are primarily devoted to Veterinary Science, and are available to all students, academic staff, veterinary practitioners and Public Health veterinarians. External users are allowed to loan books only after being authorised by the Library Director. The Library is a wireless environment and 16 new internet access points have been added to the main reading room,

so that users can navigate with their personal laptops, being also able to access the vast amount of scientific electronic resources made available by the University of Pisa.

Since 2006 student can choose to publish online their thesis through ETD (Electronic Thesis and Dissertation), the database of electronic thesis and academic dissertations of the University of Pisa.

8.1.2. Services and opening hours

The Library of the FVMP has about 15,000 works (6,000 of which are kept in the Central Library). The Library holds up to four copies of the most widely used texts; it catalogues and preserves all the BVM degree theses (as well as all the theses from other degree courses of the Faculty) written by Faculty students from 1955 onwards (for a total of 3,200); it stocks about 700 journals, of which 150 are current.

The following services are offered:

a. reading and consultation;
b. local loans;
c. guidance and instructions for use of the library and its services;
d. *vidéothèque*;
e. reference service;
f. document delivery.

The *document delivery* service makes it possible for articles to be delivered (*lending*) to Italian and foreign libraries which do not hold the given article and that submit an official request; documents can be delivered by fax or e-mail to students and professors of the Faculty who submit a request (*borrowing*). A service fee may be charged depending on the type of delivery service used. Localisation of articles is performed by PC connected to Internet, through which a bibliographical search can be performed on the wide range of databases made available by the University-wide Library system. It is also possible to download e-journals available on the University Library system; finally, it is possible to consult the on-line catalogues of Italian and foreign libraries.

Since 2002 the Library of Veterinary Medicine has adopted (based on a University decision) the Aleph programme for management of the automated catalogue. All monographic studies and theses can now be located through Aleph; therefore, since 1999 the hard copy catalogue has no longer been updated.

Loans are allowed for a maximum duration of 15 days, renewable.

The Library opening hours are the following:

during term-time: from Monday to Friday: 8.00 a.m. – 7.00 p.m.

during vacations: from Monday to Friday: 8.00 a.m. – 2.00 p.m.

The Library is closed for two weeks in August and for one week during the Christmas holidays.

8.1.3. Library Governance and Staff

The Library of the FVMP is managed by the Council, the President and the Director. The Council meets, at least twice a year, when it is necessary to discuss the Library general policy, the allocation of the budget, the major collection developments, and other general issues.

The Council is composed by:

a. the President, a teacher elected by the Council, among the delegates;
b. the Director;
c. a delegate (any level of Professor) for each of the afferent Departments, nominated by each Departmental Council;

d. a delegate (any level of Professor) for each of the Degree Courses of the FVMP, nominated by the Councils of each Degree Course.
e. three student representatives, nominated by the students elected in the Faculty Council, preferably coming from different Degree Courses;
f. two representatives of the Library staff, nominated by their colleagues.

The President convokes the Council and guarantees the respect of the decisions taken by the Council itself; she/he also represents the Library and has several administrative competences, according to the rules of the University of Pisa.

The Library Council decides the general and development policy of the Library. Furthermore it decides, through careful consideration of the budget constraints, which journals are to be bought, among those requested by the Departmental Councils. The Library Council also decides which books are to be bought, among those requested by students and teachers, and the ones proposed by the publishers. Teaching texts for students are automatically bought in four copies.

At present the Library staff is composed as follows:

- Director
- Librarian category C2
- Librarian category C3
- Librarian category D1 (part-time: 60%)
- Agent of general and technical services B3
- Personnel of an external service cooperative (2 hours per day)
- Three part-time students on 150-hour service each

8.1.4. Subsidiary Libraries of the Faculty

The Library purchases, organises and makes available books and documents used as a support for the teaching/learning and research activities carried out at the FVMP; in addition, the FVMP also manages nine Departmental libraries, which function mainly as study rooms for the students and deposit areas for various book holdings.

The Departmental Libraries are the following.

- Library of the Department of *Veterinary Clinics*
  - Section of *Clinical Surgery*, San Piero a Grado
  - Section of *Clinical Medicine*
- Library of the Department of *Animal Production*
  - Section of *Animal Production*
  - Section of *Poultry and Rabbit Science*, San Piero a Grado
- Library of the Department of *Animal Pathology, Prophylaxis and Food Hygiene*
  - Section of *Parasitology*
  - Section of *Anatomical Pathology*
  - Section of *Veterinary Anatomy*
  - Section of *Foodstuff Inspection*, San Piero a Grado
- Library of the Department of *Physiological Sciences*, Section of *Veterinary Physiology*
  - Section of *Veterinary Physiology*

Following a careful policy of *désherbage*, vital additional space has been recovered; this has made it possible to house in the Periodical Room all the current journals currently purchased by the Library, displaying all the available issues, starting from the last ten years. Only journals in the Animal Production sector are still held in the corresponding Departmental Library. These innovations represent a major step forward as compared to the recent past, when the majority of key journals were not centrally gathered together.

With regards to books, only the Library of the Department of *Animal Pathology, Prophylaxis and Food Hygiene* catalogues all its books in Aleph, the automated university catalogue, and makes

the new acquisitions through the Central Library, which catalogues and stores these books too. This change has been made possible thanks to the new enormous Montacchiello University Repository, where the Central libraries of all the Faculties can send old books which are rarely consulted.

8.1.5. The use of the Library Services

Every time students enter the FVMP's Library, they have to leave their bags inside locked boxes near the entrance. The requests of keys are registered by the Library staff. A rather good estimation of students' presence in the Library can be made using the number of key requests. In table 8.1.5.a the estimated number of students present in 2008, per month and on average per opening day, are reported.

Table 8.1.5.a – Estimation of the presences in the Library of the FVMP in 2008

Months – 2008	Total per month	Opening days	Per opening day	Percentage per month
January	608	22	27,6	6.9%
February	1,058	21	50,4	12.1%
March	795	20	39,8	9.1%
April	884	22	40,2	10.1%
May	1,035	21	49,3	11.8%
June	657	20	32,9	7.5%
July	514	23	22,3	5.9%
August	54	12	4,5	0.6%
September	699	22	31,8	8.0%
October	856	23	37,2	9.8%
November	995	20	49,8	11.4%
December	599	16	37,4	6.8%
TOTAL/AVERAGE	**8,754**	**242**	**36,2**	100.0%

The average daily presence in the Faculty Library is of 36 students/day: it means around the 7-8% of the 1st through 3rd year students attending classes in the premises in Pisa (4th and 5th year students attend classes mainly in San Piero). There is a high variability along the year: with the (obvious) exception of the month of August (only 4-5 presences per opening day), the presences vary from the minimum value in July (22) to the maximum in February (more than 50). The months of February, November and May are the ones during which the presences in the Library are the highest (around 50 per opening day). Table 8.1.5.b shows the situation of borrowings, returns and renewals during the year 2008 in all the Libraries of the University of Pisa.

Table 8.1.5.b – Situation of the borrowings, returns and renewals in the Libraries of the University of Pisa in 2008

Library	Borrowings	Returns	Renewal	Borrowings	Returns	Renewal	Students
Agricultural Sciences	2,943	2,881	1,644	2.8%	2.7%	12.0%	2.5%
Economics, Law & Political Sciences	11,925	11,838	2,986	11.2%	11.2%	21.8%	27.5%
Pharmacy	6,323	6,338	2,451	5.9%	6.0%	17.9%	3.1%
Engineering	13,500	13,444	170	12.6%	12.7%	1.2%	20.5%
Literature and Philosophy	34,003	33,701	1,860	31.8%	31.9%	13.6%	12.7%
Foreign Languages	12,531	12,529	1,302	11.7%	11.9%	9.5%	5.5%
Medicine and Surgery	7,193	7,183		6.7%	6.8%		12.0%
Veterinary Medicine	**4,048**	**3,992**	**1,661**	**3.8%**	**3.8%**	**12.1%**	**3.0%**
Natural Sciences, Math. & Phys.	14,463	13,664	1,648	13.5%	12.9%	12.0%	13.2%
TOTAL	**106,929**	105,570	13,722	100.0%	100.0%	100.0%	**100.0%**

Note: The Faculties of Law and of the humanistic area also utilise an important Library of the national Ministry of Culture.

If borrowings could be utilised as a "*proxy variable*" to evaluate the student use of the library services, it turns out that students of the FVMP use the library services slightly more of the other students of the University of Pisa. In fact, from table 8.1.5.c it is possible to see that the students of the FVMP represent the 3.0% of total students of the University of Pisa, but they ask for the 3.8%

of the total borrowings.

Another interesting data emerging from this table is the much higher percentage of the requests of renewal of the borrowings made by the students of the FVMP: 12.1% of the total renewal requested all over the Libraries of the University of Pisa. This data clearly explains the request of the students to increase the numbers of the copies of the text books acquired by the Faculty Library (see paragraph 8.1.7). Table 8.1.5.c shows the situation of borrowings, returns and renewals in the Library of the FVMP during 2008.

Table 8.1.5.c – Situation of the borrowings. returns and renewals in the Library of the FVMP in 2008

	VALUES PER MONTH			VALUES PER OPENING DAY			Borrowings /
Month	Borrowings	Returns	Renewal	Borrowings	Returns	Renewal	presences (%)
January	326	266	135	14.82	12.09	6.14	53.6%
February	354	367	137	16.86	17.48	6.52	33.5%
March	336	348	165	16.80	17.40	8.25	42.3%
April	349	325	137	15.86	14.77	6.23	39.5%
May	375	357	152	17.86	17.00	7.24	36.2%
June	350	340	145	17.50	17.00	7.25	53.3%
July	322	396	126	14.00	17.22	5.48	62.6%
August	72	36	15	6.00	3.00	1.25	133.3%
September	368	336	176	16.73	15.27	8.00	52.6%
October	509	464	174	22.13	20.17	7.57	59.5%
November	406	425	139	20.30	21.25	6.95	40.8%
December	281	332	160	17.56	20.75	10.00	46.9%
TOTAL	**4,048**	**3,992**	**1,661**	**16.73**	**16.50**	**6.86**	**46.2%**

From this table it is possible to see that, with the (obvious) exception of the month of August (6 borrowings per opening day), the percentage is rather similar through the different months: from the minimum value in July (14) to the maximum in October (22).

Another interesting information can be extrapolated from the last column of table 8.1.5.c, where ratios between borrowings and presences are reported. Even if the students asking for a borrowing could not be just the same who are present in the Library (in fact in August this percentage is more than 100%), these ratios can tell us the intensity of the usage of Library services.

In the year average almost one half of the students present inside the Library ask for a borrowing, with a less request in the month of February and with the highest in July and October.

8.1.6. Library Financial Resources

The situation of the income and of the expenses of the Library of the FVMP over the past five years is reported in the following tables. Tables 8.1.6.a-b show how the major part of the income arrives from the State for the wages of the staff (on average more than 66%). The remaining income arrives in quite similar parts by the University (14.4%) and by the FVMP (13.0%). It is important to underline the efforts made by the FVMP to maintain the same level of funding over the years notwithstanding a worsening financial situation (see Chapter 3). This fact points out the importance which the Faculty attributes to the services provided by the Library to students.

Table 8.1.6.a – Total income of the Library of the FVMP over the last five years (euro)

Year	By the State to the University A	By the University of Pisa B	By the Faculty of Veterinary Medicine C	By the Departments of the Veterinary area D	Other income E	TOTAL INCOME F = A+B+C+D+E
2004	137,062	29,077	30,000	5,653	15,637	217,429
2005	144,275	33,843	30,000	5,827	4,864	218,809
2006	151,869	32,404	30,000	6,445	10,091	230,809
2007	166,048	34,965	30,000	8,400	6,085	245,498
2008	165,344	34,848	30,000		8,023	238,215

Table 8.1.6.b – Total income of the Library of the FVMP over the last five years (percentage values)

Year	By the State to the University A / F	By the University of Pisa B / F	By the Faculty of Veterinary Medicine C / F	By the Departments of the Veterinary area D / F	Other income E / F	TOTAL INCOME F
2004	63.0%	13.4%	13.8%	2.6%	7.2%	100.0%
2005	65.9%	15.5%	13.7%	2.7%	2.2%	100.0%
2006	65.8%	14.0%	13.0%	2.8%	4.4%	100.0%
2007	67.6%	14.2%	12.2%	3.4%	2.5%	100.0%
2008	69.4%	14.6%	12.6%		3.4%	100.0%

The situation of the expenses of the Library of the FVMP over the past five years is reported on tables 8.1.6.c-d. Table 8.1.6.c shows how the major part of the expenses are for the wages of the staff (on average more than 67%).

Even if a clear decrease of the income to the Library does not yet appear over these last five years, the heavy financial situation of the University (and, consequently, of the FVMP) induced the Library to give a growing attention to its budget. In fact, if the expenses for wages are not included (table 8.1.6.d), it is possible to see how the remaining expenses are mainly devoted to acquire books, reviews and documentation. This percentage, lower only in 2004 when new equipment was acquired, always remains around 70-76%, and it appears to be grow up over the years.

Table 8.1.6.c – Total expenses of the Library of the FVMP over the last five years (euro)

Year	Expenses for the wages of the staff	Expenses for the functioning of the establishment	Expenses for acquiring equipment	Expenses for equipment maintenance	Expenses for books, reviews and documentation	TOTAL EXPENSES G
2004	137,062	17,184	17,531	7,650	38,002	217,429
2005	144,275	18,389	2,978	807	51,845	218,294
2006	151,869	10,087	4,780	5,331	46,427	218,494
2007	166,048	7,795	8,874	3,822	58,959	245,498
2008	165,344	8,385	3,828	4,665	55,055	237,277

On the contrary, the expenses for the functioning of the establishment continue to decrease, to reach a level of 10% of the total expenses (wages not included). At the same time expenses for acquiring new equipment has been sensibly reduced.

Table 8.1.6.d – Total expenses (wages not included) of the Library of the FVMP over the last five years (percentage values)

Year	Expenses (wages not included) H = G-A	Expenses for the functioning of the establishment	Expenses for acquiring Equipment	Expenses for equipment maintenance	Expenses for books, reviews and documentation	TOTAL EXPENSES (wages not included)
2004	*80,367*	21.4%	21.8%	9.5%	47.3%	100.0%
2005	*74,019*	24.8%	4.0%	1.1%	70.0%	100.0%
2006	*66,625*	15.1%	7.2%	8.0%	69.7%	100.0%
2007	*79,450*	9.8%	11.2%	4.8%	74.2%	100.0%
2008	*71,933*	11.7%	5.3%	6.5%	76.5%	100.0%

More serious problems have occurred in 2009. In fact, during the current year the University decided to cut off a large amount (around 20%) of the budget of all the Libraries. And also the FVMP, because of the reduction of around 50,000 euro of its budget (see paragraph 3.1.1.), has been obliged to reduce, for the first time in ten years, to 25,000 euro its contribution to the Faculty Library.

8.1.7. An evaluation of the services offered by the Library

In 2007 the University Library System decided to measure the users' satisfaction about the library services; to reach this goal, a questionnaire is distributed twice a year (in June and in

November) to the students present in each library. A short summary of the last two questionnaires (distributed on the 19th of November 2007 and on the 5th of June 2008) is herewith reported.

General data:

1. The Library is mainly utilised by students of the Faculty of Veterinary Medicine (94,7% of total answers), which remain in the library for 2-4 hours (27.3%), for more than 4 hours (32%), for more than 3 days per week (47.3%).
2. The library is mainly utilised:
   - for library loans
   - for consultation of bibliographic and on-line material;
   - as reading room for studying with personal books;
   - for connecting to Internet.

Evaluation of library services

The students expressed:

1. a very good appreciation for the opening hours, the kindness and skill of the library personnel;
2. the request of multiple copies of the same text books was expressed;
3. the request of more PC connections to Internet and of a better Library website was expressed;
4. the need to be better informed on electronic resources of the library and on some other library services (e.g. Document Delivery: DD) was expressed.

Problems and possible solution

1. Because the financial situation of the University of Pisa and because of space deficiency, it is impossible to increase the number of PC connections to Internet. Establishing a maximum time for the usage of a PC will undoubtedly help.
2. Again for the financial difficulties of the Library, it is very difficult to have more copies of the same books.
3. Some students proposed to keep the library open even on Saturday morning.
4. Even if some student (especially of the fourth and fifth years) asked to receive by e.mail (through the DD service) articles completely digitalised, the Library cannot perform this service because this possibility is not allowed by the terms of the licence signed between the various Publishers and the University of Pisa.
5. The Library is just working to improve the Library website.

8.2. Additional comments

The student questionnaire on user satisfaction about library services has showed a very good appreciation about the long opening hours, the courtesy and the vocational training of the staff of the library. Some users asked for the opening of the library even Saturday morning. For this reason, an opening extension (9 to 12 a.m.) was experimented during the months of October and November 2008 using out-sourcing personnel. Unfortunately this experimentation did not give satisfactory results; in fact the number of users has progressively diminished until the last Saturday of November, when nobody came. So, considering also the economic burden of this opening extension and the financial constraints of the Library, this experimentation was stopped. One of the reason of this unsuccessful experience should be searched in the too short period of opening: perhaps students should like to stay at least until 2 p.m. But the burden should be really unsustainable for the Library budget.

The questionnaire also highlighted a generalised lack of knowledge about the use of the electronic services provided by the Library, especially by the students of the first years.

The FVMP is conscious that students of the fourth and fifth years could have heavier problem in

utilising the Library services when they, in the next year, will attend all the lessons in the premises of San Piero a Grado. Only a strong improvement of the information technologies and of the web facilities could overpass these difficulties.

8.3. Suggestions

Students can use electronic resources only from the PC of the University Net, because this clause has been imposed by the License Agreement of the Publishers; on the contrary, students would really like to have access from their personal PC. For this reason they strongly suggest to change this particular clause.

The Library is trying to offer a service to inform on the electronic resources and on the way to use them by providing weekly courses on demand, held by the Library staff.

8.4. Annotations

Chapter 9 – ADMISSION AND ENROLMENT

9.1. Factual information and comments

9.1.1. The "numerus clausus" in the Italian Veterinary Medicine Degree Courses

The Veterinary Medicine Degree Course is a 5-year course, with, since the 1989-90 academic year, a limited enrolment ("*numerus clausus*"). Every year, at the beginning of September, a national admission test is performed in every Faculty where the Veterinary Medicine Degree Course is activated. For more details about the admission test, see paragraph 9.1.2.

Even if the "*numerus clausus*" is proposed every year by each Italian Faculty, the final number is decided by the national Ministry, in theory (accordingly with the national law 264/1999) on the basis of the structures available in each Faculty to guarantee a high level of teaching quality; practically on the basis of political considerations and mainly of the demand of the job market.

Actually, even if until the 2006-07 academic year many Faculties autonomously decided to reduce their own "*numerus clausus*", since the 2007-08 academic year, just because the strong lobbying action of the Professional Veterinarians Licensing Board, the Ministry decided to reduce this number even against the Faculties' proposals.

On July 3rd, 2009, a Ministry Decree fixed in 1,050 – see Table 9.1.1.a, column "2009-10 (1)" – the total number of EU students who can register as freshmen in Veterinary Medicine in all the Veterinary Medical Degree Courses offered by Italian Faculties: this was a 13% reduction with respect to the previous year. Because the motivations of this decision were not clearly explained in the Decree, many Rectors appealed against this decision, and the Ministry, on September 21st, 2009, issued a new Decree with the increased number showed in Table 9.1.1.a, column "2009-10 (2)".

Table 9.1.1.a shows the trend of the reduction during the last nine years. Until the 2006-07 academic year the decrease was incremental but globally it remained under the level of -5%; after that academic year the decrease grew remarkably every year until reaching in 2009-10 a reduction of almost 25% in comparison with the "top" situation in 2002-03. It must be underlined that the Ministry's policy is to continue to reduce the "*numerus clausus*" in the next years too.

Table 9.1.1.a – "*Numerus clausus*" of the Veterinary Medicine Degree Courses, per University (non-EU students **not** included)

University	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	*2009-10 (1)*	2009-10 (2)
Bari	135	140	135	135	135	135	135	98	*100*	**100**
Bologna	150	150	150	150	150	150	150	125	*125*	**125**
Camerino	80	80	80	80	80	80	76	49	*29*	**35**
Catanzaro				25	25	25	22	18	*11*	**11**
Messina	100	100	100	100	100	95	90	77	*62*	**67**
Milan	190	190	190	190	190	190	180	180	*162*	**162**
Naples	130	130	130	130	130	130	114	114	*68*	**80**
Padua	68	68	68	68	74	74	70	70	*63*	**65**
Parma	115	115	110	98	81	81	77	77	*62*	**68**
Perugia	117	117	117	95	95	95	90	84	*90*	**90**
Pisa	85	97	100	100	100	95	90	90	*72*	**79**
Sassari	80	80	80	45	45	45	43	43	*26*	**38**
Teramo	90	90	90	90	90	90	85	67	*60*	**70**
Turin	120	120	120	120	120	120	120	109	*120*	**120**
TOTAL	1,460	1,477	1,470	1,426	1,415	1,405	1,342	1,201	*1,050*	**1,110**
Index number: 2002-03 = 100	98.8	**100.0**	99.5	96.5	95.8	95.1	89.9	81.3	*71.1*	**75.2**
Reduction on 2002-03	-1.2%		-0.5%	-3.5%	-4.2%	-4.9%	-9.1%	-18.7%	*-28.8%*	**-24.8%**

(1) "*Numerus clausus*" firstly decided by the Ministry on the 3rd of July 2009.
(2) Final "*numerus clausus*" decided by the Ministry on 21st September 2009.

At present the number of new students which can be admitted every year at the Veterinary Medicine Degree Course of the FVMP has been reduced to 79, plus no more than 5 students arriving from Countries outside the European Union. Two of these 5 places are reserved to students

arriving from the People's Republic of China. Actually, at present, only one Chinese student is registered at the FVMP: he is attending the classes at the fourth year in the 2009-10 academic year.

Prior to the beginning of each academic year, the Dean must communicate to the Ministry all the information concerning the resources available to the Faculty for the Veterinary Medicine Degree Course. In theory, on the basis of the results of this information, the Ministry establishes the "*numerus clausus*" for the Faculty of Pisa. Actually the Ministry does not absolutely care about this information and, as shown above, the decision has been taken on the basis of general and political considerations.

Table 9.1.1.b – "*Numerus clausus*" of the Veterinary Medicine Degree Course at the FVMP

	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
"Numerus clausus"	100	85	85	90	100	105	105	107	100	95	95	84
- from EU Countries	90	80	80	85	97	100	100	100	95	90	90	79
- from non-EU Countries	10	5	5	5	3	5	5	7	5	5	5	5

Table 9.1.1.b shows the "*numerus clausus*" of the Veterinary Medicine Degree Course at the FVMP. The reduction from 90 to 80 in the year 1999-2000 was the consequence of the first EAEVE visit in 1999, as this was one of the (implicit) suggestions of the team of experts. It is relevant to underline that it was the Rector himself who, during a meeting of the Academic Senate in 2002, explicitly asked the Dean to raise the "*numerus clausus*" of veterinary medical students for the 2002-03 academic year. This request was the consequence of the decision, just taken by the University of Pisa, to re-launch the completion of the Department of *Veterinary Clinics* and the construction of the Veterinary Teaching Hospital.

9.1.2. The admission test to the Italian Veterinary Medicine Degree Courses

The admission test is unique at the national level being organised by the Ministry, and it is performed on the same day in all the Universities where a Veterinary Medicine Degree Course is offered. Both the date of the exam as well as all the questions are decided by the Ministry. Students choose the University fo which to apply. In case of admission, they must register in that University. In the following years they may apply for transferring to the Veterinary Medicine Degree Course of any other University. All the students with any Secondary High School diploma can apply for taking the admission test.

The admission test is not a test to evaluate the level of preparation of students; on the contrary, it is only a selection test, and also students with very low score (even negative) can be admitted (see paragraph 9.1.2.1). In fact the test is performed only if the number of applying students is higher than the "*numerus clausus*" established for that University by the Ministry Decree. This case does never happen for EU students (see table 9.1.3.a), but it is rather common for non-EU students who, anyway, must demonstrate a sufficient knowledge of the Italian language.

The test, by now very well-established in its frame, consists in 80 questions with a multiple choice, where only one out of five is correct. The students have two hours of time to perform the test. In the last admission test (7th September 2009) the questions dealt with the following subjects:

- General Culture and Logics: 40 questions;
- Biology: 18 questions;
- Chemistry: 11 questions;
- Physics and Mathematics: 11 questions.

The scores for each answer are the following:

- each exact answer: 1 point;
- each wrong answer: minus 0.25 points;
- no answer: 0 points.

In two or more students get the same score, the student with a better final vote from the Secondary High School is preferred. If the High School final vote is also the same, the criteria of

preference are, in the order, the following:

1. the score obtained, in the order, in the following sets of questions:
   a. General Culture and Logics;
   b. Biology;
   c. Chemistry;
   d. Physics and Mathematics;
2. age: (the youngest student is preferred).

9.1.2.1. An attempt to make up for the deficiencies of the admitted students

As shown in the previous paragraph, the admission test is only a selection one, and also students with a very poor degree of initial preparation can pass the admission test. For this reason, and just to try to remedy to these deficiencies, since the 2009-10 academic year the FVMP, according to the Decree n. 270/04, decided that the students who reached a score less than the 50% of the maximum in one or more of the sets of questions of Biology, Chemistry and Physics-Mathematics must:

- for Biology and Chemistry: either compulsory attend the apposite "recovery course" organised by the FVMP (with a minimum of 70% of class attendance), or try again a verification test before sitting for any examination;
- for Physics-Mathematics: compulsory attend the apposite "recovery course" organised by the FVMP and sit as for the examination of Physics and Mathematics before sitting for any other examination.

These new rules have the goal both to oblige students to better build their knowledge in the basic subjects, as well as to avoid the rather widespread habit to take as the last examinations of their career the one/s on the basic subject/s.

9.1.3. The number of students participating to the admission test at the FVMP

Tables 9.1.3.a-b show the number of students applying for and participating to the admission test to the Veterinary Medicine Degree Course at the FVMP, respectively, over the last twelve years. Table 9.1.3.c shows the percentage of applying students which really took the test.

Table 9.1.3.a – Students applying for the admission test to the Veterinary Medicine Degree Course at the FVMP

	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Average
Total applying	287	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*	376	383	476	504	453	489	424.0
- males	98	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*	91	123	150	127	104	121	116.3
- females	189	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*	285	260	326	377	349	368	307.7
- % females	*65.9%*	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*75.8%*	*67.9%*	*68.5%*	*74.8%*	*77.0%*	*75.3%*	*72.6%*

n.a. = data not available

Table 9.1.3.b – Students actually taking the admission test to the Veterinary Medicine Degree Course at the FVMP

	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Average
Total participating	262	269	245	259	*n.a.*	308	340	314	383	421	377	404	325.6
- males	87	89	70	68	*n.a.*	77	86	93	115	100	86	92	87.5
- females	175	180	175	191	*n.a.*	231	254	221	268	321	291	312	238.1
- % females	*66.8%*	*66.9%*	*71.4%*	*73.7%*	*n.a.*	*75.0%*	*74.7%*	*70.4%*	*70.0%*	*76.2%*	*77.2%*	*77.2%*	*73.1%*

n.a. = data not available

Table 9.1.3.c – Percentage ratio between the participating students and the applying ones at the FVMP

	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Average
Participating/Applying	91.3%	n.a.	n.a.	n.a.	n.a.	n.a.	90.4%	82.0%	80.5%	83.5%	83.2%	82.6%	84.8%

n.a. = data not available

From these tables it is possible to see how:

- the trend of number of applying students is growing along the years;
- the percentage of students who actually take the test is around 80-85% of those who apply for;
- the number of students taking the test is four or (now) five times the "*numerus clausus*";

- the percentage of the female students taking the admission test is still growing and it is currently approaching the percentage of 80%.

Even if these growing numbers mean much more work for the Offices of the University of Pisa, at the same time they indicate a strong students' interest in Veterinary Medicine and a higher chance for the Faculty to select always better and better students.

Table 9.1.3.d shows the intake of Veterinary students in the past twelve years at the FVMP. summarising numbers already shown in previous tables and comparing them to the "other entry mode" at the FVMP. Actually the only "other entry mode" with which students can enter the FVMP is by transferring from other Veterinary Medicine Degree Courses, where students must have already passed the admission test. From the table it is possible to see that this number is rather variable along the years and, in general, fairly limited.

Table 9.1.3.d – Intake of Veterinary students in the past twelve years at the FVMP

Year	Students applying for for admission	Students participating to admission	Students admitted	
			"Standard" intake (1)	Other (2) entry mode
1998-99	287	262	100	n.a.
1999-00	n.a.	269	85	n.a.
2000-01	n.a.	245	85	n.a.
2001-02	n.a.	259	90	3
2002-03	n.a.	n.a.	100	1
2003-04	n.a.	308	105	7
2004-05	376	340	105	4
2005-06	383	314	107	2
2006-07	476	383	100	4
2007-08	504	421	95	4
2008-09	453	377	95	8
2009-10	489	404	84	n.a.
Average	424.0	325.6	95.9	4.1

(1) Extra-EU students included.
(2) Only for transferring from other Veterinary Medicine Degree Courses, where students have already passed the admission test.
n.a. = data not available

9.1.4. Undergraduate students number

9.1.4.1. Students registered in the Veterinary Medicine Degree Course of the FVMP

The situation over the last eleven years of the undergraduate students registered at the Veterinary Medicine Degree Course of the FVMP is reported in the following tables 9.1.4.1.a-b. From these tables it is possible to see how:

- the total number of the Veterinary students is regularly decreasing along the years: in the 2008-09 academic year this number was the 11.2% less than eleven years before;
- this decrease mainly involves male students, whose number has been reduced of around 25-30%; on the contrary the number of the female students has stabilised around 600;
- as a consequence, the percentage of the females has grown up until the 2004-05 academic year (when reached the peak of 75.4%), and now it seems have stabilised at the 73-74% level;
- the number of foreign students is stable around 40; but whilst the number of the EU students has been practically halved, the number of non-EU students has grown up to around 50%;
- the reduction of the total number of the Vet students is certainly a consequence of the reduction of the "*numerus clausus*" over the years, but especially of the strong reduction of the number of the students "*off-course*";
- actually the reduction of the number of the students "*off-course*" is a phenomenon of the last five years: they really began to reduce only in the 2004-05 academic year (-9.5%), with the maximum decrease in the following year (-14.1%);
- the percentage of the students "*off-course*" has been very high until 2003-04, when it seemed

to be well-established at the level of 48%; after then it decreased to the 37%: however, we still consider this too high a level.

The reduction of the percentage of the students "*off-course*" is certainly connected with the new system of the University Formative Credits (UFCs) to evaluate the workload of the students, introduced by the Ministry Decree n. 509/99 and adopted by the FVMP since the 2001-02 academic year. Many students registered in the previous years decided to transfer their registration to the new system, and this fact certainly had positive effects on the duration of their career (see also paragraph 9.1.5 and table 9.1.5.b).

Table 9.1.4.1.a – Undergraduate Veterinary students composition over the last eleven years (absolute values)

	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Total number of undergraduate students	902	876	887	876	883	888	868	836	839	827	801
Total number of male students	301	282	281	262	262	247	224	206	222	229	212
Total number of female students	601	594	606	614	621	641	644	630	617	598	589
Foreign students	41	35	37	33	36	38	36	40	40	40	41
- from EU Countries	22	17	18	17	18	17	14	14	12	11	12
- from non-EU Countries	19	18	19	16	18	21	22	26	28	29	29
Total number of students in-course	500	485	470	460	460	465	485	507	517	512	502
Total number of students off -course	402	391	417	416	423	423	383	329	322	315	299

Table 9.1.4.1.b – Undergraduate Veterinary students composition over the last eleven years (percentage values)

	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Total number of undergraduate students	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total number of male students	33.4%	32.2%	31.7%	29.9%	29.7%	27.8%	25.8%	24.6%	26.5%	27.7%	26.5%
Total number of female students	66.6%	67.8%	68.3%	70.1%	70.3%	72.2%	74.2%	75.4%	73.5%	72.3%	73.5%
Foreign students	4.5%	4.0%	4.2%	3.8%	4.1%	4.3%	4.1%	4.8%	4.8%	4.8%	5.1%
- from EU Countries	2.4%	1.9%	2.0%	1.9%	2.0%	1.9%	1.6%	1.7%	1.4%	1.3%	1.5%
- from non-EU Countries	2.1%	2.1%	2.1%	1.8%	2.0%	2.4%	2.5%	3.1%	3.3%	3.5%	3.6%
Total number of students in-course	55.4%	55.4%	53.0%	52.5%	52.1%	52.4%	55.9%	60.6%	61.6%	61.9%	62.7%
Total number of students off -course	44.6%	44.6%	47.0%	47.5%	47.9%	47.6%	44.1%	39.4%	38.4%	38.1%	37.3%

9.1.4.2. Students registered in the other Degree Courses of the FVMP

The difficulties of a small Faculty have already been underlined in paragraph 1.1.4. The progressive growth along the years of the students registered at the Degree Courses of the FVMP is clearly shown in table 9.1.4.2.a.

Table 9.1.4.2.a – Number of students registered over the past ten years in all the Degree Courses of the FVMP

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	Average
Veterinary Medicine	876	887	876	883	888	868	836	839	827	801	858.1
S&T of Animal Productions	318	296	307	321	330	318	298	314	298	316	311.6
Canine Breeding T&T						289	335	402	475	514	403.0
Total students registered	1,194	1,183	1,183	1,204	1,218	1,475	1,469	1,555	1,600	1,631	1,371.2

Actually the highest increase has been realised in the 2004-05 academic year, when the Degree Course in *Canine Breeding Techniques and Training* has been activated. The increasing number of students registered in this Degree Course testifies the large success of this teaching proposal. But, as already said in paragraph 1.1.4, this Degree Course will probably cease since the next academic year, with heavy consequences on the global number of the students registered at the FVMP.

In fact, in the next years the students registered in the Degree Course in *Veterinary Medicine* will certainly decrease because the reduction of both the "*numerus clausus*" and the students "*off-course*"; at the same time the students registered in the Degree Course in *Sciences and Technologies of Animal Productions* will not increase because the job market cannot reasonably absorb a higher number of these graduates. For this reasons, it is reasonable to foresee that, after the end of the Degree Course in *Canine Breeding Techniques and Training*, in 8-10 years the FVMP will fall to a

number of registered students around 800. It is clear that this number of registered students will be not acceptable for the University of Pisa if the Ministry attitude towards the Veterinary teaching (and its costs) will not change.

In table 9.1.4.2.b the number of the regular and "*off-course*" students registered at the FVMP is reported.

Table 9.1.4.2.b – Students registered at the FVMP: regular and "*off-course*" (2008-09 academic year)

	Regular	*Off-course*	Total	*% Off-course*
Veterinary Medicine	502	299	801	37.3%
Sciences and Technologies of Animal Productions	183	133	316	42.1%
Canine Breeding Techniques and Training	344	170	514	33.1%
Total students at the FVMP	1,029	602	1,631	36.9%

From table 9.1.4.2.b it appears rather clear the generalised high percentage of "*off-course*" students. The lower level of the percentage in the Degree Course in *Canine Breeding Techniques and Training* is simply due to the little numbers of years passed since its activation (in the 2004-05 academic year).

Table 9.1.4.2.c – Number of students graduating annually over the past nine years, in all the Degree Courses of the FVMP

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	Average
Veterinary Medicine	44	75	74	68	100	93	81	76	89	77.8
S&T of Animal Productions	15	18	23	36	40	30	27	35	27	27.9
Canine Breeding T&T								10	25	17.5
Total students graduating	59	93	97	104	140	123	108	121	141	109.6

In table 9.1.4.2.b the number of students graduating annually over the last nine years in all the Degree Courses of the FVMP is shown. From this table it is evident how small the number of the students graduating at the FVMP especially when compared to the other Faculties of the University of Pisa. Table 9.1.4.2.c clearly shows how small the FVMP is within the University.

Table 9.1.4.2.d – Average number of students graduated in the University of Pisa over the past six years, per Faculty

Faculties	Average 2003-2008	
	Graduated	Percentage
Agricultural Sciences	175.5	2.5%
Economics	763.2	10.8%
Pharmacy	209.8	3.0%
Law	862.0	12.3%
Engineering	1,564.6	22.2%
Literature and Philosophy	868.2	12.3%
Foreign Languages	309.0	4.4%
Medicine and Surgery	803.7	11.4%
Veterinary Medicine	**122.8**	**1.7%**
Natural Sciences, Math. & Phys.	919.8	13.1%
Political Sciences	437.4	6.2%
University of Pisa	7,036.0	100.0%

9.1.5. Student flow in the Veterinary Medicine Degree Course at the FVMP

Table 9.1.5.a illustrates the flow of Veterinary students in the 2008-09 academic year at the FVMP. In this table the numbers which have already shown with details in previous tables are synthesised. Additionally students can be admitted at each year of course (first not included) in the number of 5 per year with, in theory, a maximum of 20. But, as shown in table 9.1.3.d, the new admissions are numerically irrelevant.

The number of students graduating annually in Veterinary Medicine at the FVMP over the last ten years is illustrated in table 9.1.5.b, whilst table 9.1.5.c shows the average number of graduates

students over the last five years. This average – 87.80 – is the number of students graduating annually used, when requested, for all the ratios in this Self Evaluation Report.

Table 9.1.5.a – Student flow and total number of undergraduate Veterinary students (2008-09 academic year)

Students (1) present after passing the admission test on year 1 (Extra-EU students included)		Max students additionally admissible (1)
1st year	95	
2nd year	95	5
3rd year	100	5
4th year	107	5
5th year (MNY: minimum number of years)	105	5
6th year	105	
>6th year	194	
Total number of undergraduate Veterinary students	801	20

(1) As a maximum possible number. The actual numbers are reported in table 9.1.3.d.

Table 9.1.5.b – Number of Veterinary students graduating annually over the past ten years, per sex

(absolute values)

Year	Male	Female	Total graduates
2007-08	21	68	89
2006-07	15	61	76
2005-06	25	56	81
2004-05	22	71	93
2003-04	40	60	100
2002-03	20	48	68
2001-02	20	54	74
2000-01	27	48	75
1999-00	17	27	44
1998-99	27	44	71
Average	23.4	53.7	**77.10**

(percentage values)

Year	Male	Female	Total graduates
2008	23.6%	76.4%	100.0%
2007	19.7%	80.3%	100.0%
2006	30.9%	69.1%	100.0%
2005	23.7%	76.3%	100.0%
2004	40.0%	60.0%	100.0%
2003	29.4%	70.6%	100.0%
2002	27.0%	73.0%	100.0%
2001	36.0%	64.0%	100.0%
2000	38.6%	61.4%	100.0%
1999	38.0%	62.0%	100.0%
Average	30.4%	69.6%	100.0%

Table 9.1.5.c – Number of Vet-students graduating annually over the past ten years, per sex

(absolute values)

	Male	Female	Total graduates
Average	24.6	63.2	**87.80**

(percentage values)

	Male	Female	Total graduates
Average	28.0%	72.0%	100.0%

(1) The value of **87.80** students graduating annually has been used **in all the ratios**.

From the above two tables it appears rather clearly that the number of graduating students is growing up year by year. If we do not take into account the 2003-04 and 2004-05 academic years (100 and 93 graduations because the high number of students who decided to transfer to the new system activated on the basis of the MD n. 509/99), since 2005 the number of graduations has sensibly increased.

Table 9.1.5.d a shows the percentage of the number of students graduating every year when considering the total number of students admitted five years previously. From this table it is possible to see how such ratio is growing very much along the years. If we do not take into account the 2003-04 and 2004-05 academic years (with percentages higher than 100%, indicating that students suddenly accelerated their exam passing rate because the transfer to the new system), the ratio continues to remain higher than in the first years of the decade, and it seems to stabilise around 80-85%. Even if this data clearly means that around 20% of admitted students do not graduate within 5 years, anyway it is a definite improvement in comparison with the past.

In table 9.1.5.e the females' graduation rate is compared with the females percentage of admission five years before. The table clearly shows that female students graduate on time in a higher percentage than their male colleagues. Only in the 2003-04 academic year they have a graduation rate less then the admission one: it means that male students gained more advantage by the transferring to the new system based on the MD n. 509/99.

Table 9.1.5.d – Percentage of graduations out of admissions 5 years before

Academic year	Students graduated	Admitted 5 years before	Percentage graduated / admitted
2007-08	89	105	84.8%
2006-07	76	100	76.0%
2005-06	81	90	90.0%
2004-05	93	85	109.4%
2003-04	100	85	117.6%
2002-03	68	100	68.0%
2001-02	74	100	74.0%
2000-01	75	100	75.0%
1999-00	44	100	44.0%
1998-99	71	100	71.0%
Average	77.1	96.5	**79.9%**

Table 9.1.5.e – Analysis of the females' graduation ratio

Year	Females graduated in the year	Females enrolled 5 years before
2007-08	76.4%	74.2%
2006-07	80.3%	72.2%
2005-06	69.1%	70.3%
2004-05	76.3%	70.1%
2003-04	60.0%	68.3%
2002-03	70.6%	67.8%
2001-02	73.0%	66.6%
2000-01	64.0%	n.a.
1999-00	61.4%	n.a.
1998-99	62.0%	n.a.
Average	69.3%	69.9%

n.a. = data not available

Even if the problem has been already examined in all the previous tables, tables 9.1.5.f-g clearly show and quantify one of the most serious problems of all the Italian Faculties (and not only of the FVMP): the too long duration of the careers of Italian students, much beyond the legal duration of their University studies. In fact, at the Degree Course in Veterinary Medicine of the FVMP, only a small percentage of students, variable between 15% and 25% (see table 9.1.5.g) over the last three academic years, succeeds in graduating in five years, the legal minimum number of years for completing their studies. We have no data for the previous years, but our feeling is that the situation was even worst in the past.

On the basis of the data shown in table 9.1.5.f, it is possible to estimate the average duration of the careers of Veterinary Medical students, males and females. Even if it is certainly possible to presume that the situation is improving over the years, certainly it cannot be considered as an acquired result: the estimated duration of studies of our students is so highly variable that it is not possible to individuate a well-established trend.

Table 9.1.5.f – Average duration of studies (distribution of students in years) (absolute values)

	2006			2007			2008		
Duration of attendance	Male	Female	Total	Male	Female	Total	Male	Female	Total
years 0 (* MNY: five)	5	7	12	1	18	19	4	15	19
years 1	2	8	10	7	14	21	2	17	19
years 2	2	10	12	4	11	15	3	12	15
years 3	4	4	8	1	4	5	4	5	9
years 4	3	5	8	1	4	5	4	5	9
years 5	3	13	16		5	5		6	6
years > 5	6	9	15	1	5	6	4	8	12
Total graduated students	25	56	81	15	61	76	21	68	89
Estimated duration of studies	8,5	8,4	8,4	6,9	7,0	7,0	8,0	7,4	7,5

* Year matching Minimum Number of Years (MNY) allotted to the Veterinary curriculum.

Table 9.1.5.g – Average duration of studies (distribution of students in years) (percentage values)

Duration of attendance	2006			2007			2008		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
-years 0 (* MNY: five)	20.0%	12.5%	**14.8%**	6.7%	29.5%	**25.0%**	19.0%	22.1%	**21.3%**
years 1	8.0%	14.3%	12.3%	46.7%	23.0%	27.6%	9.5%	25.0%	21.3%
years 2	8.0%	17.9%	14.8%	26.7%	18.0%	19.7%	14.3%	17.6%	16.9%
years 3	16.0%	7.1%	9.9%	6.7%	6.6%	6.6%	19.0%	7.4%	10.1%
years 4	12.0%	8.9%	9.9%	6.7%	6.6%	6.6%	19.0%	7.4%	10.1%
years 5	12.0%	23.2%	19.8%		8.2%	6.6%		8.8%	6.7%
years > 5	24.0%	16.1%	18.5%	6.7%	8.2%	7.9%	19.0%	11.8%	13.5%
Total graduated students	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

9.2. Additional comments

As it is possible to see, the admission test is not in any way conceived to assess student's motivation to start a veterinary career. For this reason, for many years the Italian Conference of the Deans of the Faculties of Veterinary Medicine has been trying to convince the Ministry to adapt the frame of the admission test. Actually this test succeeds in selecting "only" the best students of the urban High Schools which have the best teachers in scientific disciplines. Table 9.2 reports the Secondary High Schools where the students registered at the FVMP in the 2008-09 academic year studied before entering the University.

Table 9.2 – Secondary School (age 14-19) provenance of Veterinary Medicine students (2008-09 academic year)

	Male	Female	Total	Male	Female	Total
Scientific Lycée	123	317	440	58.0%	53.8%	54.9%
Classical Lycée	22	113	135	10.4%	19.2%	16.9%
Agricultural College	14	18	32	6.6%	3.1%	4.0%
Technical College	32	113	145	15.1%	19.2%	18.1%
Not available	21	28	49	9.9%	4.8%	6.1%
TOTAL	212	589	801	100.0%	100.0%	100.0%

But the admission test does not in any way evaluate the real motivations of the choice of the Veterinary Medical Degree Course. Perhaps just for this reason the absolutely major part of the students only wants to become a Veterinarian for pets. This fact not only increases the problems of the already too crowded job market of pet care, but it prevents the students from understanding the importance of the role of Veterinarians in other fields. Just as an example, at the 2008 General Assembly of the Breeders Association of the Province of Pisa, the President's Report revealed the difficulties of the sheep breeders who cannot find Veterinarians willing to care of their animals.

At any rate, the preference of the Ministry for this kind of procedure is closely connected with both the high easiness to centrally correct the tests by the Ministry Computer Centre (in Bologna), and (above all) with the strong idea that this kind of test is less subject to attempts of corruption and favouritisms. Unfortunately the news of these last years (especially referring to the test of the Faculty of Medicine and Surgery) cast a shadow on this idea.

For several years many teachers of Veterinary Faculties thought that it was not really useful, or better, it was without common sense and just against the interest of the students, to do any kind of advertising for the Faculty of Veterinary Medicine. In fact, for these colleagues, because the presence of the "*numerus clausus*", the number of the students admitted is always the same, whichever is the number of the students participating to the admission test.

Fortunately, over the last few years such an attitude, rather deep seated especially in elder teachers, is changing. It is incoming the idea that the higher the number of students participating to the admission test, the higher the quality of the students registered at the FVMP. For this reason, over the last 7-8 years the Faculty has been actively participating to the events organised by the University of Pisa to orientate the choices of students at the end of their Secondary High Schools

studies who have to decide which Faculty to choose.

9.3. Suggestions

For the next academic years it is suitable a more careful planning of the "*numerus clausus*" of the Veterinary Medicine Degree Courses in the Italian University, based on the real structures of the different Faculties. Furthermore the Deans of the Italian Veterinary Faculties should effect some pressures on the National Ministry for trying to modify the admission test to the Veterinary Medicine Degree Course to look for enrolling the most motivated students.

The action of lobbying within the Italian Conference of the Deans of Veterinary Medicine should continue actively, perhaps by trying to approach local or national TV producers to try and convince them to organise documentaries showing the various important roles a veterinarian can play in our society especially for public health. Also, the Faculty must continue to be active in providing information to Senior High School students concerning the various aspects of being a veterinarian as well as describing job opportunities.

After admission, already from the first year on, students should be educated to understand the importance of working in public health or in food animals, as well as to be aware of the difficulties in finding jobs in pet care. In this context students could be driven to do more practical training in veterinary areas which are less crowded or less known.

9.4. Annotations

Chapter 10 – ACADEMIC AND SUPPORT STAFF

10.1. Factual information and comments

10.1.1. The staff of the FVMP

In this Chapter the budgeted posts[7] will be mainly (and more precisely) considered not only because these posts are those which guarantee the performing and the continuity of teaching and research, but also because the non-budgeted posts[8], even if often relevant as far as number, quantity and quality of the work performed, are very variable along the (even short) term and not always exactly measurable. Anyway it is absolutely sure that many research activities of the Departments could not be performed without the work of these young persons.

Furthermore, non-budgeted personnel is utilised in teaching activities too, even if in a less relevant amount than in research. This personnel usually supports practical work of students and, sometimes, provides short cycles of formal lectures about specific topics too. This happens also because the Italian law foresees that the formal teaching activity (and, in particular, lectures) must be performed only by academic budgeted staff. External persons can teach only on the basis of a formal specific contract and only if there is a demonstrable lack of academic teaching staff.

As it will be shown in the next paragraphs, a gross estimation of the contribute of non-budgeted posts can be reasonably assessed at 10% for the teaching activities and 35-40% for research.

10.1.1.1. The teaching and support staff of the FVMP

As already mentioned in paragraph 2.1.2.1, the question of whether teaching and support staff "belongs" to Faculties or Departments is rather complex. In fact, whilst teaching staff posts are budgeted to the Faculties, and all the teachers must choose in which Department they want to do their research, support staff posts are budgeted to the University, which decides which Faculty or Department personnel has to be assigned to.

Anyway, even if from the formal and administrative point of view Faculties and Departments have their own technical and administrative staff, for practical reasons throughout this paragraph it will occasionally be considered altogether inside the FVMP (and its area). The following tables shows the teaching and support staff of all the FVMP. The personnel specifically engaged in the teaching activities related to the Degree Course in Veterinary Medicine will be identified in paragraph 10.1.2.

The teaching budgeted staff currently at the FVMP is reported in table 10.1.1.1.a. It should be noted that before the end of 2009 one Associate Professor and one Assistant Professor will retire.

Table 10.1.1.1.a – Budgeted teaching staff at the FVMP, per category

	Number	Percentage
Full Professors	21	24.1%
Associate Professors (1)	30	34.5%
Assistant Professors (2)	36	41.4%
TOTAL	87	100.0%

(1) One Associate Professor will retire on the 31st December 2009.
(2) One Assistant Professor will retire on the 31st October 2009.

Table 10.1.1.1.b shows the percentages of the various teachers' category in the Faculties of the University of Pisa. From this table it is possible to see that the FVMP has a composition of the teaching staff quite different from the average of the University of Pisa and from many other

[7] Budgeted posts are those with open-end contracts, for which the Universities receive funds by the national Ministry. These posts are permanent.

[8] Non-budgeted posts are those with end-contract. This personnel is always engaged with a specific formal contract. These contracts are of the most different kind, duration and amount. This personnel can be used for general support activities (mainly technical), to support (but also to perform) research, to support teaching activities and, sometimes, to give short cycles of lectures about specific topics.

Faculties. In fact, only the Faculties of Veterinary Medicine, Pharmacy and Medicine and Surgery have less Full Professors than Associate Professors and less Associate Professors than Assistant Professors. Even if this kind of structure is considered a good one, it must be noted that, with the present situation where it is not really possible to start search processes for new posts because of financial difficulties of the University, the youngest colleagues feel that they do not have any hope of career advancement, and thus they cannot find enough stimulations to better perform their activities (see also paragraph 10.2.1).

Table 10.1.1.1.b – Percentages of the various teacher categories in the University of Pisa, per Faculty

Faculties	Full Prof.	Associate Prof.	Assistant Prof.	Total
Agricultural Sciences	38.6%	20.5%	41.0%	100.0%
Economics	36.0%	28.1%	36.0%	100.0%
Pharmacy	*22.0%*	*35.6%*	*42.4%*	*100.0%*
Law	39.3%	19.1%	41.6%	100.0%
Engineering	37.7%	30.7%	31.6%	100.0%
Literature and Philosophy	39.3%	30.6%	30.1%	100.0%
Foreign Languages	31.3%	40.0%	28.8%	100.0%
Medicine and Surgery	*26.2%*	*34.2%*	*39.7%*	*100.0%*
Veterinary Medicine	**24.1%**	**34.5%**	**41.4%**	**100.0%**
Natural Sciences, Math. & Phys.	30.1%	31.6%	38.2%	100.0%
Political Sciences	32.8%	26.2%	41.0%	100.0%
University of Pisa	**32.6%**	**31.0%**	**36.4%**	**100.0%**
Italian public Universities	**29.8%**	**28.6%**	**41.6%**	**100.0%**

The distribution of the teaching and support staff per category in the various Departments of (or connected to) the Faculty of Veterinary Medicine is reported in table 10.1.1.1.c. For the non-budgeted staff the turnover is rather high, in connection with the end either of the period of their post degree studies or of their contracts; but a fair number of them remains at the University with any other kind of contract. So their global number tends to increase over the years.

Table 10.1.1.1.c – Allocation of academic teaching staff, expressed as FTE, and support staff to the various Departments

Faculty or Department	**Academic teaching and research budgeted staff (1)**						**Research staff (2)**		**Support staff**			
	Full Prof.		Associate Prof.		Assistant Prof.		Non-budgeted posts		Technicians	Animal	Admin.	Gen. Serv.
	VS	NVS	VS	NVS	VS	NVS	VS	NVS	(b + d + e)	carers (a)	(c1)	(c2)
Faculty & Library									5	1	4	5
Dept. APPFH	5	3	9	1	11	1	8.4	7.2	16		4	2
Dept. AP	1	2	2	5	2	9		7.5	9	4	3	3
Dept. VC	7	1	7	2	6	2	13.3	1	8	3	5	1
Dept. AMAES				1		1						
Dept. Biology				1								
Dept. Physics				1								
Dept. PS – VP	1	1		1	3	1	5.5	5	3		1	
Total	**14**	**7**	**18**	**12**	**22**	**14**	**27.2**	**20.7**	**41**	**8**	**17**	**11**
TOTAL	**87**						**47.9**		**77**			

(1) The main tasks of all Italian University teachers are both teaching and research.
(2) This personnel includes all those who participate at any level to research activities (PhD, contracts, scholarships, etc.).
VS = Veterinary Surgeon. NVS = Non Veterinary Surgeon.
- Dept. APPFH = Department of *Animal Pathology, Prophylaxis and Food Hygiene.*
- Dept. AP = Department of *Animal Production.*
- Dept. VC = Department of *Veterinary Clinics.*
- Dept. AMAES = Department of *Agronomy and Management of Agro-Ecosystem.*
- Dept. PS-VP = Department of *Physiological Sciences*, Section of *Veterinary Physiology.*

As already stated, the number of non-budgeted posts is relevant. These persons certainly play a very important (and sometimes even strategic) role in developing research within the Departments. This situation is not only present at the FVMP, but all over the Italian University system. Many of these persons remain at the University for a very long time, still waiting for a budgeted post. This

situation inevitably creates difficulties and even social tensions. Over the last several years a national movement of these non-budgeted university personnel has achieved some kind of organisation to put strong pressure on every University as well as on the Ministry to establish new budgeted posts for Assistant Professors.

Table 10.1.1.1.c clearly shows one of the most relevant problems of Italian Universities: the very small number of support staff in comparison with the academic teaching staff. At the FVMP this ratio is 1:0.88 (1:0.71 not including the Dean's Office and the Library staff). Such a ratio (typical of all Italian Universities: see table 10.1.1.1.d) necessarily obliges teachers (and not only younger ones) to perform mansions that actually do not pertain to their status, and even to waste a lot of time in bureaucratic activities in support of their research.

Table 10.1.1.1.d – The ratio *teaching : support staff* in the public Italian Universities

Budgeted posts	Faculty of Pisa's Veterinary Medicine	University of Pisa	All public Italian Universities
Teaching staff	87	1,807	60,712
Support staff	77	1,424	56,603
Total teaching and support staff	164	3,231	117,315
Ratio teaching : support staff	1 : 0.88	1 : 0.79	1 : 0.93

Note: Data referring to Pisa are at the 1st October 2009. Data referring to the Italian Universities are at the 31st December 2008.

At the same time we must recognise that every time teachers must choose, they always prefer to have a new budgeted post for an Assistant Professor rather than a new unit of support staff. Perhaps for this reason, any decision about budget allocation to new posts of support staff is in the power of the Council of Administration, and this budget is assigned to the Faculties and to the Departments directly by the Administrative Director. In order to avoid a further decrease of the number of the support staff, over the last four years the University of Pisa decided to fix the percentage of the total amount of the expense for the wages of the support staff out of the total amount for the wages spent by the University both for teaching and support staff at the value of 25%. A simple processing of data already shown in table 3.1.1.a, and now reported in table 10.1.1.1.e, clearly demonstrates that at the FVMP this percentage is quite exactly respected in the average of the last three years: 24.88%. It means that there are no real possibilities to see a relevant increase of the number of support staff at the FVMP in the near future.

Table 10.1.1.1.e – Percentages of the expenses for teaching and support staff at the FVMP

Year	By the State to the University for the wages of the		Total expenses for teaching and support staff
	teaching staff A	support staff B	C1 = A+B
2006	7,195,346	2,379,809	9,575,155
2007	7,287,560	2,407,300	9,694,861
2008	7,004,949	2,331,038	9,335,987
Average	7,162,619	2,372,716	9,535,334
Percentage	75.12%	24.88%	100.00%

Table 10.1.1.f shows a synthesis of the distribution of teaching and support staff.

Table 10.1.1.f – The teaching and support staff of the FVMP and of the Departments of its area (FTE)

1. Academic staff	Budgeted posts		Non-budgeted posts		Total posts	
	VS	NVS	VS	NVS	VS	NVS
a. Teaching staff (total FTE)	54	33			54	33
b. Research staff (total FTE)			27.2	20.7	27.2	20.7
c. Others (please specify) (FTE)						
Total FTE	54	33	27.2	20.7	81.2	53.7
Total FTE academic staff (Vets + Non Vets)	**87**		**47.9**		**134,9**	
FTE providing last year teaching	12		1.9		13.9	

2. Support staff	Budgeted posts	Non-budgeted posts	Total posts
a. Care and treatment of animals	8	3	11
b. Preparation of practical and clinical teaching	13		13
c1. Administration	17	1	18
c2. General services, maintenance, etc.	11		11
d. Support to research	23		23
e. Others (teaching services, web services, etc.)	5	1	6
Total support staff	**77**	**5**	**82**

3. Total staff	Budgeted posts	Non-budgeted posts	Total posts
Total academic and support staff	**164**	**52.9**	**216.9**

VS = Veterinary Surgeon. NVS = Non Veterinary Surgeon.

10.1.2. The staff dedicated to the Degree Course in Veterinary Medicine

10.1.2.1. The criteria utilised to identify the FTE staff for the Degree Course in Veterinary Medicine

As the FVMP has activated three other Degree Courses, it has become necessary to precisely identify the number of full time equivalent budgeted teachers which are engaged in the Degree Course in Veterinary Medicine.

The procedure utilised for this goal has been the following.

1. For all the budgeted teaching staff, 400 hours have been considered the number of hours of their full time engagement.
2. The total teaching load of each teacher of the Faculty has been calculated including:
   - lectures at the different Degree Courses and at the Specialisation Schools;
   - practical works performed with the students;
   - examinations (half a hour per student, not counting "*off-course*" ones);
   - time for preparing lectures and practical works (two hours per each lecture and practice hour);
   - it must be underlined that the time spent by the teachers in supervising the final thesis, tutoring students, taking care of teaching-related bureaucracy etc. has not been considered: therefore, the level of engagement of budgeted teachers has been certainly underestimated.
3. For each teacher, the hours of teaching load performed either at the Veterinary Degree Course or at the Specialisation Schools have been attributed to the veterinary education.
4. All the teachers have been evaluated as FTE in Veterinary education in accordance with their percentage out of the 400 hours dedicated to the Veterinary Degree Course and to the Specialisation Schools. Any teacher performing more than 400 hours has been anyway considered as 1 FTE (actually another underestimation of the teaching engagement).

10.1.2.2. The teaching and support staff for the Degree Course in Veterinary Medicine

The result of the procedure shown in the previous paragraph is that the number of FTE budgeted teachers of the FVMP engaged in the Veterinary education is **59.51** teachers, out of the 87 budgeted posts. To these 59.51 FTE must then be added 5.00 FTE non budgeted posts, with a total of **64.51** FTE teachers. Actually, in the calculations of the ratios only the 59.51 academic teachers have been considered.

Table 10.1.2.2.a shows the budgeted teachers engaged in Veterinary education, per level of engagement. This table shows how almost all the teachers of the Faculty (91%) teach in the Degree Course in Veterinary Medicine and/or in the Specialisation Schools. Almost 50% (42) of the 87 academic teachers are engaged only in the veterinary education.

Even if almost 40% of the teachers of the FVMP (34 out of 87) are not Veterinary Surgeons, the percentage of the Veterinary Surgeons grows with the level of the engagement in veterinary education. Basically, two third (65.8%) of the 79 teachers, counted per head, and not as FTE, engaged in veterinary education are Veterinary Surgeons. This percentage slightly increases if we

consider the teachers engaged in veterinary education as FTE teachers. These figures are reported in table 10.1.2.2.b, which shows that this percentage is slightly higher than 70% if we consider both budgeted as well as non budgeted staff: 70.27% versus 70.73%, with a global weighted average of 70.30%.

Table 10.1.2.2.a – Teachers engaged in the veterinary education, per level of engagement

	VS	NVS	TOTAL	% Teachers	%VS	
100% teaching load in veterinary education	31	11	42	48.3%	73.8%	
50-100% teaching load in veterinary education	11	7	18	20.7%	61.1%	
25-50% teaching load in veterinary education	7	4	11	12.6%	63.6%	
10-25% teaching load in veterinary education	3	5	8	9.2%	37.5%	65.8%
0-10% teaching load in veterinary education	0	0	0	0.0%		
No teaching load in veterinary education	1	7	8	9.2%	12.5%	
TOTAL	53	34	87	100.0%	60.9%	

VS = Veterinary Surgeon. NVS = Non Veterinary Surgeon.

Table 10.1.2.2.b – The percentages of VS-NVS in the teaching staff engaged in veterinary education at the FVMP

	Budgeted teaching staff		Non-budgeted teaching staff		Total teaching staff	
	Value	Percentage	Value	Percentage	Value	Percentage
Veterinary Surgeon teachers	41.82	**70.27%**	2.90	**70.73%**	44.72	**70.30%**
Non-Veterinary Surgeon teachers	17.69	29.73%	1.20	29.27%	18.89	29.70%
Total teachers	59.51	100.00%	4.10	100.00%	63.61	100.00%

Table 10.1.2.2.c shows the number of teaching and support staff in Veterinary education at the FVMP. Globally 64.51 teachers are engaged in Veterinary education, helped by 38 units of support staff. In this last figure all the personnel of the Dean's Office is included. Therefore, the total amount of the persons (as FTE) engaged in the Veterinary education arises to 102.51.

Table 10.1.2.2.c – The teaching and support staff in veterinary education at the FVMP

1. Academic staff	Budgeted posts		Non-budgeted posts		Total posts	
	VS	NVS	VS	NVS	VS	NVS
a. Teaching staff (total FTE)	41.82	17.69			41.82	17.69
b. Research staff (total FTE)			3.60	1.40	3.60	1.40
c. Others (please specify) (FTE)						
Total FTE	41.82	17.69	3.60	1.40	45.42	19.09
Total FTE academic staff (Vets + Non Vets)	**59.51**		**5.00**		**64.51**	
FTE providing last year teaching	12.00		1.90		13.90	

2. Support staff	Budgeted posts	Non-budgeted posts	Total posts
a. Care and treatment of animals	8.00	3.00	11.00
b. Preparation of practical and clinical teaching	13.00		13.00
c1. Administration	4.00		4.00
c2. General services, maintenance, etc.	5.00		5.00
d. Support to research			
e. Others (teaching services, web services, etc.)	5.00		5.00
Total support staff	**35.00**	**3.00**	**38.00**

3. Total staff	Budgeted posts	Non-budgeted posts	Total posts
Total academic and support staff	**94.51**	**8.00**	**102.51**

VS = Veterinary Surgeon. NVS = Non Veterinary Surgeon.

10.1.3. Ratios

Table 10.1.3 provides details about all the data necessary to calculate the ratios R1, R2, R3, R4 and R5. These data are taken by tables of this Chapter and of the previous ones.

Table 10.1.3. – Synthesis of the data necessary to calculate the ratios R1, R2, R3, R$ and R5

Figure	Typology of data	Value
A	No. undergraduate Veterinary students ("*off-course*" not included) (1)	502
B	No. undergraduate students at Faculty ("*off-course*" not included) (1)	1,029
C	No. students graduating annually (average of the last five years)	87.80
D	No. total academic FTE in Veterinary training	59.51
E	No. total academic FTE at Faculty	87
F	No. total Veterinary Surgeons FTE in Veterinary training	41.82
G	No. total FTE support staff in Veterinary training	32.00

(1) *Off-course* students have not been included for the calculation of these ratios in consideration of the fact that anyway these students, from a teaching point of view, are a burden only for examinations as they do not attend lectures and practical works more than once.

$$\textbf{R1:}\ \frac{\text{No. total academic FTE in Veterinary training (D)}}{\text{No. undergraduate Veterinary students (A)}} = \frac{59.51}{502} = \frac{1}{8.44} \Rightarrow \textbf{Denominator: 8.44}$$

$$\textbf{R2:}\ \frac{\text{No. total academic FTE at Faculty (E)}}{\text{No. undergraduate students at Faculty (B)}} = \frac{87}{1{,}029} = \frac{1}{11.82} \Rightarrow \textbf{Denominator: 11.83}$$

$$\textbf{R3:}\ \frac{\text{No. total VS FTE in Veterinary training (F)}}{\text{No. undergraduate Veterinary students (A)}} = \frac{41.82}{502} = \frac{1}{12.00} \Rightarrow \textbf{Denominator: 12.00}$$

$$\textbf{R4:}\ \frac{\text{No. total VS FTE in Veterinary training (F)}}{\text{No. students graduating annually (C)}} = \frac{41.82}{87.80} = \frac{1}{2.10} \Rightarrow \textbf{Denominator: 2.10}$$

$$\textbf{R5:}\ \frac{\text{No. total VS FTE in Veterinary training (F)}}{\text{No. total FTE support staff in Veterinary training (G)}} = \frac{59.51}{32.00} = \frac{1}{0.54} \Rightarrow \textbf{Denominator: 0.54}$$

10.2. Additional comments

10.2.1. Comments on the levels of staff salaries

The wages of Italian University staff, and especially of teaching staff, are very difficult to calculate. Even more difficult, because of taxes and many other deductions from the payroll, it is to determine the net amount of money actually received by each person. Furthermore the development of the economic career of Professors not only is very complex to determine, but it is also very variable in its growth along the various periods of their career. Because of all these reasons, it is quite impossible to indicate a real "average net wage" of the Italian University staff and, in particular, of the University Professors. Anyway we can try.

The national law n. 382/1980 established that a) the gross annual wage of Associate Professors is 70% of the gross annual wage of the Full Professors, and b) the gross annual wage of Assistant Professors is around the 70% of that of Associate Professors. On the basis of these rules and of the average expenses for personnel wages, five years ago the Ministry, in an attempt to keep under control the expenses of the Universities for their teaching and support staff, fixed some "standard weights" among the various categories of personnel. These weights are reported in the first column of table 10.2. Furthermore, with the goal to evaluate the average gross annual cost of each category of personnel, the Ministry, on the basis of these weights, also evaluated their standard annual gross costs. The result is in the second column of table 10.2. Going from the gross wage to the net one is very difficult because of the very many variables which play a role. At any rate, a very rough estimation of the annual and monthly (12 months: year-end bonus included) wages for the different staff categories are reported in the third and fourth columns of table 10.2. These are values around the middle of the career: actually they are rather lower at the beginning and much higher at the end, especially for Full Professors.

Anyway we must underline that these average values grow up very much, especially for Full and Associate Professors, with the growing length of their service. Also, it should not be forgotten that, whilst Assistant Professors must retire at the age of 65 years, Associate Professors can remain in service until 68 and Full Professors until 70 years of age[9]. In other words they have many years to grow in their economic career.

Table 10.2 – Gross standard annual costs and estimation of average net wages of teaching and support staff (euro)

	Ministerial standard weights	Standard annual gross cost for the University	Estimation of annual net wage per person	Estimation of monthly net wage per person
Full Professor	1.00	105,000	47,250	3,938
Associate Professor	0.70	73,500	36,750	3,063
Assistant Professor (1)	0.50	52,500	28,875	2,406
Support staff	0.30	31,500	18,900	1,575

Note: In the monthly wage (12 months) the year-end bonus is included.

(1) The costs reported in this table refer to an average career. Since the Assistant Professors of the FVMP (as shown in paragraph 0.1.3) are very young, at present their wage is much less than the one reported in the table.

The crucial question is: are these net wages competitive with the income obtainable in the other sectors where Veterinarians can operate? Currently the Italian Veterinary job market is experiencing heavy difficulties. Even if in the past years the attitude of people, in a general situation of growing affluence, towards the pets and the animal in general has deeply changed with a consequent growing willingness of the families to spend for animal care, the situation has started to change over the last few years. In fact, not only the economic crisis induces people to change their consumptions, but the job offer in small animal care has drastically reduced. Furthermore there are still too few Veterinarians holding some kind of advanced post-graduate or European College degree: in other words, too many Veterinarians just doing the same things.

It should be noted that in our situation the opening of a private veterinary clinic requires an initial investment of at least 60-80,000 euro; then it needs time to succeed in launching the activity, and more additional study is always requested. Certainly all these difficulties related to finding a compared to the reliability of a long term University job certainly plays an important role in favour of the decision taken by a young Veterinarian to enter the University, even if the wage of non-budgeted posts is quite less than the average shown above (around 1.500 euro per month).

But time goes by, and while professionalism and level of specialisation of young teachers increases, their wages very often do not grow at the same rate. Only those Assistant Professors who have the opportunity to apply for higher level positions can have both more professional satisfactions and perspectives of interesting wage improvement. Otherwise they can begin to think that, with their level of professionalism and specialisation, they could have much higher satisfactions in the private sector. And therefore they start thinking about working outside the

[9] The retiring ages have been recently changed. Until two years all these ages were two years higher: respectively, 67, 70 and 72.

University too. Actually the risk of the present economic situation of the University of Pisa is just the following: over the last five years practically no new search process for posts of Full or Associate Professors has been issued. And this could discourage young people to improve their engagement in teaching and research activities.

In the past another very interesting employment for Veterinarians was in the National Health Services. As from the administrative point of view NHS veterinarians are considered pair to human medical staff, their wages are very high (compared to veterinarians working at the University) already at the beginning of their career. This creates a very strong competition with the Academic job. However, again for the heavy budgetary difficulties of the Italian State, this channel of employment has recently been substantially curbed, and is currently limited to only a partial substitution of retired staff.

At the same time the wages of the support staff are really very low. The value shown above is just an average not only because of the length of service, but also because of the level. The lower levels have wage much lower than that average value. Also, there is no serious mechanisms neither to stimulate good practices nor to discourage bad ones. As a consequence, the extreme situation is well represented by this terrible joke, very well known in many Italian public offices: "As long as they will pretend they are paying me, I will pretend I am working…".

10.2.2. Comments on recruiting and retaining personnel

On the basis of the considerations developed all along this Chapter, actually there is no real problem neither in recruiting nor in retaining personnel, especially the ones involved in the research activity. The only problem, real and serious, is whether or not the University will succeed in finding funds to promote new search process for posts of Assistant Professors.

Working in research still fascinates and exerts a remarkable attraction on young graduates although certainly this is true more from the personal and professional rather than economic point of view. This happens also because, in general, the Italian University education is actually more devoted to produce young researchers rather than young professionals.

In this way many young graduates remain to work, in many different ways, at the University often continuing their thesis work. This temporary employment very often ends up in being not really temporary, and in many cases it may lasts many years. It is not unusual for people to have to wait for ten years and more for a budgeted post, without any kind of certainty. This inevitably creates social (and personal) problems both to the University and to the concerned people as well as to their referring teachers too.

10.2.3. Comments on the percentage of Veterinarians in the academic staff

Even if in a Faculty of Veterinary Medicine the percentage of Veterinarians as teachers seems to be never high enough, this percentage at the FVMP, a little more than 70% as FTE teachers: 70.3%, seems to be adequate. The percentage is lower, but not too much: 60.9%, for all the Faculty teaching staff. Actually this fact is inevitable just because some non-Veterinary subjects are formally requested by the law, and experience shows that it is much better to have these teachers formally working at the Faculty rather than to have to look for them outside time by time. In the long term they can better understand what the Veterinary students really need of these subjects.

Furthermore a certain number of non-Veterinary teachers are important in a Faculty which has activated other Degree Courses in the animal husbandry area. Some of these professionalisms can better be found in other types of graduates, mainly in the same Degree Course of *Sciences and Technologies of Animal Productions* and, to a lower degree, in *Agricultural Sciences*.

10.3. Suggestions

In the current financial situation of the University of Pisa it appears really difficult to suppose that the FVMP could increase its budgeted personnel. If the Faculty wants to maintain, or, better, to improve, the current teaching level, it must look very seriously for new external funds to hire more non budgeted posts who could give a help especially in student practical work. In this context the Veterinary Teaching Hospital must be seen as an important opportunity to have clinical cases, student practical work and money enough to pay external personnel.

10.4. Annotations

Chapter 11 – CONTINUING PROFESSIONAL DEVELOPMENT

11.1. Factual information and comments

11.1.1. Continuing Professional Development in Italy

In Italy, over the last 3 decades, the continuing professional development of Veterinarians has been performed mostly by private scientific and professional veterinary associations. Undoubtedly the quality level of these events has anyway been generally very good. For many years, most Faculties of Veterinary Medicine have generally limited their activities to the institutional ones: Degree Courses and Specialisation Schools.

Perhaps it mainly happened for three reasons. The first one is the fact that, in Italy, only Universities can issue educational titles which have legal value. And this is particularly true for the sanitary area, and therefore for the Veterinary Medical Degree. This meant that, until the issuing of the Ministerial Decree n. 509/99, the Veterinary Medical Degree and the diploma of the Specialisation Schools were the only two legal education titles available for Veterinarians. Because of this reason, Veterinary Faculties concentrated their efforts mainly in these two institutional teaching activities. However, we must recognise that Universities acted in a "monopolistic situation", sometimes with all its inevitable consequences. In this context University teachers really preferred to insert their specialised knowledge in the under degree curricula rather than to teach them in higher level post degree courses. This fact has been two unpleasant effects: on one side the under degree curricula become heavier and heavier for students (who actually didn't very often have competences enough to completely appreciate this specialised teaching); on the other side for a long time the Universities, except for the Specialisation Schools, have been not really interested in the supply of Continuing Professional Development (CPD) teaching, limiting to organise some sporadic events.

The second reason is the fact that during the '60s and '70s many university teachers, particularly clinicians, were not too keen in being challenged by private practitioners in their professional activities. The Veterinary School was, in some extreme cases, perceived as a feud where academicians could practice at a level which was undisputedly regarded as the best possible one, and nobody would dare to publicly challenge the expertise and professionalisms of many of these professors.

The third reason is the performance of one of the two national companion animal veterinary association, AIVPA (*Italian Association of Veterinarians for Small Animals*) which, during the '70s, was the only such association present in the Country. At that time AIVPA was in its infancy and it had given itself very strict rules, one of which was that only those veterinarians who owned a small animal clinic could be members of the association, which would leave a vast majority of small animal veterinarians frustrated. This fact, coupled with a non professional and rather parochial approach to CPD, led to the birth of a second association called SCIVAC (*Italian Cultural Society of Veterinarians for Companion Animals*) which developed thanks to the efforts of some young veterinarians who had done stages abroad, particularly in Northern Europe and in the USA, and had then developed a taste for what was a professional way of organizing CE for veterinarians. This led to a strong dualism between AIVPA and SCIVAC; the former rapidly eliminated its restrictions to entry and improved its performance within a few years and has been up to standards since the early '90s; the latter, thanks to its early start as a very professional and well organised association, now accounts for a vast majority of members (approximately 8,000, versus 1,000 members for AIVPA). In its early days, SCIVAC led a crusade against Veterinary Academia in Italy, claiming that clinicians working in Italian Veterinary School were outdated professionals. As a result, until recently all SCIVAC CE conferences were featuring almost exclusively foreign speakers (with few exceptions) and Veterinary Faculties were not taken into consideration for the organisation of CE events.

The situation has now deeply changed, with clinical disciplines being taught in all Veterinary

Schools throughout the Country at a level which is comparable to that of the rest of the Western World, and with many Italian academicians now being regularly invited as speakers in SCIVAC (as well as AIVPA) CE events. However, the strong dualism between AIVPA and SCIVAC still exists, which causes a very strong and high-quality (although still fairly expensive) offer of CPD events every month in every Region of Italy, with the two associations sometimes organizing conferences on the same date in the same city. In this panorama, the organisation of CE events by any Veterinary School has been, in general, rather difficult for the uncertainty of the number of delegates attending because of the high offer of CE events basically every week-end (although the lower cost of attending CE events organised by Veterinary Schools, as compared to CE events organised by AIVPA or SCIVAC, has been of help in some cases).

With the MD n. 509/99 the situation greatly changed. In fact this MD for the first time officially introduced the University Master title[10]. This fact opened the Academia to a more flexible teaching offer. Veterinary Faculties not only started to organise Master courses (for the FVMP see paragraph 12.1.3), but also began to organise many short CE events which now are of a very high quality, just because the high level of the opportunities currently being offered by the two private veterinary associations.

11.1.2. Continuing Professional Development at the FVMP

Over the last seven years a growing number of CE events has been organised by the FVMP on many different topics of interest to already graduated Veterinarians but also to undergraduate students. Actually during these years the FVMP has actively (and successfully) operated to become the centre of a scientific and professional debate about all the topics of Veterinary interest. The Faculty has also given hospitality to initiatives organised by other parties such as Scientific Veterinary Associations, public subjects, private Veterinarians, etc.

A detail of the number of events performed by the FVMP is reported in table 11.1.2.a. The table may not really complete, because the memory of some events might have been lost. The detailed list of all the events, classified per general subject and listed per date, is reported in paragraph 11.1.3.

Table 11.1.2.a – Events organised by the FVMP, per year and per month

Month	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
January				1	1	1	2	3			1	9
February							1	3	4	2	6	16
March			1	3	4	2	3	4	4	5	3	29
April	2		1		1		3	2	2	6	4	21
May		1	2	1	2	3	4	3	2	1	6	25
June	1	4			3	3	1	2	2	2		18
July												
August												
September									1	2		3
October					2		3	1	1	1		8
November	1	2	1	2	1	6	2	1		2		18
December				2		6				1		9
Total	4	7	5	9	14	21	19	19	16	22	20	**156**

Note: 20 of these events have been "multiple" ones: i.e. composed by 2-5 meetings on the same topic.

Table 11.1.2.b shows the events organised by the FVMP classified per year and per general subject. From this table it is possible to see the high variety of topics touched by these events, with almost all the professional areas of the Faculty being involved in organising CE initiatives. All these events are always open to undergraduate students. Therefore, even if student's participation is

[10] Until the issuing of MD n. 509/99 Master was only an "informal title", with neither a regulation nor a legal value. On the basis of this MD, "University Masters" have a regulation and legal value.

not always high, we feel that the amount of opportunities for learning that veterinary medical students can have during their career at the University of Pisa is an added value.

The level of attendance to the events is fairly variable. Participation is usually higher in the case of more traditional topics, and (unfortunately) lower for the newer topics, which demonstrates that at least our graduates are still too focused on the classical aspects of our professions rather than looking for new avenues in the job market.

Table 11.1.2.b – Events organised by the FVMP, per year and per general subject

General subject	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Clinics of small animals	1			1	2	6	1	5	2	7	4	29
Dog and its topics: the breeds								1	2		3	6
Dog and its topics: the genetics						1	3	2	2			8
Dog and its topics: miscellany					1		5	3	1			10
Horse and its topics					2	3	1	1	2		1	10
Infectious, bacterial and parasitic diseases	3		4	4		2	2	1	4	2	8	30
Food Hygiene				1	4		1	1	2	4	2	15
Farm animals		2		3	3	5	2	2		5	2	24
Wild fauna and its management		1	1				4	1	1	1		9
Miscellany		4			2	4		2		3		15
Total	4	7	5	9	14	21	19	19	16	22	20	**156**

It must be underlined that the topics treated inside the University Masters organised by the FVMP (see paragraph 12.1.3) are only marginally touched in these postgraduate events. This is due to the fact that the lectures of the Masters are often open to non-registered attendants too; the most relevant ones are well advertised for a larger participation.

11.1.3. The Continuing Professional Development events organised by the FVMP

In this paragraph all the CPD events organised at the FVMP are listed per general subject and per date.

Table 1 – Clinics of small animals

Date	Subject of the event
15-nov-1999	The Ostrich (Struthio camelus): breeding, diseases and clinical aspects
30-nov-2002	Feline behavioural diseases
08-09-mar-2003	Non conventional veterinary medicines: un update (2 meetings)
04-06-apr-2003	Feline radiology: an update (2 meetings)
17-18-jan-2004	Acupuncture in veterinary practice (2 meetings)
15-may-2004	Small animal anaesthesia: theory and practice
13-jun-2004	Skin nodules in the dog and cat: pathogenesis and clinical correlates of the most important lesions
26-jun-2004	Transfusion therapy and blood diseases in the dog and cat
21-nov-2004	Homeopathy in veterinary medicine
04-dec-2004	An introduction to pet therapy
23-jan-2005	Behavioural veterinary medicine
02-feb-2006	Animal welfare management
07-mar-2006	Practice management
09-may-2006	Cardiomiopathies in dog
Oct-Nov 2006	Obstetrics and gynaecology in small animals (3 meetings)
03-nov-2006	Management of the “client with problems” in the veterinary practice
23-feb-2007	Welfare of companion animals
29-30-sep-2007	Homeopathy and phytotherapy in veterinary practice (2 meetings)
14-28-mar-2008	Practical course on acupuncture (2 meetings)
2008	Behavioural veterinary medicine (5 meetings)
22-mar-2008	Reproduction in dogs and cats
2009	Behavioural medicine and rehabilitation treatments (5 meetings)
05-jun-2008	Laboratory data integration in the clinical practice: some clinical cases.
27-28-sep-2008	Canine dermatology (2 meetings)
22-nov-2008	Slow Food and companion animals: re-discovering home-made food

2009	Behavioural veterinary medicine (5 meetings)
Feb 2009	Reproduction in dogs and cats
2009	Nephrology and urology (5 meetings)
15-16-may-2009	Phytotherapeutic drugs in Veterinary Medicine: a knowledge between science and tradition (2 meetings)

Table 2 – Dog and its topics: the breeds

Date	Subject of the event
07-jun-2006	Rescue dogs
22-feb-2007	The "Corso" dog: history and development
27-apr-2007	Nordic sled-dogs
27-feb-2009	Morpho-functional analysis of Rottweiler (a trotter) and Doberman (galloper) dogs
06-mar-2009	Morpho-functional analysis of sled-dogs
21-may-2009	Sled-dogs: their breeds and history

Table 3 – Dog and its topics: the genetics

Date	Subject of the event
17-dec-2004	Canine Genetic diseases
05-apr-2005	Prevention and control of canine hereditary cardiomiopathies
19-apr-2005	Canine breeding and hereditary neurologic conditions: congenital deafness, epilepsy and spinal malformations
19-oct-2005	Genetics of hair colour in the dog
27-apr-2006	Genetic management of small canine populations
25-may-2006	Guide dogs for the blind: selection and training
23-feb-2007	Practical aspects of organising a genetic selection plan for dog
02-mar-2007	Control and eradication of canine genetic diseases

Table 4 – Dog and its topics: miscellany

Date	Subject of the event
10-may-2003	Electronic microchip identification of pets
27-jan-2005	Dog breeding-related activities: safety and risk prevention
17-feb-2005	Dog breeding-related activities: biologic risk and working traumas
05-mar-2005	Olfactory capacities of rescue dogs
31-mar-2005	The importance of playing games in canine education and training
09-nov-2005	Dog trainer: current perspectives and opportunities for a new profession
31-jan-2006	What lies ahead for the hunting dog breeding business?
28-feb-2006	Signs of calm in the dog
09-mar-2006	Practical course for canine nursing related activities in Police dogs
05-28-jun-2007	Training course on management of public utility dog for the State Forestry Corp (2 meetings)

Table 5 – Horse and its topics

Date	Subject of the event
01-mar-2003	Reproduction techniques in horse
26-oct-2003	Equine sport medicine
08-nov-2004	Equine reproduction
13-nov-2004	The use of viscous components and their application in equine arthrology
04-dec-2004	On the proper nutritional and health management in equine breeding
23-jun-2005	Equine neonatology
05-mar-2006	Gastric ulcers in the horse
07-mar-2007	Equine infectious anaemia: current situation and epidemiological perspectives
14-jun-2007	Equine reproduction and neonatology
06-mar-2009	Epidemiology, prevention and control of intestinal strongylosis in the horse

Table 6 – Infectious, bacterial and parasitic diseases

Date	Subject of the event
16-apr-1999	Biology of ovine pulmonary carcinoma (pulmonary adenomatosis): A retrovirus-induced lung cancer of sheep
16-17-apr-1999	COST Meeting: Lentivirus of sheep and goats: pathogenesis, diagnosis and prevention (2 meetings)
10-jun-1999	Contagious ecthima (ORF) virus: an update
19-mar-2001	Bluetongue is no more an exotic disease
06-apr-2001	Emerging infectious diseases of human and veterinary interest
02-may-2001	An integrated approach to control of flea-related diseases in Eastern African countries
09-nov-2001	Transmission, geographic distribution and methods of control of some flea-related diseases
15-mar-2002	BVD infection: diagnosis and control
28-may-2002	Biologic tools to measure water quality

22-29-nov-2002	Prevention of tuberculosis, brucellosis and leucosis in Tuscany (2 meetings)
12-dec-2002	Viral infectious diseases in veterinary public health
12-may-2004	An update on human and animal parvoviral infections
04-dec-2004	Human e canine leishmaniasis in Italy
16-mar-2005	Human and canine infections due to *Babesia* spp., *Rickettsia* spp. and *Ehrlichia* spp.
24-nov-2005	Avian influenza: current issues on how to spread the knowledge.
15-mar-2006	Technique and Science 2006 – Specialist seminars on disinfestations
16-17-feb-2007	An update on vector-borne diseases (2 meetings)
21-mar-2007	An update on small ruminant transmissible spongiform encephalopathies
18-apr-2007	Bacterial diseases transmitted by arthropodes
09-may-2007	Blue Tongue in Italy and Europe: the experience of CESME
12-mar-2008	Management of an avian influenza epidemics
23-apr-2008	AIDS and seropositivity
21-jan-2009	Veterinary profession: interactions between veterinarians of the National Health Service and private practitioners
13-feb-2009	Waterborne protozoan zoonoses
25-feb-2009	Practical experiences on Contagious Bovine Pleuropneumonia
01-apr-2009	WEST NILE disease: epidemiology and surveillance
22-apr-2009	HIV – AIDS infection: changes from 1981 to 2008
06-may-2009	The new A/H1N1 influenza virus
13-may-2009	Diagnosis of bovine tuberculosis in the live animals
14-may-2009	The problem of the antibiotic resistance in public health

Table 7 – Food Hygiene

Date	Subject of the event
18-jan-2002	Criteria and methods for the quality control of traditional Tuscany foods
3-5-6-mar-2003	Milk and cheese microbiology (3 meetings)
14-jun-2003	The safety control in foods of animal origin
21-jun-2003	The safety control of the typical and organic foods
28-jun-2003	Traceability in the chains of foods of animal origin
15-apr-2005	Traditional cheese production in Tuscany
18-may-2006	The food industry
08-mar-2007	The milk and cheese productive chain in Italy
17-may-2007	The beef productive chain in Italy
13-feb-2008	The identification of risk in breeding establishments according to the EU Regulation n. 882/04
27-mar-2008	The control of the productive chain of the quality *salami*
09-apr-2008	Practical application of competent authorities on the Hygiene Package
05-dec-2008	Food Packaging: hygienic conditions of material used
18-mar-2009	Practical application of competent authorities on animal health and welfare
23-apr-2009	Animal production and the alimentary pyramid in Tuscany

Table 8 – Farm animals

Date	Subject of the event
16-may-2000	The most common diseases of ruminants in Kenya
15-nov-2000	Medicine and surgery of rabbits, rodents and fur animals
20-mar-2002	The sheep milk chain in Tuscany
20-mar-2002	Food safety, traceability and costs for final consumers
11-dec-2002	Animal husbandry and related health and nutritional issues in developing countries
25-jan-2003	Aquaculture: technical and economic aspects
22-oct-2003	The swine breeding: some problems
12-nov-2003	Farm animals breeding techniques: some problems
22-mar-2004	The integrated beef production in Italy: new answers to a social quest for ethics, food safety and food quality
04-nov-2004	Organic animal farming
12-19-nov-2004	Organic products of animal origin (2 meetings)
03-dec-2004	Current issues in swine reproduction
11-dec-2004	Organic animal farming: technical and economic aspects
05-may-2005	Current issues in technical management in swine breeding
12-may-2005	Current issues in health management in swine breeding
19-jan-2006	A new profession: aquaculture
26-apr-2006	The animal feed industry
24-apr-2008	The fish productive chain in Italy
30-apr-2008	Swine nutrition
14-may-2008	Vaccinology in food animals
13-sep-2008	An update on biologic farming

29-oct-2008	New techniques in swine breeding
11-feb-2009	On farm evaluation of animal welfare in ovine and bovine dairy farms
05-may-2009	Swine nutrition

Table 9 – Wild fauna and its management

Date	Subject of the event
20-nov-2000	Diseases of hares and wild animals
03-may-2001	The role of the veterinarian in wildlife conservation
20-may-2005	Avifauna: a multidisciplinary approach to its management
27-may-2005	Production, management and health issue of hares
01-oct-2005	Hunting problems in Tuscany Region
21-oct-2005	Management of wild ungulates
16-feb-2006	Breeding management of wild animals
25-28-oct-2007	Breeding management of wild animals (2 meetings)
13-nov-2008	Breeding management of pheasants

Table 10 – Miscellany

Date	Subject of the event
06-jun-2000	Safety working in the lab
15-jun-2000	Diagnostic and research activities at the New Bolton Centre
16-jun-2000	The evaluation of quality in the university
30-jun-2000	Quality systems in research laboratories
25-mar-2003	Telemedicine and ECG networks
19-may-2003	Meeting on a new proposal of law for animal rights
15-mar-2004	Statistical analysis and Data Mining using the SAS software
24-may-2004	Meeting on teaching Zooantropology
04-jun-2004	The new proposal of Regional law on regulation on the breeding and management of dangerous dogs
27-nov-2004	Sanitary issues during emergencies
11-jan-2006	Meeting with students from the Cornell University (USA)
19-jun-2006	Animal experimentation and alternative methods
14-15-feb-2008	Veterinary Medicine between tradition and modernisation (2 meetings)
30-apr-2008	The laboratory accreditation system
19-jun-2008	ICT, Telemedicine and knowledge networks in Veterinary Medicine

11.1.4. A special project of the FVMP

Because of its growing role in CPD as well as the expectation of professional veterinarians, the FVMP has developed tools for managing events design, performance and quality assessment. This approach has been particularly successful in the field of veterinary public health, for which the Faculty of Veterinary Medicine set up the "*Regional Centre of Reference to Plan and Manage Continuing Professional Development in the Field of Veterinary Public Health and Food Safety*", called *CERERE*, with the aim to straightening the integration between the Faculty and the stakeholders in the field of CPD.

CERERE was developed thank to an agreement between FVMP, the Public Health Department of Tuscany Regional Government and the Experimental Zooprophylactic Institute of the Regions of Lazio and Tuscany (see paragraph 0.1.6 and Annex I).

These three bodies share the same interests in the field of professional training:

- the FVMP, whose objective is to provide a CPD offer abreast the needs of the veterinary profession;
- the regional system of veterinary public health and food safety, whose objectives are oriented towards the improvement of health levels by strategies based on training and on the management of skills of officials involved;
- the Experimental Zooprophylactic Institute of the Regions of Lazio and Tuscany, whose objective is to strengthen its role of support in the management of animal health and food safety.

These bodies are furthermore involved in the education of the private operators, whose objective

is to raise the safety and the competitiveness of commercialised products. According to the constitutive principles, the mission of *CERERE* is to act as reference between all those involved in veterinary public health and food safety in Tuscany, so as to reinforce the management system of knowledge and professional competences.

The main actions of *CERERE* are oriented to perform analysis, proposal and management, so as to improve continuously knowledge and professional competences. Objectives of *CERERE* are:

- to reinforce relations between subjects involved;
- to connect with regional, national and international networks;
- to monitor formative needs;
- to evaluate specific competences;
- to plan and to manage training events;
- to offer a service of advice and support in the field of professional training for businesses, professional and classes organisations.

CERERE is managed by a Committee with the director coming from the FVMP, and four members coming from the others partners.

11.2. Additional comments

For many decades the CPD of Italian veterinarians has been promoted and guided by specialised private Association of Veterinarians who organised high level events. The Italian Faculties have, on the other hand, centred their activities on institutional educational programmes, namely the Course Degrees and the Specialisation Schools. These have been the only available titles with legal value since the issuing of the Ministerial Decree 509/99. After the introduction of this MD, the University Master title has been officially instituted and assigned a formal value, after which all the Universities began to supply more flexible teaching activities and to organise additional short educational programs of good quality.

The FVMP has been involved in the organisation of several Masters and short events of interest for the veterinary profession for both practicing veterinarians, graduate and undergraduate students. The Faculty has also given hospitality to events organised by third parties. Student participation is high, with a large affluence to the courses, especially on more traditional topics.

As already said, many other public seminars, open to all the interested people, students included, are often organised within both the regular teaching courses and the Specialisation Schools and Masters. Unfortunately, undergraduate students appear to be a little detached from these initiatives: even if they attend lessons with care, actually they seem not to understand that this kind of seminars, dealing with a variety of different professional topics, could help them to better understand both their real preferences and the large amount of opportunities offered by the professional job market. Only after graduation they understand the importance to approach the professional reality.

11.3. Suggestions

11.4. Annotations

Chapter 12 – POSTGRADUATE EDUCATION

12.1. Factual information and comments

12.1.0. The post graduate education in Italy and at the FVMP

The structured post graduate education at the FVMP is represented by four different objects, the first three of which are institutional ones:

1. Specialisation Schools;
2. PhD Programmes;
3. Master Courses;
4. European Colleges.

At present, the format of the Specialisation Schools is just changing, with a more structured organisation. Since the next academic year all the Specialisation Schools must be at least of 3-year duration (in the past they were only 2-year long). The main and general contents of each type of School are established by law. The admission is limited and an admission test is performed every year. The graduation in veterinary Medicine is requested. Except for some rare cases, students have no grant to attend the School, which requests a part-time engagement. The diploma issued by the different Schools is required title to apply for and/or progress in the career in the different areas of the National Health (Veterinary) Service.

Actually Italian Specialisation Schools are not a very flexible tool to easily and quickly adapt to the new trends in the Veterinary profession. In fact any substantial change in the teaching framework and planning of the Schools must be approved, in sequence, by: the Council of the School; the Faculty Council; the Academic Senate; the National University Committee; the Ministry. The only thing that can very quickly be adapted is the contents of each individual teaching course.

Italian law introduced the activation of PhD Programmes in 1984, which are organised by the Departments, mainly with the participation of other Departments. They are 3-year programmes, with a limited number admission. Every PhD programme must have a certain number (unfortunately very small) of grants given by either the University or some other subject (both public and private). Students without grant may be admitted but only in a number no higher than that of students with grant. A full-time engagement is requested to the students with grant, whilst student without grant are not obliged to a full-time engagement.

At the end of each year, the teaching staff meets to review a detailed report by all the students and certified by their tutors, describing the research performed during the year. If the research is approved, teaching staff allows the student to continue in their PhD Programme.

At the end of the 3-year course, candidates must discuss their PhD thesis in front of a committee formed by external examiners as well as internal members of the teaching staff. The thesis should contain original results, and it is evaluated by the examining committee in order to issue the title of Doctor of Research.

At the University of Pisa grants for PhD programmes are mainly funded by the University. Actually it is very difficult to find other sources of funding for PhD grants, whose cost is of almost 40,000 euro per each grant for the three years of duration. Because of the growing financial difficulties of the University of Pisa, the number of grants assigned to each programme is decreasing year by year.

As already explained in paragraph 11.1.1, prior the issuing of the MD n. 509/99, the Master was only an "informal title", with neither a regulation nor a legal value. The MD n. 509/99 introduced the University Master title, which now has a regulation and a legal value. According to this MD, University Masters are academic courses which must have a duration of at least one year, and a student's global workload of at least 60 University Formative Credits. Masters can be attended only after graduation. University Masters can be first (or primary) or second (or secondary) level[11], in accordance with the level of the graduation requested to apply for. In the University of Pisa Masters Courses can be organised both by Faculties and Departments. At present all the Masters organised within the FVMP are organised by the Departments.

Masters have a limited admission: usually 10-35 students per year. The number is connected with the amount and the type of practical activities foreseen by the teaching program of the Master.

In comparison with the Specialisation Schools, Masters are a much more flexible teaching tool. In fact, not only Masters can have any kind of content (whilst the main contents of the Specialisation Schools are fixed by the law), but they can be activated, changed and stopped with a much greater ease. Therefore Masters can adapt very quickly and easily to the new requests arising from the professional world.

With regard to European Colleges, 10 teachers at the FVMP hold a diploma (one colleague holds two different diplomas) in six different European Colleges. A few years ago two Departments of the FVMP have been recognised as centres for the training of Residents of the respective European College. Details are reported in paragraph 12.1.4.

12.1.1. The Specialisation Schools at the FVMP

The FVMP has been organizing the following three postgraduate Specialisation Schools for several decades:

1. *Small Animals Pathology and Clinics*: this 3-year course started in 1964, and at present accepts a maximum of 10 students per year;
2. *Animal Health, Breeding and Husbandry*: this 3-year course started in 1987, and at present accepts a maximum of 15 students per year;
3. *Inspection of Food of Animal Origin*: this 3-year course started in 1987, and at present accepts a maximum of 20 students per year;

   Only veterinary graduates are admitted.

1. The Specialisation School in "Small Animals Pathology and Clinics"

This Specialisation School was first started in 1964-65 as a 2-year Specialisation School in "*Small Animal Diseases*" and subsequently reorganised in 1996-97 as the 3-year Specialisation School in "*Small Animal Pathology and Clinics*", with compulsory class attendance, in conformity with the new ministerial rulings. The qualification obtained at the end of the 3-year programme is required in order to apply for and/or for career progression of graduates in Veterinary Medicine working in the different areas of the National Health (Veterinary) Service.

[11] As already said in paragraph 0.1.5, note 3, University Masters are academic courses which can be attended only after graduation. University Masters can be of first (or primary) or second (or secondary) level, in accordance with the level of the graduation requested to apply for. In the University of Pisa Masters Courses can be organised both by Faculties and Departments.

The objective of the School is to enhance the professional skills of veterinarians working in the field of small animal medicine and surgery. Applicants must have a degree in Veterinary Medicine and have passed the State Board examination. A total number of 1,200 hours of training activities (50% theoretical and 50% supervised practical activities) are organised during the 3 years.

At the end of the second year candidates are required to choose a field (selecting one of the following: cardiology, dermatology, haematology, gastroenterology, nephrology, neurology, ophthalmology, orthopaedics) to which they will be required to dedicate at least 200 hours of theoretical/practical activities.

Only 10 graduate students are accepted per year of the Specialisation School (resulting in a total of 30 enrolled students in any given academic year). The qualification as Specialist in *Small Animal Pathology and Clinics* (with reference to the field chosen during the last year) is awarded following defence of a thesis, generally a review paper suitable for publication (although some candidates will opt for a research paper), which the candidate must have compiled under the guidance of a supervisor chosen from among the professors of the Specialisation School.

Seminars and conferences on topics of interest to small animal practice are periodically organised at the Veterinary School following proposals by a teacher or teachers of the Specialisation School. Also, formal collaborations with private veterinary clinics or public bodies are agreed upon by the Council of the Specialisation School, in order to allow graduate students to acquire experience in performing practical activities outside of the Veterinary School.

To date, approximately 450 veterinarians have obtained the Diploma of Specialist in Small Animal Pathology and Clinics from the University of Pisa.

Based on the Ministerial Decree issued on 27th of January 2006, as of the 2009-10 academic year each Specialisation School will be required to conform to a new set of rules. The Small Animal Pathology and Clinics Specialisation School will continue to have a 3-year duration with compulsory attendance, and admission limited to veterinarians who have passed the State Board exam. The total workload within the 3 years is equivalent to 180 University Formative Credits (UFCs), corresponding to 4,500 hours of study, composed of theoretical work with attendance at lectures, practical training and individual study.

A specialist in *Small Animal Pathology and Clinics* must have sound theoretical and practical knowledge on physiopathology, semeiotics, medical and surgical therapy and follow-up of diseases affecting the individual organs or systems of companion animals. Specific competence must be acquired in the fields of medical and surgical treatment of the most common diseases of the respiratory, digestive, nervous, endocrine, orthopaedic and reproductive system, including diseases of the skin, the eye, the ear. Additionally, specialists must be competent in emergency treatment, thoracic and abdominal surgery, anaesthesia and resuscitation, medical and surgical treatment of tumours, as well as in artificial insemination and the reproductive biotechnologies commonly used in andrology and gynaecology of dogs and cats.

2. The Specialisation School in "Animal Health, Breeding and Husbandry"

This 3-year course was started in 1987, and accepts a maximum of 15 students every year.

Students who specialise in Animal Health must acquire in-depth knowledge of epidemiology, veterinary public health, animal husbandry and zootechnical productions, and quality control of foodstuffs of animal origin. Students must also acquire theoretical knowledge and practical skills in:

- recognition of the main infectious and parasite-borne diseases with special emphasis on those included in the Veterinary Police Regulations and the OIE lists;
- concepts pertaining to laboratory diagnosis of viral, bacterial and parasite-borne diseases of beef cattle and other animals raised for profit;
- concepts pertaining to breeding techniques (nutrition and pharmacological treatment), with particular emphasis on guarantees for animal wellbeing and food safety in connection with control of residues in foodstuffs;
- the legal and administrative foundations of the State;
- general concepts of political economy and public accounting.

The School is organised into two curricula:

- Animal Health Care;
- Hygiene of breeding establishments and productions.

Learning resources are provided in the form of lectures in the Faculty and as well as through intense practical activity, which is carried out partly in laboratories and partly also through internships. Laboratory experience can be acquired at:

- the premises of the Experimental Zooprophylactic Institutes which have signed a formal agreement with the Faculty;
- the laboratories of the Department of *Animal Pathology, Prophylaxis and Food Hygiene*, with regard to laboratory diagnostics concerning infectious and parasite-borne diseases;
- the laboratories of the Department of *Animal Production*, with regard to chemical-physical analyses on forage samples and complete animal feeds, as well as on samples of meat, milk and eggs;
- the Toxicology laboratories of the Department of *Veterinary Clinics*, with regard to testing for residues in forage and feed samples.

The period of compulsory internship can be undertaken at National Health Service facilities.

Students who chose the curriculum in "Hygiene of Breeding Establishments and Productions" at the moment of enrolment can undertake their internship in the area of the Veterinary Service that deals both with all materials utilised for animal breeding and also with animal wellbeing. Students following this approach will familiarise themselves with pharmacosurveillance in the context of medication administered to animals and its possible residues in products of animal origin, above all milk and dairy products. The associated issue of monitoring the entire production and supply chain of milk and cheese products will also be addressed. Additionally, students will acquire knowledge on the problems involved in relations between the animal and the natural environment.

Those who, instead, choose the curriculum focusing on "*Animal Heath Care*" can perform their internship in the area of the Veterinary Service that is concerned with the animal as a living being that in various ways engages in relations either with other animals or with man. In a rural context, veterinary professionals who work in this area deal with problems of animals destined to be utilised for human foodstuffs, while in the urban context they address problems linked to the presence of companion animals and synanthropic animals (pigeons, starlings, stray cats and dogs, etc.). Students following this curriculum also carry out surveillance and control of infectious and contagious diseases of animals, perform the compulsory prophylactic procedures and health check-ups of livestock, conduct inspections on the registry of animals and breeding establishments and issue health certifications for the exporting and importing of animals.

The final examination consists in a written dissertation on a topic agreed with a professor of the School, which the student will defend before the panel of examiners. The qualification of specialisation issued by the School is compulsory in order to apply for employment in the National Health Service.

3. The Specialisation School in "Inspection of Animal Origin Food"

This 3-year course was started in 1987, and accepts a maximum of 20 students every year. Two places are reserved: one for non-EU citizens and one for military veterinarians. Between 1987 and 2009 151 veterinary graduates completed this 3-year course. This is one of the few titles which veterinarians who work in the National Health Service can take advantage of to progress in their career.

The Specialist in "*Inspection of Animal Origin Food*" must have acquired theoretical, scientific and professional knowledge in food inspection and control of all the stages of the production chain of food of animal origin. Training must be focused on the hygiene of production, distribution and

consumption, on the management of self-control plans (HACCP System), on the epidemiology of foodborne diseases, on the risk analyses and on the animal welfare.

Each year of the program includes 200 hours of formal teaching and seminars and 1,000 hours of practical activity carried out in the laboratories of the Departments of the FVMP, or in other approved laboratories, and in the health units of the National Veterinary Health Service.

The basic educational objectives are updating of the knowledge of anatomy and physiology with a view to its further application in control of food safety. The objectives of the general training are acquiring knowledge on animal health, toxicology, epidemiology, food law, food technology and anatomical pathology useful for a proper implementation in the food control.

The objective of the specific training are acquiring the modern methods for the assessment of food quality, the tools to prevent and remove the causes of deterioration of food, the programmes for the realisation of cross-sectorial strategies to ensure "food security", the formulation of protocols for quality certification of food chains, the assessment of the environmental impact of food processing activities, the assessment of the influence on human health of new styles and new types of consumption, the evaluation of the characteristics of different food contact materials, the problems of food transportation and import.

The professional activities are: critically assessment of the self-control plans of different production realities (dairy, meat processing plants, seafood processing plants), the support of official veterinary inspectors in their activity (slaughterhouses, meat processing plants, catering, etc.), the collaboration of the formulation of educational training plans for food chain workers, attending practical training sessions of health management in emergency management, attending practical activities in laboratories (sensory evaluation of food, chemical and physicochemical, microbiological and toxicological analyses), and attending practical training sessions in collection and processing of veterinarian competence documents.

During the third year students have to choose a curriculum between three proposed by the School ("*Milk*", "*Meat*" and "*Seafood*"). Each curriculum includes 90 hours of formal instruction and 75 hours of practical activities. At the end of the course the students must discuss a specialisation thesis.

12.1.2. The PhD Programmes at the FVMP

12.1.2.1. The PhD Programmes at the FVMP in general

At the FVMP the following three different PhD Programmes are activated:

1. *Veterinary Medicine*;
2. *Animal Husbandry, Health and Hygiene in Countries with Mediterranean Climate*;
3. *Inspective and Sanitary Concerns in Animal Productions in Exchanges Between the European Union and the People's Republic of China*;

Furthermore, the FVMP participates to two other PhD Courses which are activated in Faculties of Veterinary Medicine of other Italian Universities:

1. *Epidemiology and Control of Zoonoses*, Administrative headquarter: University of Bologna;
2. *Experimental and Applied Equine Physiology*, Administrative headquarter: University of Messina.

Tables 12.1.2.1.a-b-c portray the main figures for all the PhD Programmes of the FVMP over the last three years.

As already said in paragraph 2.1.4, over the last few years the University of Pisa began a reorganisation of all its PhD Courses in "**PhD Schools**", by grouping them altogether in a number of homogeneous PhD Programmes. This reorganisation reached an end during the year 2009. All

the PhD Courses of both the Faculties of Veterinary Medicine and Agricultural Sciences have been grouped in a PhD School named "***PhD School in Veterinary and Agricultural Sciences***".

Table 12.1.2.1.a – Main figures for the PhD Programmes at the FVMP in the last three years

	Total available posts	Posts with grant	Applicants	Admitted with grant	Admitted without grant	Total admitted
2006	20	10	34	10	8	18
2007	37	22	89	22	16	38
2008	26	14	38	14	8	22
Total	83	46	161	46	32	**78**

Table 12.1.2.1.b – Total number of PhD students admitted at the FVMP

	Veterinary Medicine	Animal Production	EU and China	Epidemiology and C. of Z.	Equine Physiology	Total PhD students
2006	5	5		4	4	18
2007	6	7	12	8	5	38
2008	5	5		6	6	22
Total PhD stud.	16	17	12	18	15	**78**

Table 12.1.2.1.c – Total PhD students successfully defending their thesis at the FVMP

	Veterinary Medicine	Animal Production	EU and China (1)	Epidemiology and C. of Z.	Equine Physiology	Total graduated
2006	4	4		3	4	15
2007	4	5		3	4	16
2008	7	4		4	4	19
Total graduated	15	13	0	10	12	**50**

(1) This PhD Programme started in 2007: the first graduated will be on 2010.

The School has the following curricula:

- *Veterinary Medicine*;
- *Animal Husbandry, Health and Hygiene in Countries with Mediterranean Climate*;
- *Inspective and Sanitary Concerns of the Animal Productions within the Exchanges between the European Union and the People's Republic of China*;
- *Agricultural Sciences*.

The *PhD School in Veterinary and Agricultural Sciences* was established in July 2009 and will start its teaching activities on January 2010.

12.1.2.2. The PhD Programme in "Veterinary Medicine"

Table 12.1.2.2 reports the main figures for the PhD Programme in "*Veterinary Medicine"*. The number graduates of this PhD programme is shown in table 12.1.2.c.

Table 12.1.2.2 – PhD in Veterinary Medicine

	Available posts	Posts With grant	Applicants	Admitted with grant	Admitted without grant	Total admitted
2006	6	3	6	3	2	5
2007	6	4	14	4	2	6
2008	6	3	11	3	2	5
Total	18	10	31	10	6	16

The PhD Programme in "*Veterinary Medicine*" was activated in 2000. Its main aim is to constitute an advanced training centre in veterinary disciplines, open to young Italian and foreign researchers offering a high level education. The cooperation with all the Departments of the FVMP area ensures the availability of laboratories and research structures of high level. The teaching subjects of the PhD Programme cover most of the topics of veterinary sciences, including:

Basic sciences
- Anatomy (including histology and embryology)
- Physiology
- Biochemistry, cellular and molecular biology
- Genetics (including molecular genetics)
- Pharmacology and pharmacy
- Toxicology (including environmental pollution)
- Immunology
- Professional ethics

Clinical Sciences
- Obstetrics
- Pathology including anatomical pathology
- Parasitology
- Clinical medicine
- Surgery (including anaesthetics)
- Preventive medicine
- Diagnostic imaging (including radiology)
- Field veterinary medicine (surgery clinics)
- Reproduction and reproductive disorders
- Veterinary state medicine and public health
- Veterinary legislation and forensic medicine
- Therapeutics

Animal Production
- Veterinary hygiene
- Animal ethology and protection

Food Hygiene / Public Health
- Food hygiene and technology
- Food science including legislation

PhD students are encouraged to do stages in external qualified research laboratories and to develop their 3-year research work in cooperation with external research institutes, both in Italy and in foreign Countries. The PhD Programme promotes the organisation of educational activities (courses, seminars) of high technical and scientific quality, by means of both internal and external lecturers.

12.1.2.3. The PhD Programme in "Animal Husbandry, Health and Hygiene in Countries with Mediterranean Climate"

Table 12.1.2.3 portrays the main figures for the PhD Programme in "*Animal Husbandry, Health and Hygiene in Countries with Mediterranean Climate"*. The number of its PhD graduates is shown in table 12.1.2.1.c.

Table 12.1.2.3 – PhD in Animal Husbandry, Health and Hygiene in Countries with Mediterranean Climate

	Available posts	Posts With grant	Applicants	Admitted with grant	Admitted without grant	Total admitted
2006	6	3	7	3	2	5
2007	6	4	18	4	3	7
2008	8	4	6	4	1	5
Total	20	11	31	11	6	17

The PhD programme in "*Animal Husbandry, Health and Hygiene in Countries with Mediterranean Climate*" has been activated in 2001 with the intention of supplying the necessary knowledge for research, teaching and working activities in private companies or public institutions, by means of the competences acquired within different curricula. Furthermore, great importance has

been given to the interdisciplinary education in order to develop in students the potential to face professional matters with a 360 degrees approach.

The PhD Programme is organised in a 3-year course.

During the first year the students must choose the curriculum, start their lab activity and attend the following courses:

- Statistics applied to animal production;
- Informatics applied to animal production;
- English language;
- Bibliographic research strategies.

Upon beginning of the second year, the individual research program must be definitely identified in accordance with the supervisor teacher and the specific lab activities must be set up. The second and the third years are committed to the aforesaid activities.

At the end of every year, the students must present a detailed report on the performed activity and discuss it with the Teachers' Board.

The thesis must be discussed and approved by the Teachers' Board before the final exam, when the thesis must be finally discussed in front of a Committee of teachers nominated by the PhD Council.

The Departments involved in this PhD program are the following:

- Department of *Agronomy and Management omef Agro-Ecosystem*;
- Department of *Animal Pathology, Prophylaxis and Food Hygiene*;
- Department of *Animal Production*;
- Department of *Veterinary Clinics*.

The PhD curricula are the following:

- General animal husbandry and genetic improvement
- Animal feeding
- Breeding technologies and production quality
- Animal health, breeding and production hygiene
- Food hygiene and technology
- Economics and food market

Within each curriculum, the knowledge and the skills that the students must accomplish are related to the following topics:

- Statistics applied to the animal production;
- Informatics applied to the animal production;
- Molecular biology;
- English language;
- Agronomy and forage cultivations;
- Chemical and biochemical evaluation of feeds;
- Animal feeding;
- Animal husbandry and genetic improvement;
- Breeding technologies, animal welfare and quality of production;
- Veterinary microbiology, parasitology and immunology;
- Infective and parasitic diseases of animals;
- Reproduction hygiene and artificial fecundation;
- Zootechnical and sanitary law;
- Food technology;
- Toxicology of animal production;
- Food inspection;
- Food legislation;
- Economics and market of food of animal origin.

The main research topics of the PhD are:

- Agronomy, cultivation and conservation of forages;
- Animal nutrition;
- Genetics and genetic improvements of animals in production;
- Breeding technologies and milk quality;
- Breeding technologies and meat quality;
- Breeding technologies, game census and management;
- Animal health, breeding hygiene, production hygiene;
- Food microbiology;
- Food toxicology;
- Food biotechnology and biosafety;
- Hygiene, technology and quality of food of animal origin;
- Economics, quality assessment and certification, marketing of animal products.

12.1.2.4. The PhD Programme in "Inspective and Sanitary Concerns in Animal Productions in Exchanges Between the European Union and the People's Republic of China"

Table 12.1.2.4 reports the main figures for the PhD Programme in "*Inspective and Sanitary Concerns in Animal Productions in Exchanges Between the European Union and the People's Republic of China"*. The first candidate will obtain her/his PhD in this topic in 2010.

Table 12.1.2.4 – PhD in Inspective and Sanitary Concerns in Animal Productions in Exchanges Between the European Union and the People's Republic of China

	Available posts	Posts with grant	Applicants	Admitted with grant	Admitted without grant	Total admitted (1)
2007	12	6	36	6	6	12
Total	12	6	36	6	6	12

(1) During the first two years all the PhD students without grant abandoned the PhD Programme.

The PhD Programme in "*Inspective and Sanitary Concerns in Animal Productions in Exchanges Between the European Union and the People's Republic of China*" was activated in 2007 with a special co-funding by the Italian Ministry of Education, Research and University and the University of Pisa. Furthermore funds for three grants for Chinese students were given by the Italian Ministry for Foreign Affairs. Other two grants were funded by the Universities of Parma and Turin.

Partners involved in the project are:

Chinese partners:

- Animal Husbandry and Veterinary Medicine College of Xining;
- Chinese Academy of Agricultural Sciences (Beijing);
- Department of Veterinary Science and Animal Husbandry, Guangxi Agricultural University.

Italian partners:

- Faculty of Veterinary Medicine, University of Pisa;
- Faculty of Veterinary Medicine, University of Parma;
- Faculty of Veterinary Medicine, University of Turin;
- National Ministry of Health;
- Region of Tuscany;
- Zoo-Prophylactic Institute for the Lazio and Tuscany Regions.

The main goals of the PhD Programme is the interdisciplinary training of students and the consequent development of professional figures able to operate within the field of animal production connected with the cultural and commercial relations between these two worlds. In particular, the development of a bilateral teaching system would allow the students to improve their knowledge of the laws and organisation of food production systems and food control of the host Countries, which is fundamental for consumer protection within the new policy of the extraordinarily growing exchange rate between China and countries of the EU. Moreover, the

project will allow the improvement of teachers' experience supporting their presence by the partner Country institutions during their stages abroad.

The PhD is structured on the basis of a 3-year education program in which Italian and Chinese students will spend most of their training periods (at least 18 months) in Chinese and Italian institutions, respectively. While doing their stages abroad, they will attend courses and lectures and participate to established research programmes. Furthermore, students will be included in a number of industrial sectors in order to improve their personal knowledge and competences on the food production and manufacturing reality. Finally students will have to attend intensive courses to learn the language of the Country where they will be educated, even if English will be admitted as communication language.

During the first two years all the PhD students without grant, both Italian and Chinese ones, abandoned the PhD Programme. The first graduations of the students with grants will take place during the year 2010.

12.1.2.5. *The PhD Programme in "Epidemiology and Control of Zoonoses"*

The main figures for the PhD Programme in "*Epidemiology and Control of Zoonoses"* are displayed in table 12.1.2.5. The number of PhD graduates of this programme is shown in table 12.1.2.1.c.

Table 12.1.2.5 – PhD in Epidemiology and Control of Zoonoses

	Available posts	Posts with grant	Applicants	Admitted with grant	Admitted without grant	Total admitted
2006	4	2	6	2	2	4
2007	8 (*)	5	10	5	3	8
2008	6	3	7	3	3	6
Total	18	10	23	10	8	18

(*) five grants have been funded by the High Institute of Health (Ministry of Health) and one grant has been funded by the Region of Sardinia with funds of the project "Master and back".

This PhD started in 1993. At that time the programme was carried out by the Universities of Bologna (Departments of "*Veterinary Public Health*" and "*Animal Pathology*"), as administrative University, and Turin (Department of "*Animal Productions, Epidemiology and Ecology*") as a joint partner. Starting from 1997, Pisa University (Department of "*Animal Pathology, Prophylaxis and Food Hygiene*") replaced Turin University.

The programme offers advanced study on veterinary epidemiology and on strategies to control of zoonoses, and produces highly-qualified specialists in this field. So far the majority of the past PhD students have found employment in the field of veterinary public health (research and diagnostic institutions, national and regional veterinary services).

The work is organised into classes, seminars and practical experiences both in diagnostic laboratories and on the field. Students attend the programme in a full-time commitment, under the supervision of a tutor, and carry out an original scientific research under her/his guidance. The research activity must be performed following the rules on the quality control ISO 9001/2000. The topic of the research is chosen by the student after a period of training and must be related to the epidemiology and/or the diagnosis of bacterial, viral, mycotic and parasitic zoonoses. At the end of each year a detailed report, describing the research performed during the year, is presented by the students to the PhD teaching staff. If the report is approved the student is allowed to continue in the PhD programme.

With the authorisation of the teaching staff, PhD students can spend training and research periods abroad in qualified institutions, to familiarise with techniques relevant to perform the experimental work. The majority of the students so far have spent at least one period abroad.

At the end of the 3-year course the title of PhD is issued following the discussion of the PhD thesis in front of a committee formed by external as well as internal examiners.

On the whole so far 5 students based in Pisa have obtained their PhD degree. At present no students are enrolled in the PhD programme in Pisa.

12.1.2.6. *The PhD Programme in "Experimental and Applied Equine Physiology"*

Table 12.1.2.6 shows the main figures for the PhD Programme in "*Experimental and Applied Equine Physiology"*. The number of PhD graduates of this programme is shown in table 12.1.2.1.c.

Table 12.1.2.6 – PhD in Experimental and Applied Equine Physiology

	Available posts	Posts with grant	Applicants	Admitted with grant	Admitted without grant	Total admitted
2006	4	2	15	2	2	4
2007	5	3	11	3	2	5
2008	6	4	14	4	2	6
Total	15	9	40	9	6	15

This PhD Programme, started in the 1992-93 academic year, is carried out by Departments of the Universities of Messina (a town of Sicily, where the academic headquarter is located), Pisa and Naples. Every year 3 places with grant plus 3 additional places without grant are available for this programme. Ten students (based in Pisa) have so far obtained their PhD degree in this field. Presently (2008-09), 3 students are registered in this PhD programme, mainly from Pisa.

The programme offers advanced study of theoretical-practical knowledge in equine physiology, and produces highly-qualified specialists in the field of Equine Sport Medicine. It also provides thorough training in the evaluation of well-being and pain assessment in horses.

The work is organised in classes, seminars and theoretical-practical works both in the laboratory and in the field, in addition to carrying out individual scientific research under the guidance of the tutor. Graduate students concentrate on the most relevant aspects of equine physiology, evaluating both experimental aspects and practical applications. A full-time commitment is required to attend this programme, under the supervision of a tutor.

According to the specific goals of the scientific work, course attendance may also be required at racetracks, private stables, public or private zootechnical establishments and wildlife reserves where students actively participate in carrying out experimental protocols under the guidance of their tutor. If authorised by the teaching staff, PhD students can attend Italian and foreign institutes chosen by the tutor (or also under proposal of the student) especially if relevant for the completion of their final thesis.

12.1.3. The Master Courses at the FVMP

Whilst during these last ten years the FVMP has been still involved in its traditional activities in Post Degree Education (PhD Courses and Specialisation Schools), in 2002 the Faculty increased its activity by organizing University Master Courses, formally introduced for the first time in the Italian University with the MD 509/99. At present the following thirteen Master courses (of at least one year duration and with a student's workload of at least 60 UFCs) have been activated at the FVMP.

1. Veterinary Oncology (secondary level);
2. Equine Reproduction (secondary level);
3. Behavioural Medicine of Companion Animals (secondary level);
4. Food Safety Control and Certification in Animal Productions (secondary level);
5. Sport Physiology and Veterinary Physiotherapy (secondary level);
6. Bee Pathology and Apidology (secondary level);
7. Clinical Biochemistry and Veterinary Laboratory Medicine (secondary level);

8. Ethology of companion animals (secondary level): this course is not intended for Veterinarians only;
9. Risk Management in Animal Production Food Chains (primary level);
10. Animal Assisted Activities and Therapies: the operator with a dog (primary level);
11. Dog Training (primary level);
12. Animal Bioethics (secondary level);
13. Animal Health Care, Quality and Hygiene of Small Ruminant Productions (secondary level).

A short summary of the main contents of each Master course is reported below.

1. Veterinary Oncology (2nd level)

The course is aimed at those professionals working in the field of veterinary oncology who wish to progress in their knowledge towards an academic qualification. The aim of the programme is to give the practitioners a scientific understanding of the cellular and molecular biology of cancer, its epidemiology and pathology, and to place this in a clinical context. How this knowledge effects therapeutic approaches, and disease management will then be addressed. The program focuses on the scientific study of carcinogens; the onset of malignancy in cells, tissues, and organs; the genetics of cancer; the anatomy and physiology of cancer cells; and the study of cancer behaviours and chemical, radiologic and other treatment therapies.

The MSc has a part-time basis one year programme (60 UFCs), arranged in sixteen study blocks. The programme is accessible and appropriate to veterinary practitioners from a wide variety of backgrounds reflecting the modern multidisciplinary constitution of cancer care professionals (diagnostic cytology and histopathology, clinical trials, scientific research, diagnostic imaging, surgery, and therapies). The students must attend a practical internship (120 hours) within the Department of *Veterinary Clinics* or within specialised structures recognised by the Master Board. At the end of the course each student has to pass a written test and to prepare a final thesis.

Since 2007, four courses have been activated (2 during the 2007, 1 during the 2008, and 1 in the 2009) and all the different activities have been submitted to an internal evaluation by the students, with absolutely positive results. This assessment is confirmed by the presence of a large number of applications for the next year course.

2. Equine Reproduction (secondary level)

The aim of this Master course is to deepen and update the knowledge of Veterinary Surgeons providing them with exhaustive theoretical and practical competence in the field of equine reproduction (management of the reproductive cycle, pregnancy and parturition, breeding soundness evaluation, semen cryopreservation, artificial insemination and other assisted reproduction techniques, diseases of the male and female genital system and of the neonate, surgical techniques of the genital tract). The Master was firstly activated in the 2007-08 academic year and 7 students, 3 from Tuscany and 4 from outside, registered. After a pause in the subsequent year, the Master will be activated again in the year 2009-10.

3. Behavioural Medicine of Companion Animals (secondary level)

Admission to this Master is currently restricted to Veterinarians. It was activated for the first time in 2004-05 academic year, and it is at its fifth edition. The number of registered students has always been around 30 per year. The main goal of this Master course is to provide students with a sound competence on both pet behaviour and the most important behavioural pathologies. The

training program is organised in 20 week-ends (with classes being held on Fridays, Saturdays and Sundays), with a total of 400 hours of theory and practice.

During the simulations of behavioural sessions, shown during the course, the participants acquire an expertise about both behavioural diseases and the techniques of communication with the animal's owner in order to establish a strong therapeutic alliance. The preparation of the behavioural Veterinarian is completed by lectures on bioethics, zooanthropology and dog training: in this way the Veterinarian acquires all the tools she/he needs to go in for the profession of behavioural advice.

4. Food Safety Control and Certification in Animal Productions (secondary level)

With the "*Hygiene Package*", the European Union drew a new strategy for food safety, with the aim to establish a higher level of trust in citizens. The pursuit of improving the prevention system lead the political authorities to adopt tools and methods characterised by a high content of innovation, whose application needs more advanced competences than the previous setting.

The educational content of this Master seeks to provide knowledge and operational capabilities to apply the new requirements of food safety in the production of food of animal origin. In particular the educational programme focuses on the acquisition of competences in the following fields:

a. assessment and management of food-related risks;
b. certification and control of quality management systems;
c. training and communication management.

The training method provides many opportunities of interdisciplinary comparison and practical learning, with exercises and activities self-managed by participants under the tutoring of teachers.

The aim of this Master is to integrate the training of professionals, who operate in the field of food productions of animal origin, with specific competences able to give them the ability and the experience in the guidance of food safety management systems in animal productions, both in the context of Veterinary Public Health as well as in production companies. In this production field, in fact, the training needs pointed out by public and private bodies concern the following abilities:

- to identify and manage food-related risk factors;
- to manage the organisational and management tools finalised to food safety guarantees.

5. Sport Physiology and Veterinary Physiotherapy (secondary level)

This secondary level Master's course will be officially started in the 2009-10 academic year. The aim of this Master's course, admission to which is currently restricted to Veterinarians, is to provide sound knowledge and professional expertise in the training of dogs and horses for sports activities and in physiotherapeutic rehabilitation of these animals following trauma or as a result of neurological conditions. The progressive lengthening of animal life is creating a number of previously unrecognised ageing-related problems for which physiotherapeutic techniques can be of help. Furthermore, progress in orthopaedic techniques now allows successful solution of many joint problems in horses and dogs, especially in conjunction with physiotherapeutic treatment.

The course will focus above all on the range of training techniques adopted in the horse and the dog, and the major types of physiotherapeutic therapy that can be applied to these species.

6. Bee Pathology and Apidology (secondary level)

The Master (60 UFCs) was activated for the first time in 2006-07 academic year, spreads over 18 months and aims to provide theoretical knowledge (35 UFCs) and practical experience (10 UFCs) in the organisation and management of a bee pathology laboratory. The workload for the final thesis is of 15 UFCs.

The access is limited to graduates in Veterinary Medicine, Agricultural Sciences and in all the life sciences. At the end of the first course 22 students (one coming from Greece) obtained the title (19 veterinarians, 2 agronomists and 1 biologist):

- 13 students worked in Local Divisions of the National Health Service of many different Italian Regions;
- 5 were professional veterinarians;
- 2 were professional agronomists;
- 1 was a national beekeeping association technician;
- 1 was a biologist working in a Experimental Zooprophylactic Institute.

The main goal of this Master course is to update the knowledge of bee pathology diagnosis, bee farming including wild and solitary bees, bee products marketing and law. The training program is organised in 30 week-ends (with classes being held on Friday and Saturday). Within this Master three sub-courses of two days each have been held in the National Institute of Apiculture of Bologna: instrumental insemination; melissopalynology and sensorial analysis; a stage was held at the University of Athens. Teachers were all well known at international level (one was coming from Germany). After a stop in 2009-10, the Master will be activated again in 2010-11.

The following themes have been stressed:

- honeybees within the bee world;
- bees behaviour and the physiology of the colony;
- bees management and breeding;
- marketing;
- bees law
- bee pathology 1 (brood disease);
- bee pathology 2 (adult disease);
- bee pathology 3 (bee medicine);
- bee biochemistry;
- apidology;
- taxonomy;
- bees and pollination;
- wild bees rearing and management;
- bee-biodiversity and competition;
- bees and pesticides;
- environmental monitoring with bees;
- bee garden;
- bee-watching and education.

7. *Clinical Biochemistry and Veterinary Laboratory Medicine (secondary level)*

Since the 2003-04 academic year, the Interuniversity Master in "*Clinical Biochemistry and Veterinary Medicine Laboratory*" has been established within a cooperation among the Faculties of Veterinary Medicine of the Universities of Perugia and Pisa, and the two Experimental Zooprophylactic Institutes of the Regions of Lazio-Tuscany and Umbria-Marche.

The Master (60 UFCs, 8 hours of frontal teaching per each UFC, at least 70% of practical activity) spreads over two years and aims to provide theoretical knowledge and practical experience in the organisation and management of a veterinary clinical laboratory. The access is limited to graduates in Veterinary Medicine. The final title is awarded by the Rector of the head office of course, with the joint signatures of the two Deans of the Faculties of Perugia and Pisa. Up to the end of 2008, 18 students obtained the title.

At the end of the course, students will have knowledge of experimental and analytical techniques of major interest in veterinary diagnostics and will acquire methods of proper management of a veterinary diagnostic laboratory, accordingly to internationally accepted good practices, as implemented by the Italian laws.

The first year includes: theoretical and training activity on chemometry, chemistry of proteins, nucleic acids and the main biological analytes, principles of molecular biology, management of laboratory materials, biochemical separation techniques, molecular biology methods in veterinary, immunological and infectivological diagnostic.

The second year includes: training in laboratory diagnostics in parasitology, haematology, clinical toxicology, clinical chemistry, economical and legal management of the Veterinary diagnostic laboratory.

8. Ethology of companion animals (secondary level)

At present, this Master of secondary level is at its third edition. Its goal is to provide students with a deep knowledge on pet behaviour thus allowing graduates in disciplines different than Veterinary Medicine to understand and deal with unusual behaviour of pets.

The participants to this Master are graduates in Biology and related disciplines who want to improve their knowledge in the behaviour of companion animals and to counsel the Veterinarian in her/his work in prevention of the most common behavioural troubles of these animals.

Being addressed to branches different from the veterinary medicine, this Master provides an approach mainly focused on the study of the normal behaviour of companion animals and the possibility of intervening on anomalous behaviours through behavioural modifications techniques.

9. Risk Management in Animal Productions Food Chains (primary level)

This Master's programme is designed to provide professional operators in the field of animal production food chains with a sound knowledge in the new strategic targets of public health. In this context, the methods of risk assessment and management, recently introduced by the new set of EU rules about food safety, is a professional and cultural challenge for all the operators involved in the animal production food chains.

The Master course concentrates on topics of food safety and related subjects, such as environmental safety, safety of working places, quality management and certification, training and communication. Professionals interested in this Master course are public and private operators who carry out technical and managerial works in the field of safety in work, environment and food consumption.

10. Animal Assisted Activities and Therapies: the operator with a dog (primary level)

This secondary Master's course (primary level) is being held for the second time and pursues the aim of providing an in-depth background of professional skills for operators who seek to work in the field of the training of dogs to be used in animal assisted therapies. The amount of work necessary to prepare an animal for use in pet therapy while safeguarding its welfare during training sessions is often underestimated. This Master's course assures that students acquire sound knowledge in dog training, dog behaviour and signs of stress in animals along with basic information on the most common behaviour-related conditions. Lectures on human communication, both as regards communication with the assisted person and also with other members of the team, are included in the program, as well as special guidance for the operator in management of emotions that may arise in tense situations.

During this Master's course, students are offered the opportunity to obtain a license from the Delta Society, a US cultural association involved in educating pet therapy operators.

11. Dog Training (primary level)

This primary level Master's course, which aims to provide students with a sound knowledge of dog training, is being held for the fourth time. Dogs can be trained to perform a variety of different tasks as well as sporting activities and competitions; however, many of the training techniques used do not appropriately take into account animal welfare, but rather are often coercive. This Master's course therefore offers the opportunity to learn about non-coercive dog training techniques, highlighting the limitations and dangers of violent techniques both for animal wellbeing as well as for the safety of the operators. Almost 50% of the 400 hours of teaching are spent in the field providing practical demonstrations of what is being taught in class. An important pre-requisite for being accepted into this Master's course is owning a well socialised dog who will accompany the student and become a most important partner for practical demonstrations.

As dog trainers are often involved in trying to re-train dangerous or aggressive dogs, part of the course will be devoted to teaching behavioural modification techniques.

12. Animal Bioethics (secondary level)

This Master's course is being activated for the first time in the 2009-2010 academic year. It aims to enable students to become well versed in the legislation concerning animal welfare safeguards and to acquire sound knowledge of the tools required for rational decision-making and enforcement policies in all fields in which an animal is utilised in human activities.

The course is open to veterinarians and to graduates in other disciplines in which a solid background in this field provides a valuable aid for decision-making processes in any institutional framework that is in charge of the control and assessment of animal wellbeing.

13. Animal Health Care, Quality and Hygiene of Small Ruminant Production (secondary level)

This Master has been activated only once in the 2003-04 academic year. It had a good success (22 participants) but, because the very limited number of veterinarians interested to the care of small ruminants, the FVMP decided to not activate again this Master.

12.1.4. The European Colleges at the FVMP

As already said in paragraph 11.1.1, the diplomas issued by the European Colleges are not official titles with a legal value in Italy. It means that Italian diplomates in any European College could not, at least in theory, publicly advertise their diploma even if, of course, the European Colleges diplomas are anyway very well regarded in any field of the private professional practice. The regard of these Diplomas is less relevant within the University; as they cannot guarantee any real formally recognised advantage within an official search process for an academic position.

Some years ago, in a joint action, the Conference of the Deans of the Faculties of Veterinary Medicine and the National Licensing Board of the Professional Veterinarians, contacted the Ministry in order to obtain the formal validation of these diplomas as another legal post degree title, with legal value. Unfortunately, also because the formal difficulties, this attempt had no success.

At present 10 teachers of the FVMP have obtained a diploma (one has two different diplomas) in the following six European Colleges:

- European College of Animal Reproduction: 2 diplomates;
- European College of Veterinary Parasitology: 3 diplomates;
- European College of Veterinary Clinical Pathology: 2 diplomates;
- European College of Veterinary Internal Medicine – Companion Animal: 1 diplomate;
- European College of Veterinary Pathology: 2 diplomates;
- European College of Veterinary Pharmacology and Toxicology: 1 diplomate.

Currently, at the FVMP there are two recognised training centres for European Colleges residents.

1. European College of *Animal Reproduction* (subspecialty *Equine*), at the Department of *Veterinary Clinics*.
   The first two trainees were approved as ECAR residents in November 2008. They chose two different plans. One of them chose the traditional three year residency system, and at present he is continuously participating in the activities at the Department of *Veterinary Clinics*, except for

a period spent at the Faculty of Veterinary Medicine of Utrecht, another approved ECAR training centre. The other one chose a 5-year alternative route, and he will thus do most of his practical activity outside the Department, with frequent meetings with the Programme Director and Supervisor. Both residents have been enrolled after they have attended the Master in Equine Reproduction.

2. European College of *Veterinary Pathology*, at the Department of *Animal Pathology, Prophylaxis and Food Hygiene*.

   According to guidelines of the European Board of Veterinary Specialisations, the Department of *Animal Pathology, Prophylaxis and Food Hygiene* provides a training programme for pathologists to the European College of Veterinary Pathology (ECVP) board examination. Trainees at the Department are encouraged to use the Department's facilities for the different features of the ECVP training. The Department provides the trainees with the necropsy room, the process/reduction room, process/cut facilities, staining stations, automated station for immunohistochemistry, immunofluorescence microscope, SDS-Page and western blot devices, traditional (DNA, RNA) and Real Time (DNA, RNA) PCR thermocyclers, cytofluorimeter (at the Retrovirus Centre, 2 km from the Department, a 10-minute trip), TEM laboratory (ultra microtome, processing and viewing semi-fine sections, Transmission Electron Microscope), 2 research grade upright with epifluorescence and digital imaging acquisition system, 4 research grade upright with digital imaging acquisition system, 1 upright with morfometric analysis system and epifluorescence, 1 upright multiview (2 pathologists with epifluorescence), 2 upright multiview (5 pathologists each), 40 upright for teaching purpose.

   The Department has over 60,000 cases of viewable glass slides correlated with an electronic database that contains information about clinical history, description, and diagnosis. The Library of the FVMP has the principal veterinary pathology texts in paper format. The Department of Animal Pathology also provides for ECVP trainees the electronic access for the most important pathology papers. Furthermore, the Department caseload is also available to trainees who can benefit from it. The following are the main activities in which ECVP trainees are involved on a yearly basis:

   <u>*Necropsy*</u>
   - average 5-6 necropsies per week;
   - Species: dogs, cats (approximately 50%), wildlife species (hares, foxes, deers, wild boars, badgers), small ruminants, large ruminants, horses, pigs, avian species, some exotic species (little mammals, reptiles)

   <u>*Histopathology (biopsy or necropsy samples)*</u>
   - About 5,000 total samples per year coming from biopsies/excision histopathology service and necropsy cases.

   <u>*Other speciality areas*</u>
   - Cytology: about 500 samples per year;
   - SDS Page / Western Blotting: biologic fluids qualitative protein studies;
   - Immunofluorescence: research for some pathogen (for example *Distemper virus*) on cytology samples;
   - IHC: characterisation of tumours by markers of some Haematoxylin & Eosin cases.

   Residents are moreover encouraged to present formal lectures, small group discussions, and literature/journal clubs. At present, the Department hosts five residents. The five ECVP residents in training are all performing the 3-year standard route. Two of them started their residency after a PhD; one of these moved for a period to the Cambridge University, after a Master in Veterinary Oncology, held in the same Department; while the other two residents at the moment are PhD students. The Veterinary Pathology training programme allows graduate veterinarians to acquire in-depth knowledge of veterinary pathology and its supporting disciplines under the supervision and guidance of the two Diplomates professors of the European College of Veterinary Pathologists members of the Department of *Animal Pathology, Prophylaxis and Food Hygiene*. Diplomates professors are responsible for administration and continuity of the

programme and for the evaluation, at regular (yearly) intervals, of the performances and progresses of the residents.

Furthermore, in the 2002-03 and 2003-04 academic years, a Faculty Dipl. ECVIM-CA, Internal Medicine, supported the residency program on European College of Veterinary Internal Medicine for Cardiology for the subspecialty of Internal Medicine as co-supervisor of one resident whose official residency programme was at the Veterinary Clinic "*Gran Sasso*" in Milan.

This same Diplomate is officially available to cooperate and support residency programmes on Veterinary Internal Medicine for the subspecialty of Cardiology and Oncology as these subspecialties need a period of time spent working together with a Diplomate of ECVIM-CA.

12.2. Additional comments

The post graduate education at FVMP is based on the Specialisation Schools, the PhD Programmes, the Master Courses, and the European Colleges. Among these, the first three listed are institutional.

The Specialisation Schools since the next year will be 3-year courses. The admission is limited and every year an admission test is performed.

The Master Courses of the FVMP started in 2002. At present thirteen Master Courses with at least 1-year duration have been activated. The aim of these courses is to update the Veterinarians' knowledge and skills on specific topics of either veterinary clinics (i.e veterinary oncology, clinical biochemistry…) or pet behavioural medicine, animal health care and food safety control, and many others.

The diplomas issued by the European Colleges are well regarded in any field of the veterinary practice, but nowadays still have no official value in Italy. Ten teachers of the FVMP have obtained a Diploma, and in the Faculty there are two recognised centres for European College training: the European College of Animal Reproduction and European College of Clinical Pathology.

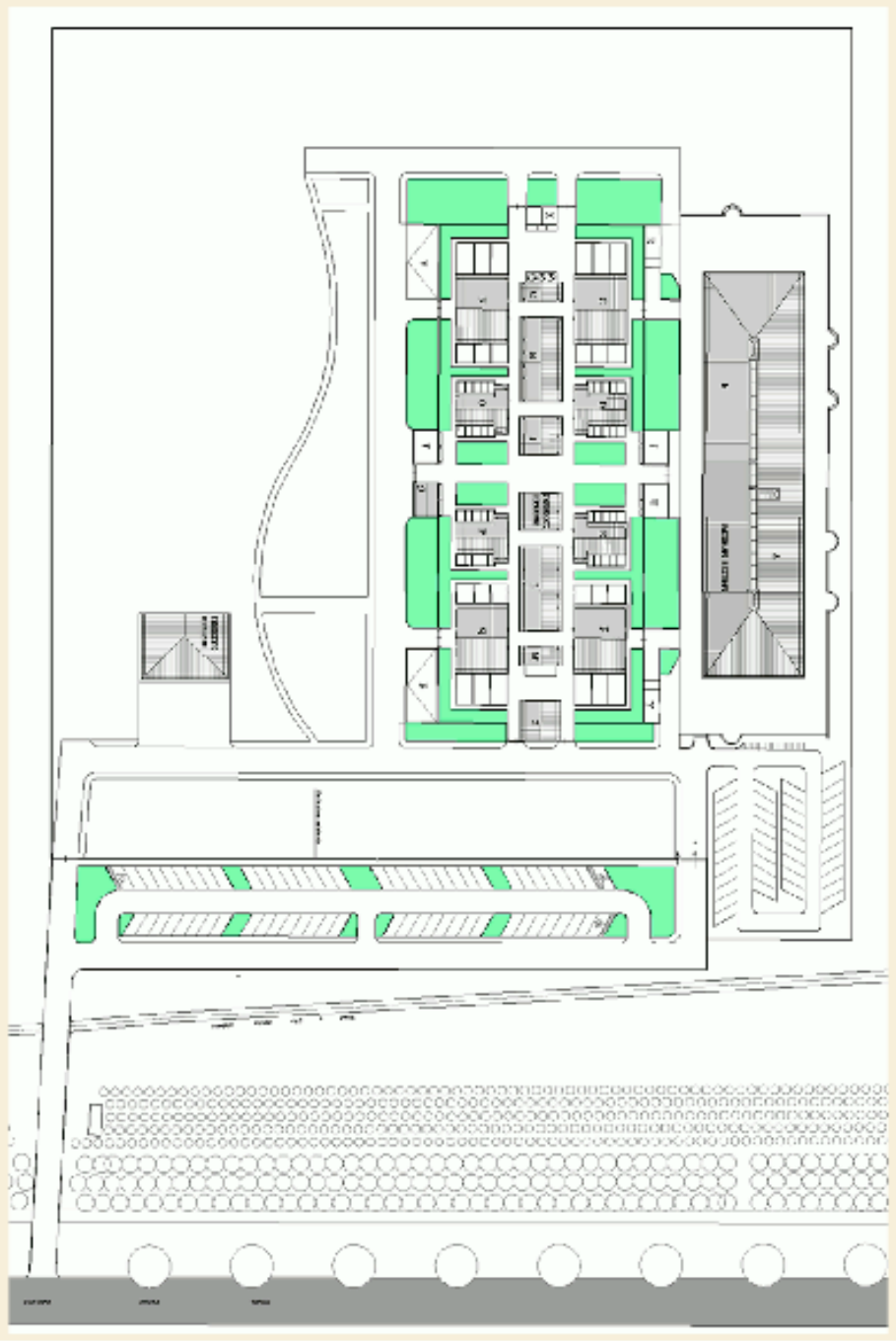
During the last ten years, the major novelty in the Italian postgraduate education has certainly been represented by the introduction of the Master courses. Actually the Departments of the FVMP have been able to take great advantage from this opportunity in offering to professional Vets a large range of teaching proposals, very often innovative and therefore really useful to try to escape from the most crowded sectors of the job market. Furthermore this expansion of the more specialised teaching proposals could progressively induce teachers to do not teach too specialised topics to the undergraduate students: this could have the advantage of reducing the amount of specialist knowledge required by the students, as well as paying more attention to help the students to achieve the *day-one skills*.

On the other hand we cannot forget the risk that Master courses could become only a *business* for either the Departments or the Faculty. In fact students pay around 2,000-4,000 euro to attend a Master course (and in some other Faculties they are much more expensive). In a situation where the University needs money and graduates need higher specialisation, the risk that Master could become an increasingly more important goal for the University could be real. It is really important to have always clear which are the genuine aims of the University and to keep a correct equilibrium among the different goals.

Another problem in the Master courses organisations concerns the engagement of academic teachers which could be detrimental to their commitment in institutional teaching. At present at the FVMP a correct balance is maintained, not only because the Masters are performed only during week-ends but also because many external teachers are involved.

12.3. Suggestions

The FVMP recognises that the number of its teachers holding a European College Diploma, especially in the clinic disciplines, is too small. The Faculty must identify a strategy to encourage professors (especially the younger ones) to obtain a Diploma. This could be very useful in the management of the Veterinary Teaching Hospital.



12.4. Annotations

Chapter 13 – RESEARCH

13.1. Factual information and comments

13.1.0. Introduction

Even if a detailed report about the research activities of the FVMP is not among the main goals of the present SER, however the Faculty, together with the EAEVE, recognises that "research and research-based veterinary training are the basis for the advancement of veterinary science and hence have a great impact on undergraduate veterinary education" (EAEVE, Principles and Process of Evaluation and Manual of Standard Operating Procedures, 2007).

Accordingly, as already stated (see paragraph 1.1.2.), research is an important objective of the FVMP. Its major task is to develop both basic and applied knowledge in the field of Veterinary Sciences and, at the same time, to provide teachers, PhD students and research fellows, as well as students, with an appropriate environment to expand their research capabilities. Moreover, the FVMP has many research and cooperation agreements with Public and Private Institutions; it also provides third-party services, as a source of teaching material.

Research is a right/duty of all teachers, and researches are performed by the entire teaching body. The freedom of research and the status of holders of the respective funding are recognised to individual teachers. The organisation structures of reference for research activities and the connected financial issues are the Departments.

As already shown in paragraph 1.1.6.2, the research work performed by all the Faculty teaching staff is evaluated through a three-yearly report which has to be evaluated and approved by the reference department and by the Faculty. Furthermore, the University of Pisa requests an annual monitoring of the scientific production of the individual teachers.

Individual profiles are available online at the address:
http://unimap.unipi.it/cercapersone/cercapersone.php

13.1.1. Students' participation to the research activities of the FVMP Departments

Students have access to either research laboratories or clinical facilities mainly for the activities related to their final degree theses. Theses may be presented:

- either as review paper, consisting in a review of existing literature on a given subject, or in an analysis of clinical cases retrospectively collected (as case review);
- or as an original experimental works consisting in an autonomous analysis, obviously always under the guide and the responsibility of a supervisor teacher, of experimental data collected by the students themselves. In this case students can access surgeries and research laboratories.

Students may also ask to attend any of the laboratories of the Faculty under the supervision of a staff member; in this case they are recognised as internal attending students.

With the goal to better evaluate the participation of the students to the research activities of the FVMP's Departments, the data referring to the final degree theses in Veterinary Medicine of the last eleven years are summarised in the following tables. Table 13.1.1.a shows the final theses classified per typology (review paper and experimental work) and per year. Unfortunately the information reported in the data base does not allow to do this distinction for the period 1998-2002. For the following six years it is possible to see that the number of review paper-type theses is decreasing along the years and becoming really marginal. Students clearly prefer to have new opportunities to perform a more practical (and professional) work.

In table 13.1.1.b-c all the final degree theses, altogether, both review type and experimental papers, are classified per EU-listed subjects of reference[12].

[12] Even if in this analysis the theses are attributed entirely to a specific EU-listed subject, the reality is more complex. In fact many

Table 13.1.1.a – Final degree theses, per year and typology

(absolute values)

Year	Review papers	Experimental	Data n.a. (1)	Total
1998			53	53
1999			71	71
2000			44	44
2001			75	75
2002	2	5	67	74
2003	20	48		68
2004	14	86		100
2005	12	81		93
2006	8	73		81
2007	4	72		76
2008	1	88		89
Total	61	453	310	824

(percentage values)

Review papers	Experimental	Data n.a. (1)	Total
		100.0%	100.0%
		100.0%	100.0%
		100.0%	100.0%
		100.0%	100.0%
2.7%	6.8%	90.5%	100.0%
29.4%	70.6%		100.0%
14.0%	86.0%		100.0%
12.9%	87.1%		100.0%
9.9%	90.1%		100.0%
5.3%	94.7%		100.0%
1.1%	98.9%		100.0%
7.4%	55.0%	37.6%	100.0%

(1) Data n.a. = Data not available

The most "crowded" EU-listed subjects are, in this order, Clinical Medicine and Surgery (3.d: 39,9%) and Obstetrics and Reproduction (3.a and 3.i: 10.2%), which, all together, collect a little more than 50% (50.1%) of all the theses performed during the last eleven years. Most of these theses concern pets (mainly dogs and cats) in the case of Clinical Medicine and Surgery; mainly horses in the case of Obstetrics and Reproduction, even if farm animals and pets are dealt with too. The frequency of these EU-listed subjects reflects the growing interest by the students over the last few years: in 2006, 2007 and 2008 they represent 52-54% of the total theses.

On the other side, it is noteworthy the reduced interest of students for both the sector of Animal Production (5.1%) and, especially, of Food Hygiene-Public Health (3.9%). Students too often choose the Faculty of Veterinary Medicine to become a "*Pets Doctor*": and they don't really change their mind along the years of the University studies. Actually this is a real problem because at present in Italy the pets veterinary job market has become really too crowed, and young veterinarians find growing difficulties in succeeding in obtaining adequate satisfactions, both personal and economic, for their job.

Table 13.1.1.b – Total final degree theses, per year and EU-listed subjects (absolute values)

EU-listed Subjects	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
1.+2.a+2.d+2.c) Basic Subjects plus Anatomy, Genetics, and Biochemistry		2		1		2	1	2	1	1	2	12
2.b) Physiology	5	7	1		4		4	6	6	5	8	46
2.e+2.f) Pharmacology and pharmacy plus Toxicology	3	4	1	7	11	4	8	5	3	3	1	50
2.g+2.h) Microbiology (including virology, bacteriology and mycology) plus Immunology	6	5	3	10	8	2	4	4	2	2	5	51
2.i) Epidemiology (including scientific and technical information and documentation methods)					1	2	1	3	2	1	1	11
3.b) Pathology (including anatomical pathology)	5	4	1	6	4	3	5	2	6	8	2	46
3.c) Parasitology	7	8	8	8	3	2	7	7	9	6	11	76
3.d) Clinical medicine and surgery (including anaesthetics)	21	21	17	31	30	36	36	33	37	29	38	329
3.e) Clinical lectures on various domestic animal, poultry and other animal species including avian pathology							5		2		1	8
3.h) Diagnostic imaging (including radiology)					4	5	6	8	6	2	6	37
3.a+3.i) Obstetrics plus Reproduction and reproductive disorders	2	11	9	9	6	4	10	8	5	12	8	84
4. Animal production	3	6	3	1		4	6	8	2	4	5	42
5. Food Hygiene / Public Health	1	3	1	2	3	4	7	7		3	1	32
Total	53	71	44	75	74	68	100	93	81	76	89	**824**

theses are interdisciplinary: very often teachers of at least two different scientific sectors participate in supervising the student's work. For this reason, results must be anyway taken with a certain attention.

Table 13.1.1.c – Total final degree theses, per year and EU-listed subjects (percentage values)

EU-listed Subjects	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
1.+2.a+2.d+2.c) Basic Subjects plus Anatomy, Genetics, and Biochemistry		2.8%		1.3%		2.9%	1.0%	2.2%	1.2%	1.3%	2.2%	1.5%
2.b) Physiology	9.4%	9.9%	2.3%		5.4%		4.0%	6.5%	7.4%	6.6%	9.0%	5.6%
2.e+2.f) Pharmacology and pharmacy plus Toxicology	5.7%	5.6%	2.3%	9.3%	14.9%	5.9%	8.0%	5.4%	3.7%	3.9%	1.1%	6.1%
2.g+2.h) Microbiology (including virology, bacteriology and mycology) plus Immunology	11.3%	7.0%	6.8%	13.3%	10.8%	2.9%	4.0%	4.3%	2.5%	2.6%	5.6%	6.2%
2.i) Epidemiology (including scientific and technical information and documentation methods)					1.4%	2.9%	1.0%	3.2%	2.5%	1.3%	1.1%	1.3%
3.b) Pathology (including anatomical pathology)	9.4%	5.6%	2.3%	8.0%	5.4%	4.4%	5.0%	2.2%	7.4%	10.5%	2.2%	5.6%
3.c) Parasitology	13.2%	11.3%	18.2%	10.7%	4.1%	2.9%	7.0%	7.5%	11.1%	7.9%	12.4%	9.2%
3.d) Clinical medicine and surgery (including anaesthetics)	39.6%	29.6%	38.6%	41.3%	40.5%	52.9%	36.0%	35.5%	45.7%	38.2%	42.7%	39.9%
3.e) Clinical lectures on various domestic animal, poultry and other animal species including avian pathology							5.0%		2.5%		1.1%	1.0%
3.h) Diagnostic imaging (including radiology)					5.4%	7.4%	6.0%	8.6%	7.4%	2.6%	6.7%	4.5%
3.a+3.i) Obstetrics plus Reproduction and reproductive disorders	3.8%	15.5%	20.5%	12.0%	8.1%	5.9%	10.0%	8.6%	6.2%	15.8%	9.0%	10.2%
4. Animal production	5.7%	8.5%	6.8%	1.3%		5.9%	6.0%	8.6%	2.5%	5.3%	5.6%	5.1%
5. Food Hygiene / Public Health	1.9%	4.2%	2.3%	2.7%	4.1%	5.9%	7.0%	7.5%		3.9%	1.1%	3.9%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

The situation reported in the tables 13.1.1.b-c especially concerns the main interests of the students (even if sometimes students don't really know their own professional interest). To have a clear idea of the active participation of the students to the researches of the FVMP Departments, it is better to look only to the 448 experimental theses (years 2000-2008), which anyway represent the 88.4% of the 507 theses performed by the students in those six years.

A synthesis of these data is shown in table 13.1.1.d, whilst details are reported in table 13.1.1.e-f.

Table 13.1.1.e – Final degree theses, per year and EU-listed subjects (all and experimental ones)

EU-listed Subjects	1998-2008	2003-2008	
	All theses	All theses	Experim.
1.+2.a+2.c+2.d) Basic Subjects plus Anatomy, Biochemistry and Genetics	1.5%	1.8%	1.8%
2.b) Physiology	5.6%	5.7%	5.1%
2.e+2.f) Pharmacology and pharmacy plus Toxicology	6.1%	4.7%	2.5%
2.g+2.h) Microbiology (including virology, bacteriology and mycology) plus Immunology	6.2%	3.7%	3.3%
2.i) Epidemiology (including scientific and technical information and documentation methods)	1.3%	2.0%	2.2%
3.b) Pathology (including anatomical pathology)	5.6%	5.1%	5.8%
3.c) Parasitology	9.2%	8.3%	9.4%
3.d) Clinical medicine and surgery (including anaesthetics)	39.9%	41.2%	41.3%
3.e) Clinical lectures on various domestic animal, poultry and other animal species including avian pathology	1.0%	1.6%	1.6%
3.h) Diagnostic imaging (including radiology)	4.5%	6.5%	7.4%
3.a+3.i) Obstetrics plus Reproduction and reproductive disorders	10.2%	9.3%	10.3%
4. Animal production	5.1%	5.7%	4.7%
5. Food Hygiene / Public Health	3.9%	4.3%	4.7%
Total	100.0%	100.0%	100.0%

Table 13.1.1.e – Experimental final degree theses, per year and EU-listed subjects (absolute values)

EU-listed Subjects	2003	2004	2005	2006	2007	2008	Total
1.+2.a+2.d+2.c) Basic Subjects plus Anatomy, Genetics, and Biochemistry	2	1	1	1	1	2	8
2.b) Physiology		3	3	5	4	8	23
2.e+2.f) Pharmacology and pharmacy plus Toxicology		4	2	2	2	1	11
2.g+2.h) Microbiology (including virology, bacteriology and mycology) plus Immunology	1	4	3	1	2	4	15
2.i) Epidemiology (including scientific and technical information and documentation methods)	2	1	3	2	1	1	10
3.b) Pathology (including anatomical pathology)	3	5	2	6	8	2	26
3.c) Parasitology	2	7	7	9	6	11	42
3.d) Clinical medicine and surgery (including anaesthetics)	26	30	29	34	28	38	185
3.e) Clinical lectures on various domestic animal, poultry and other animal species including avian pathology		5		1		1	7
3.h) Diagnostic imaging (including radiology)	5	6	8	6	2	6	33
3.a+3.i) Obstetrics plus Reproduction and reproductive disorders	4	10	8	4	12	8	46
4. Animal production		3	8	2	3	5	21
5. Food Hygiene / Public Health	3	7	7		3	1	21
Total	48	86	81	73	72	88	448

Table 13.1.1.f – Experimental final degree theses, per year and EU-listed subjects (percentage values)

EU-listed Subjects	2003	2004	2005	2006	2007	2008	Total
1.+2.a+2.d+2.c) Basic Subjects plus Anatomy, Genetics, and Biochemistry	4.2%	1.2%	1.2%	1.4%	1.4%	2.3%	1.8%
2.b) Physiology		3.5%	3.7%	6.8%	5.6%	9.1%	5.1%
2.e+2.f) Pharmacology and pharmacy plus Toxicology		4.7%	2.5%	2.7%	2.8%	1.1%	2.5%
2.g+2.h) Microbiology (including virology, bacteriology and mycology) plus Immunology	2.1%	4.7%	3.7%	1.4%	2.8%	4.5%	3.3%
2.i) Epidemiology (including scientific and technical information and documentation methods)	4.2%	1.2%	3.7%	2.7%	1.4%	1.1%	2.2%
3.b) Pathology (including anatomical pathology)	6.3%	5.8%	2.5%	8.2%	11.1%	2.3%	5.8%
3.c) Parasitology	4.2%	8.1%	8.6%	12.3%	8.3%	12.5%	9.4%
3.d) Clinical medicine and surgery (including anaesthetics)	54.2%	34.9%	35.8%	46.6%	38.9%	43.2%	41.3%
3.e) Clinical lectures on various domestic animal, poultry and other animal species including avian pathology		5.8%		1.4%		1.1%	1.6%
3.h) Diagnostic imaging (including radiology)	10.4%	7.0%	9.9%	8.2%	2.8%	6.8%	7.4%
3.a+3.i) Obstetrics plus Reproduction and reproductive disorders	8.3%	11.6%	9.9%	5.5%	16.7%	9.1%	10.3%
4. Animal production		3.5%	9.9%	2.7%	4.2%	5.7%	4.7%
5. Food Hygiene / Public Health	6.3%	8.1%	8.6%		4.2%	1.1%	4.7%
Total	100%	100%	100%	100%	100%	100%	100%

13.2. Additional comments

With the exception of a limited number of internal attending students, undergraduate students participate to research activities during the last year(s) of their career for the preparation of their experimental theses. However it should be noted that students are more interested in activities connected to the professional areas rather than in the area of basic research; consequently the majority of experimental theses are characterised by the analysis of clinical work.

13.3. Suggestions

Students should become more involved in research activities, since these activities are very formative and help to develop problem-solving strategies. Action to reward with higher marks the experimental theses well prepared should be adopted more consistently.

13.4. Annotations