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LISBOA

UNIVERSIDADE  
DE LISBOA



**EAEVE**

**Lisbon, 2017**

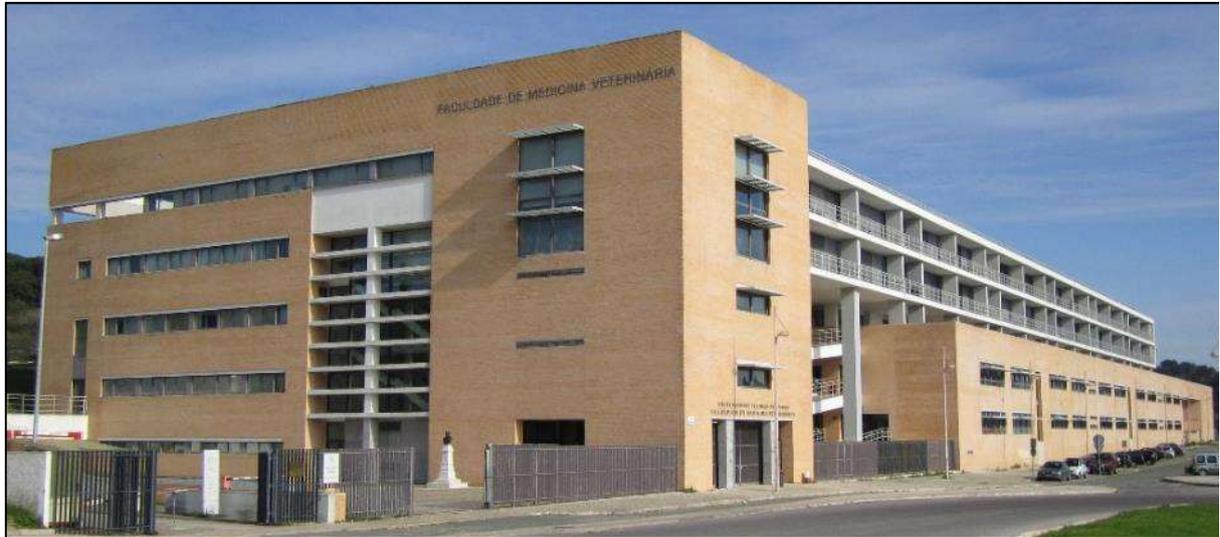
**Self-Evaluation  
Report**



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## INTRODUCTION

### Brief history of the Establishment

The first Portuguese University was established in 1288 in Lisbon, having moved to Coimbra in 1537. Higher education was only re-established in the capital, Lisbon, in the late eighteenth century, while the University of Lisbon (UL) was founded in the first Republic, in 1911. Later, in 1930, the Technical University of Lisbon (UTL) was founded. On July 2013, as a result of a merger process between UL and UTL, the **Universidade de Lisboa (ULisboa)** was founded, taking advantage of the synergies between the scientific and cultural traditions of both institutions.

The **Faculty of Veterinary Medicine (Faculdade de Medicina Veterinária – FMV)** is one of the oldest schools of the ULisboa. FMV was founded in 1830 as the Royal Military Veterinary School. Later, in 1886, the Veterinary Medicine course was established in the Institute of Agronomy and Veterinary Medicine, which was divided in 1910 into the School of Veterinary Medicine and the Institute of Agronomy. Finally, they both joined the UTL when it was created in 1930 and, later, on the University of Lisbon in 2013.

As a privileged space of science and knowledge, ULisboa is today the largest and most prestigious university in Portugal and one of the major institutions of Higher Education in Europe, with 18 Faculties or Institutes, 3,369 teachers (2,664.2 FTE, of which 82.73% with a PhD Degree), 3,936 researchers (368 with permanent contracts), and 47,543 students, including 35,196 undergraduate and integrated master students (1<sup>st</sup> + 2<sup>nd</sup> cycle), 8,465 master students (2<sup>nd</sup> cycle) and 3,882 PhD students (3<sup>rd</sup> cycle). With an annual budget of 319 million € in 2017, ULisboa offers 417 Programmes, including 101 Graduation (*Licenciatura*) and Integrated Master, 206 Master, and 110 PhD degrees.

### Previous ESEVT Visitations

Regarding European Veterinary Education, **FMV is a founder member of the European Association of Establishments of Veterinary Education (EAEVE)**. Together with other ten European schools, FMV has volunteered to be evaluated on a Pilot Study as a reference example for the system. Hence, FMV prepared an auto-evaluation report, was visited by a team of experts in November 1989 and was included in the EAEVE Approved List of European Veterinary Schools.

FMV was further visited by EAEVE in **May 2004**. Then, the recommendations of the expert team in the evaluation report motivated FMV to invest considerable **efforts to improve the quality of Veterinary Medicine programme**, namely regarding:

- The significant increase in the number of large animals observed in house clinics;
- The achievement of the objectives established for the improvement of the facilities of the large animal clinics;
- The significant increase of poultry and swine production training through the reorganisation of the student's visits to the Zootechnical Institute, industrial farms and participation in the activities of the Ambulatory Clinics;
- The significant increase of the case load in equine clinics through the establishment of protocols with main Portuguese institutions;
- The increase on the frequency of farms visited by the Ambulatory Clinics was greatly achieved by the establishment of fixed contracts for regular clinical assistance with several farms, and by the increase number of attended requests of emergency calls by farmers;

The chairman of the evaluation team and the president of EAEVE re-visited FMV in October 2007 and JEC included FMV again in the EAEVE list of approved Faculties.

The Veterinary Education at **FMV was also evaluated at a national level**, by competent organizations:

- a) In 1999, by the Evaluation Council of the Foundation of Portuguese Universities;
- b) In 2004, simultaneously with the EAAVE assessment, by the National Council for the Evaluation of Higher Education (*Conselho Nacional de Avaliação do Ensino Superior, CNAVES*);
- c) In 2015, by the Agency for Assessment and Accreditation of Higher Education (*Agência de Avaliação e Acreditação do Ensino Superior, A3ES*).

**All those evaluations approved the study programme in Veterinary Medicine carried out by FMV.** Both the national and European evaluations proved to be important incentives to foster improvements in governance, structuring and performance of FMV at various levels. In fact, the trend of FMV's evolution has been positively influenced by the diagnostic workout and recommendations of each of the above mentioned evaluation teams.



### Main features of the Establishment

- The **oldest Veterinary School in Portugal**, educating and training veterinarians since 1830.
- **International recognition**, as it was the only study programme of Veterinary Medicine approved by the EAEVE in Portugal until recently (meanwhile the veterinary study programme of *Universidade de Trás-os-Montes e Alto Douro* was approved in 2016).
- **Teaching staff of high scientific and pedagogic quality**, mostly with a doctorate degree (94.4%), working full time (71 teachers – 67.67 FTE) or exclusivity (97%).
- **High-quality students** recruited in a highly competitive process.
- **Well-equipped facilities**, including a Veterinary Teaching Hospital (VTH) and Diagnostic Services.
- **Modern curriculum**, regularly revised and updated in accordance with international recommendations.
- Host of the **Centre for Interdisciplinary Research in Animal Health (CIISA)**, the most prestigious research centre in Veterinary Sciences in Portugal, with the highest classification given by the Foundation for Science and Technology (FCT).
- Included in **ULisboa**, the largest and most prestigious university in Portugal and one of the major institutions of Higher Education in Europe.

### Main developments since the last Visitation

Since the last EAEVE visitation (2004), several improvements were adopted:

1. The **Veterinary curriculum was reviewed in 2005 and 2007** in accordance with European directives and Bologna principles, leading to the adoption of a master's integrated model, with an 11 semester-long *curriculum* with a total of 330 ECTS, and the requirement for a dissertation as a result of the mandatory final traineeship. The *curriculum* was planned to ensure the acquisition of all the skills required for professional practice by veterinarians and was approved by the Scientific Council (SC) on the 10<sup>th</sup> May 2000 and revised on the 30<sup>th</sup> July 2014, to encompass the masters in Veterinary Medicine. To date, minor changes have been incorporated in the *curriculum* which are summarized in the points below.
2. **To maximize the potential of the VTH for the practical training of students** of the Integrated Master in Veterinary Medicine (IMVM), a set of six US were implemented since 2005-06, named Clinical Rotations I to VI, which take place from the 3<sup>rd</sup> to the 5<sup>th</sup> year of the *curriculum*. This strategy resulted in a complementary training of 174 h/student covering topics such as companion animals and equine internal medicine, basic and advanced life support, diagnostic imaging, inpatient ward care and professional communication skills.
3. Since 2012-13, the 5<sup>th</sup> year school-schedule was re-organized to provide **2.5 days per week fully devoted to practical classes**.
4. In 2013-14, two new US were established, **Equine Clinics I and II**, to improve the balance between species of the relevant core clinical training of each student.
5. A **logbook** was introduced in 2014-15 to boost student's proactivity and autonomy, as well as to increase the quality assessment of the acquisition of Day One Competences for veterinary graduates.
6. The **number of teachers was increased by 5** as 14 new teachers were appointed (three with Specialisation), 5 retired, 2 left, and 2, unfortunately, passed away.
7. **More veterinarians and nurses** were employed by the VTH: in 2006, the VTH staff included 14 veterinarians and no nurses, while in 2017 it includes 25 veterinarians (one with a European Specialisation), 12 nurses and 4 auxiliaries.
8. **Expansion of the equine facilities**, through the construction of 20 stalls (with individual paddock), one indoor riding arena, a new reproduction lab and breeding room, special hospitalization and intensive care stables with 5 stalls.
9. **Improvement of the bovine facilities** to meet animal welfare requirements.
10. **Improvement of the animal isolation facilities**, including the acquisition of new equipment.
11. The **Infectious Diseases Isolation Unit (IDIU)** was fully integrated into the clinical training of IMVM students from the 3<sup>rd</sup> to the 5<sup>th</sup> year. Considerable investment was made to promote patient health care and to improve students training, such as equipment of companion animal intensive care units with oxygen safety requirements and adaptation of one ward into a surgery room.



12. **Remodelling** of consultation offices, reception and waiting rooms (dogs and cats) in the VTH of companion animals.
13. A **Clinical Skills and Simulation Centre** was recently opened assembling home-made dog manikins with a new set of full-sized, realistic and advanced canine, feline and equine manikins.
14. The **number of vehicles to be used in ambulatory service was increased** with 1 additional minibus and 1 minivan (ambulance unit).
15. **New surgical and diagnosis equipment** was acquired (listed in Chapter 4), of which it is worth highlighting: a new computed tomography scan, ultrasonography, surgery microscope, dynamic endoscopy; and a portable direct X-ray and arthroscopic surgery equipment for horses.

### Major problems encountered by the Establishment

- **Insufficient public financial funding** to support the desirable developments in teaching and research.
- Facilities: **Poor quality of construction** involves frequent and costly maintenance works; limited areas to keep livestock species.
- Faculty members: **Absence of performance incentives** for teachers and other employees; weak age-stratification.
- **Insufficient promotion of FMV's image.**
- **Delay in the implementation of a full Quality Assurance (QA) System** by the University and, consequently, by FMV.

### Version and date of the ESEVT SOP which is valid for the Visitation

ESEVT 'Uppsala' SOP May 2016







FACULDADE DE MEDICINA VETERINÁRIA

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## ● Objectives and Organization





## 1. OBJECTIVES AND ORGANISATION

### 1.1. Factual information

#### 1.1.1. Details of the Establishment

- **Official name** - Faculdade de Medicina Veterinária (Universidade de Lisboa)
- **Address** - Av. da Universidade Técnica, Pólo Universitário, Alto da Ajuda, 1300-477 LISBOA, PORTUGAL
- **Phone number** + 351 21 365 2800; Fax number + 351 21 365 2810
- **Email** – [fmv@fmv.ulisboa.pt](mailto:fmv@fmv.ulisboa.pt)
- **Website address** - [www.fmv.ulisboa.pt](http://www.fmv.ulisboa.pt)
- **Establishment's Head** – Professor Luís Manuel Morgado Tavares (Full Professor)
- **Person responsible for the professional, ethical, and academic affairs of the Veterinary Teaching Hospital** – Professor António José de Almeida Ferreira (Full Professor)
- **Official authority overseeing the Establishment** – Rector of the University of Lisboa – Professor António Cruz Serra (Full Professor)

#### 1.1.2. Summary of the Establishment Strategic Plan with an updated SWOT analysis

The **strategic plan for the four-year period of 2014-17** presented by FMV-ULisboa focused on the need to implement measures to continue complying with the commitment made with the community, expressed in FMV's Mission, Vision and Values statement. The priority strategic lines of action are:

1. To **consolidate and improve teaching, research and services to the community**;
2. To **expand and modernize** teaching and research facilities;
3. To **renew** academic, non-academic and support **staff**;
4. To **stimulate new proposals for scientific projects**, promoting synergies that increase competitiveness;
5. To **increase the offer of postgraduate training** of the lifelong programme;
6. To **develop synergies and collaborations with other ULisboa schools**, namely in the scope of graduate and post-graduate education and research;
7. To boost **innovative and diversified partnerships** to create new job, research and development opportunities;
8. To **plan the national evaluation by A3ES in 2015 and the international evaluation by EAEVE in 2017**, namely ensuring compliance with the ratios and targets set in the quality criteria of these organizations;
9. To **enhance the QA System**, in line with ULisboa.

This strategic plan for the period 2014-17 presented by FMV-ULisboa is conditioned by the existing financial and human resources constraints.

### SWOT analysis

#### Strengths

The **oldest Veterinary School in Portugal**, educating and training veterinarians since 1830;

- **International recognition**, as it was until recently the only study programme of Veterinary Medicine approved by the EAEVE until 2016, among the 6 currently existing in Portugal;
- **Faculty members of high scientific and pedagogic quality**, mostly with doctorate degree (94.4%), working in full time (71 teachers – 67.67 FTE) or exclusivity (97%), with a mean age of 52.2± 7.96 years;
- **High-quality students** composed of individuals selected in a highly competitive process (average minimum classification of 158 out of 200, taking into account the marks in high school and in national exams of Biology and Chemistry, filling all vacancies available since the implementation of *numerus clausus*, with the average number of candidates being nearly 4-fold the number of vacancies), resulting in a challenging population of high intellectual profile, motivation and enthusiasm;
- **Well-equipped facilities**, with large areas for practical teaching and research, including the VTH, laboratories for practical classes and research, rooms for dissection, necropsies, food technology, isolation unit, kennels, catteries, stables (ruminants and horses), and a modern library with rooms for self-learning and group study;
- **Modern curriculum revised and updated regularly**, according to international recommendations, including directives governing the teaching of veterinary medicine in the EU. Syllabuses are focused on a strong practical component, built on a solid theoretical background, and prompting the development of critical analysis, autonomy and creativity in students;
- **A research unit (CIISA)** covering 4 major research areas: Animal Health, Clinics, Animal Production and Food Safety, rated Very Good by FCT;
- **A VTH providing high level clinical services, 24 h per day, 365 days per year**, to a growing client population, representing a reference unit used by many veterinarians to solve complex problems. The VTH represents a huge asset in the teaching / learning process of our students;
- **Diagnostic Services**, also closely linked to the teaching / learning process, composed by a large number of laboratories in close liaison with the VTH, comprising the following areas: Clinical Pathology, Anatomical Pathology, Bacteriology, Virology, Mycology, Parasitology, Toxicology, Reproduction, Obstetrics and Gynaecology. FMV also has Food Safety laboratories and a Blood Bank;
- **FMV is part of ULisboa**, the largest and most prestigious University in Portugal and a major European university, well classified in the most important International rankings (see <https://www.ulisboa.pt/en/info/rankings>).

**Weaknesses**

- **Public funding became increasingly scarce** in the last decade, constraining the development of teaching and research;
- Faculty members: **lack of performance incentives for teachers and other staff** (halt in career and salary progression); **weak age-stratification** of faculty members (for teachers:  $7 \leq 40y$ ;  $40y > 18 \leq 50y$ ;  $50y > 39 \leq 60y$  and  $60y > 7 < 70y$ ); **retirement of technical and administrative civil servants has not been fully compensated** over the years due to the various government policy of blocking access to public service careers. This has led to the hiring of services and personnel through private budget of FMV. The salaries of this staff, which are now absolutely indispensable to the normal functioning of FMV, are entirely supported by internal FMV revenues and not through public funding. Currently, only 30 % of the total number of non-teaching staff (131) are civil servants;
- **Budgets cuts in funding for research and for doctoral and post-doctoral scholarships** have affected the dynamics of research, with all the negative implications in research and teaching activities;
- **Facilities: poor quality of construction** requiring frequent and costly maintenance works;
- **Constraints deriving from the legal framework of public institutions regarding:**
  - a) The limited autonomy and flexibility of human resources management;
  - b) The huge amount of time and resources spent in bureaucratic duties.

**Opportunities**

- **The merger of UTL with the UL, resulting in ULisboa, provided important new opportunities:**
  - a) The establishment of new internal collaborations at teaching and research levels, particularly with the faculties of Medicine, Pharmacy, Dentistry, Biology;
  - b) The positive effects of the increase in critical mass;
  - c) Better negotiation capacities (economies of scale);
  - d) Better access to support and shared services centred in the Rectorate, increasing the administrative efficiency and rendering resources available for other activities.
  - e) Increased visibility of FMV;
- **Life and Health Sciences are undoubtedly the most dynamic areas of research at global level** and for which Society has higher expectations, prompting the allocation of significant financial resources to these areas by the government. The decisive role of Veterinary Medicine in the concept of "One Health" provides great opportunities for the development of shared research lines including Human and Veterinary Medicines and the integration of students into research and development activities, training qualified professionals fully prepared for future challenges;
- Opportunity to improve teaching and scientific performance through **national and international competitive programs and projects**;
- **Better perception by society of food safety and food security issues**, particularly regarding foods of animal origin for human consumption. In this context, Veterinary Sciences play a decisive role in developing efficient and sustainable processes, capable of producing food of quality for the growing human population;
- **Establishing protocols with the neighbour School of Agriculture (ISA)**, to create synergies and optimize results in terms of teaching, research and use of specific areas of *Tapada da Ajuda* for practical activities and to keep farm animals that will increase students learning opportunities;
- **Development of partnerships to promote teaching and research internationalization**, particularly through European programs and with Portuguese-speaking countries;
- **Ability to attract high quality international students**;
- **Participation in international networks** with access to knowledge generated in the worldwide process of globalization, aiming at enhancing access to economic and financial resources, improving mobility of students, teachers and researchers, and sharing the spread of knowledge.

**Threats**

- The main constraints are the **shortage of funds and difficulties in renewing human resources**, related to, as explained above, the cuts in state funding and constraints in public hiring rules, respectively. Thus, the main threats include:
  - a) **High cost of Veterinary Medicine training**, generally acknowledged as the most expensive of all university education.
  - b) In spite of the multiple efforts over the years, the **budget remains below the desired level**, with noticeable consequences, such as:
    - Difficulty in celebrating new contracts to achieve the ideal number of teachers and support staff, both in absolute terms and from a future renewal perspective;
    - Less than desirable opportunities for career development for excellent performing teachers and support staff, essential for their motivation;
- **Delay in implementation of a full QA System** in ULisboa;
- **Portugal economic and financial situation**, impairing country's industrial development and business activity;
- **Scarce investment in know-how and technology transfer of the majority of Portuguese companies** in the animal business sector.



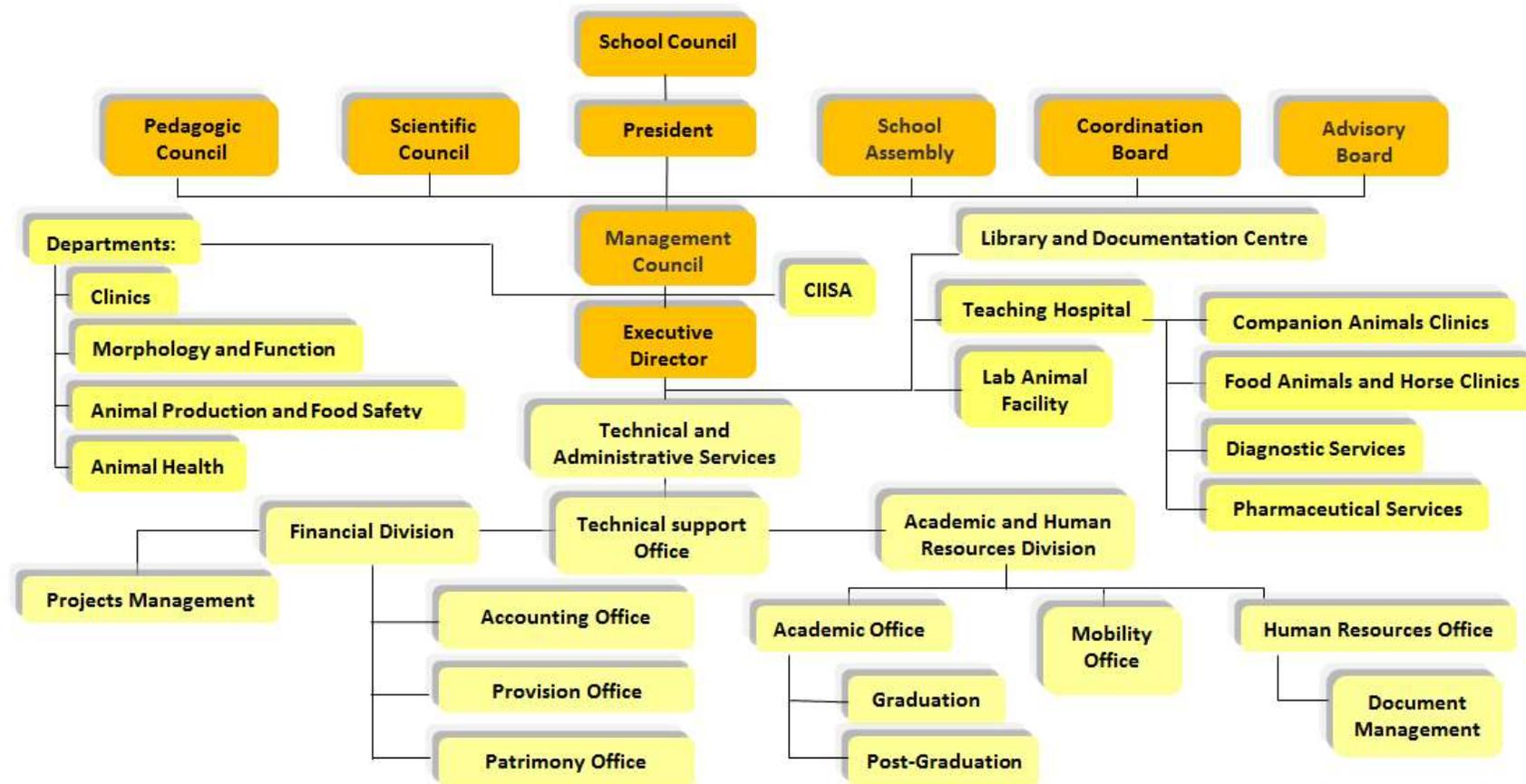
### 1.1.3. Summary of the Establishment Operating Plan with timeframe and indicators of achievement of its objectives

The main strategic axes defined in Strategic Plan 2014-17, were operationalized with the following priority actions:

Action	Timeframe	Indicators
<b>1. Improve teaching, research and community services.</b>	2014-17	
Reduce the negative impact of financial crisis	Continuous	
Expand and modernize VTH services for small and large animals	Continuous	>10%/year
Organization of Diagnostic Services	2014-15	
Increase VTH revenues	Continuous	>10%/year
Expand research funds	Continuous	>2%/year
Increase training actions and revenues	Continuous	>2%/year
Improve Public Funding	Continuous	>4%/ year
<b>2. To expand and modernize teaching and research facilities.</b>	2014-17	
Construction of the new equine unit.	2014	Conclusion
Waterproofing of the VTH and the Auditorium roof.	2014	Conclusion
Requalification of the VTH reception and waiting room	2015-16	Conclusion
Requalification of Lab Animal Facilities	2015-16	Conclusion
New surgery rooms, hospitalization and intensive care.	2014-17	On-going
New classrooms, offices for grad-students and researchers (C-Building).	2014-17	On-going
Construction of Museum and reassembling of the old library from FMV old facilities (C-Building).	2014-17	On-going
<b>3. Renovation of teaching and non-teaching human resources.</b>	2014-17	
Renovation of academic staff (nº ETI)	Continuous	>2%/year
Renovation of administrative and support staff	Continuous	>2%/year
Staff assessment	Continuous	> Results
<b>4. Stimulate research: new strategic lines and grants.</b>	2014-17	
Assessment of research activities	Continuous	Class. CIISA
Increase scientific publications	Continuous	>5%/year
Increase transfer of technology and knowledge: Patents, Spin-off firms	Continuous	>2.5%/year
Identify new research lines answering society emerging problems	Continuous	> grant App.
<b>5. Increase LLL and postgraduate training activity.</b>	2014-17	
Increase Life Long Learning training courses	Continuous	>2.5%/year
Increase Postgraduate studies	Continuous	1 programme
<b>6. Develop synergies and collaborations within ULisboa.</b>	2014-17	
Increase programmes / units of study offered in collaboration with other schools	Continuous	>5%/year
<b>7. Encourage innovative and diversified partnerships.</b>	2014-17	
Expand collaborations, innovative and diversified partnerships	Continuous	>5%/year
<b>8. Prepare the national evaluation by the A3ES in 2015 and the international evaluation by EAEVE in 2017.</b>	2014-17	Accreditation
<b>9. Consolidate the outcome assessment and Quality Assurance.</b>	2014-17	On-going
<b>10. Increase the image and visibility.</b>	2014-17	
Renovation of the Webpage	Continuous	2017 edition
Modernizing information dissemination and communication systems	Continuous	



1.1.4. Organisational chart (diagram) of the Establishment





**1.1.5. List of departments/units/clinics and councils/boards/committees with a very brief description of their composition/function/responsibilities**

**School Council (ScC):** The School Council is the body of strategic decision, supervision of the compliance with Statutes, other applicable legal regulations, and the fulfilment of the FMV mission. It includes 15 members, as follows: 9 representatives of teachers and researchers (PhDs and full-time basis); 1 representative of non-teacher staff; 2 representatives of the students; and 3 co-opted external personalities.

**President (Establishment’s Head, Dean):** The Dean is a uninominal executive organ, of external and internal representation of FMV. He is elected by an absolute majority by the ScC, amongst all FMV’s full professors.

**Scientific Council (SC):** SC is the body responsible for FMV’s scientific policy, the qualifications of its teaching staff and the quality and relevance of students training, considering the strategic plans of the ScC and the functions and powers of both the Dean and PC. It comprises 15 elected members: 12 full-time teachers with a PhD degree and 3 representatives of the research unit, teachers and researchers with a PhD degree.

**Pedagogic Council (PC):** The PC is the body responsible for the guidance of FMV’s pedagogic policy and, in accordance with the strategic options approved by the ScC and the functions and powers of the Dean and SC. It promotes and evaluates the guidelines, methods, actions and results of teaching activities, contributing to its proper coordination in order to assure their success, the proper functioning of the study programmes, the quality and relevance of training and career opportunities. It comprises 5 full-time teachers with a PhD degree and 5 students that should assure the appropriate representation of both master’s and PhD students.

**Management Council (MC):** The Management Council is chaired by the Dean and includes one of the Vice-Deans, the Executive Director and the head of the Financial Division. It is responsible for:

- a) The administrative, financial and property management of FMV.
- b) Promoting the inventory of all FMV’s assets and their evaluation, ensuring its annual update.

**School Assembly:** The School Assembly is an advisory body summoned in situations considered of major importance and complexity for the life of FMV. It is composed by all the teachers, researchers and other workers and student delegates (all students participating in the FMV government bodies and that take part in the Students Union). The School Assembly is convened and chaired by the Dean.

**Advisory Board:** The Advisory Board is the body that communicates with society and stakeholders, namely with personalities of the social, economic and professional sectors related to FMV’s areas of training and research. It is composed of inherent members (the Presidents of the management bodies and departments, the President of the Alumni Union and the President of the Students Union) and 20 personalities of sectors of society related to the FMV’s fields of training and research, appointed by the Dean upon proposal of the ScC after consulting the SC.

**Departments**

The departments are the operative units, corresponding to vocational areas of teaching and research. They are autonomous in terms of internal organisation and development of teaching (under and post-graduate), research and services activities, including providing consultancy to public and private entities.

Each department has its Department Council, which includes all teachers and researchers with a PhD degree who elect a President and an Executive Committee every four years. Each scientific area elects one Study Coordinator.

**Units**

**Centre for Interdisciplinary Research in Animal Health (CIISA)**

**Veterinary Teaching Hospital (VTH):** The Veterinary Teaching Hospital (VTH) aims to offer practical training to students in propaedeutic and clinical areas and research activities in Clinical and Animal Health, and to provide qualified and reference services to society. The VTH is organised in four subunits:

<b>Companion Animals Clinics</b>	<b>Food Animals and Horse Clinics</b>	<b>Diagnostic Services</b>	<b>Pharmaceutical Services</b>
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The VTH is run by a Board chaired by the Dean, including also the heads of each subunit, the PC President and Presidents of the Departments of Clinics and Animal Health.

Further information on function/responsibilities of those bodies and units are provided in Appendix 6.



### 1.1.6. Description of how and by whom the strategic plan and the organisation of the Establishment are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

The current strategic plan (2014-17) was proposed by the Dean and presented to staff, students and stakeholders in a public audition, when he applied for the position, and was later approved by the ScC. The strategic plan is communicated to staff, students and stakeholders on the website and it is implemented by the management bodies and assessed by the ScC.

The organization of FMV is largely established by national legislation and partially decided by the institution. The above described bodies, ScC, Dean, SC and PC, their composition, functions and responsibilities, are legally defined. The Statutes of ULisboa also determine those bodies and the Management Council, describing their functions in further detail. All the other bodies, boards, departments and units were envisaged in FMV Statutes and were decided by the faculty in its Statutes prepared by an assembly specifically appointed for this purpose, which included representatives of teachers, workers and students. The statutes were then approved by the ScC and, finally, by the Rector.

This organization and the public legal documents are communicated to staff, students and stakeholders through FMV's website where these documents are made public.

## 1.2. Comments

The scenario of Portuguese Veterinary Education has substantially changed in the last decades. From the situation of being the only veterinary school until 1986, FMV witnessed the opening of five veterinary courses in 3 public Universities: *Trás-os-Montes e Alto Douro* (UTAD), *Porto* (ICBAS-UP), *Évora* (UE) and then in two private Universities, first in *Coimbra* (*Escola Universitária Vasco da Gama*) and then in *Lisboa* (*Universidade Lusófona*). However, **this fact did not change the attraction potential of FMV towards students seeking Veterinary Education**, since 100% of FMV's *numerus clausus* have been filled over the years with high qualified new students (average minimum mark of 158 out of 200).

## 1.3. Suggestions for improvement

The image of FMV is one of the main aspects to be improved, as a critical piece to its prestige and reputation, contributing significantly for the attraction of the best "customers" (stakeholders, students) and employees (teachers, researchers, support staff), and thus for the success of its mission. This promotion is mainly performed through its outward indicators making noticeable its name/brand, organization, products and services. To overcome this need, a new website, aesthetically attractive, simple and easy-to-use was made available in 2017.

Another aspect that needs improvement, also aiming at the consolidation of the institutional image, is the ability to provide rapid and personalized answers to anyone seeking its services either in person, by phone or by email.

A third aspect that would allow improving FMV's image is its presence in all major fora and events in its fields of activity, from education to research, not forgetting the services. This presence is important to make FMV known to the general public, to promote its participation in important decision-making processes, and also to collect relevant information and experience from other actors in the Veterinary sector.

All these aspects, once improved, will contribute decisively, not only to promote FMV's image but also, by gaining better access to relevant information, for its development in line with the needs and expectations of the outside world, ensuring its success by anticipating scenarios and actions, allowing the competition for resources that will be increasingly scarce.

Finally, simple aspects of promotion of the brand name can be achieved with merchandising of products with the image of FMV or its services that should be reinforced.





2

Finances



## 2. FINANCES

### 2.1. Factual information

#### 2.1.1. Description of the global financial process of the Establishment

Government defines annually the total amount of the financing for ULisboa and then the Rector distributes this budget between its 18 organic units according to a complex formula in which several parameters are considered, of which the most relevant are:

- Number of students;
- Student rate level dependent on teaching specificity and education costs (see table below);
- Training and differentiation of teaching staff and ratios Students/Teachers (FTE) and Support staff/Teachers (FTE).

	Education Fields	Students/Teachers (FTE)	Support staff/Teachers (FTE)
U1	Medicine, Dentistry (Veterinary Medicine)*	6	0.85
U2	Performing Arts	6	0.45
U3	Veterinary Medicine*	9	0.85
U4	Engineering, Sciences, Pharmacy, Agronomy	11	0.75
U5	Arts, Design, Architecture, Sports, Psychology	12	0.5
U6	Mathematics, Statistics, Computer sciences	14	0.5
U7	Economy, Business, Tourism, Geography	17	0.45
U8	History, Languages, Social - Political Sciences	20	0.35

\* The ministry and the university recognized veterinary education at U1 level starting in the State Budget for 2016 (see below).

Endowed with patrimonial and financial autonomy, **FMV is responsible for all financial management decisions**, revenue collection and payment of expenses.

**FMV's financial income has two main sources, one public** derived from the State Budget and **one private** derived from its own revenues:

Tuition and fees paid by the students	Research grants	Rental of spaces	Provision of services to the community

**Public revenues** from the State Budget are all spent to cover staff salaries. **Private revenues** are used to cover all expenses other than the payment of salaries. Private resources obtained from services to the community are generated and managed through a private non-profit association, the **Association for the Development of Veterinary Sciences – ACIVET**, whose president is the Dean of FMV and whose associates are mainly FMV professors (see 2.2). Starting in 2017, ACIVET and FMV consolidate accounts; therefore, in the tables below, showing annual revenues and expenditures, the amounts are also consolidated.

It is worth noting that in 2009 FMV sold its old facilities located in the centre of Lisbon. This resulted in an additional income of 3,681,250€ which, according to the law, has been used exclusively for reinvestment in facilities and equipment. These funds are registered annually as balances carried forward to the following years. For the purpose of this report, these balances are shown in table 2.1.2 as other sources. The gradual decrease in these figures from 2014 to 2016 reflects the use of these funds for investments in the last few years.

#### 2.1.2. Degree of autonomy of the Establishment on the financial process

According to both the ULisboa and its own Statutes, **FMV is a collective entity with legal personality under public law, with statutory, scientific, cultural, pedagogic, administrative, financial and patrimonial autonomy**. However, as a public institution, **FMV depends mainly on funding from State Budget**.

Table 2.1.1. Annual expenditures during the last 3 years (€) (Consolidated values FMV/ACIVET)

Area of expenditure	2016	2015	2014	Mean
Personnel	6,841,901.02	6,537,269.49	6,819,475.47	6,732,881.99
Operating costs	3,150,704.38	2,434,606.67	4,009,000.33	3,198,103.79
Maintenance costs	358,400.08	661,674.80	657,936.37	559,337.08
Equipment	95,955.20	480,967.18	151,517.14	242,813.17
<b>Total expenditure</b>	<b>10,446,960.68</b>	<b>10,114,518.14</b>	<b>11,637,929.31</b>	<b>10,733,136.04</b>

**Table 2.1.2. Annual revenues during the last 3 years (€) (Consolidated values FMV/ACIVET)**

Revenues source	2016	2015	2014	Mean
State Budget	5,385,690.00	4,873,777.00	4,952,853.04	5,070,773.35
Tuition fee (standard students)	968,862.41	1,168,893.63	1,011,583.22	1,049,779.75
Tuition fee (full fee students)	N/A	N/A	N/A	N/A
Clinical services *	1,660,693.00	1,434,651.00	1,281,590.00	1,458,978.00
Diagnostic services*	540,157.00	475,100.00	433,136.00	482,797.67
Other services	286,560.47	179,563.18	145,549.11	203,890.92
Research grants	1,836,817.33	1,197,525.18	2,774,406.29	1,936,249.60
Continuing Education	86,339.42	96,919.38	80,926.66	88,061.82
Donations	0.00	0.00	0.00	0.00
Other sources**	516,542.68	1,209,142.00	2,180,411.49	1,302,032.06
<b>Total revenues</b>	<b>11,281,662.31</b>	<b>10,635,571.37</b>	<b>12,860,455.81</b>	<b>11,592,563.16</b>

\* Managed through Protocol with ACIVET.

\*\* Balances carried forward, in particular regarding the amount received in 2009 from selling FMV old facilities, which have been used exclusively for reinvestment in equipment and facilities. The figures decreasing from 2014 to 2016 reflect the reduction in the balances resulting from these investments.

**Table 2.1.3. Annual balance between expenditures and revenues (in Euros) (Consolidated values FMV/ACIVET)**

Academic year	TOTAL EXPENDITURES	TOTAL REVENUES	Balance **
<b>2014</b>	11,637,929.31	12,860,455.81*	1,222,526.50
<b>2015</b>	10,114,518.14	10,635,571.37	521,053.23
<b>2016</b>	10,446,960.68	11,281,662.31	834,701.63

\* The revenues and expenses of the year 2014 appear much higher, reflecting the funds received from an international research project on African swine fever - ASFORCE. As a leader of the project, FMV received these funds and distributed most of them to its international partners, which was reflected on both the revenues and expenses of that year.

\*\* These figures are not all real balance since they include the funds from the sale of the old facilities which have not yet been spent for the intended purposes, which are necessarily considered as revenues of the following year. As these funds are spent, the balance decreases gradually. The remainder of the balance reflect payments and money transfers from other entities that occur usually in the last days of the year particularly related to research grants.

### 2.1.3. % of overhead to be paid to the official authority overseeing the Establishment on revenues from services and research grants.

Not applicable.

### 2.1.4. Annual tuition fee for national and international students.

**Tuition fee for national students is established by the government annually. In 2017 it is of 1,063€.** This reduced amount represents less than 1/10<sup>th</sup> of the students actual yearly cost. Although the University Board has established a full tuition of 12,500€ to be applied for international students, specific legislation issued by **the government does not allow** that Medicine, Dentistry and Veterinary Medicine **to accept international students**, other than those included in specific programs (like Erasmus). So, no Full tuition fees were ever charged on IMVM.

### 2.1.5. Estimation of the utilities and other expenditures directly paid by the official authority and not included in the expenditure tables.

**All utilities are paid by the establishment** and are therefore included in the expenditure tables shown above.

### 2.1.6. List of the on-going and planned major investments for developing, improving and/or refurbishing facilities and equipment, and origin of the funding.

**FMV is currently in the process of completion of the investments using the funds obtained from the sale of FMV's facilities in central Lisbon**, as devised in the Strategic Plan 2014-18, including:

- Relocation of part of the historic estate** from the old buildings, such as the romantic fountain and founder's bust, was completed;
- Building of the concierge**, new facilities for the **equine clinical services** (boxes, riding stables and breeding laboratories), improvement of **VTH isolation unit**, and new equine intensive care facilities have been concluded;
- Renewal and expansion of the VTH** (reception, roof isolation and surgery rooms), the renovation of the Lab Animal facilities and the acquisition of several units of modern equipment for the VTH have been completed;
- Building of new educational spaces**, including the **Museum of Veterinary Medicine and of a recreational space** that enhances the interaction between professors, students, researchers and employees, as well as the promotion of cultural activities, are still waiting for an opportunity and financial support.



FMV's buildings, whose quality of construction is unfortunately much lower than desirable, are already beginning to show signs of deterioration that urge correction. These investments far exceed the financial capacity provided by the scarce state budget allocated annually to the institution. **The Management Board had to choose between the modernization and construction of new spaces and acquisition of equipment using old facilities funds, or their use to amend deficiencies in the construction of buildings.** Clearly and consciously, the Management Board opted for the first, transferring to the university the responsibility of building's conservation. An exhaustive survey of all necessary maintenance work is under way and the Rector has already been alerted to the need to provide FMV with the necessary financial support to implement them.

### 2.1.7. Prospected expenditures and revenues for the next 3 academic years

The convergence of several facts already referred to and further explained in sections 2.2 and 2.3 of this chapter, allow FMV to face the next 3 years with optimism. **The main sources of funding for FMV's activities are expected to increase significantly and consistently over the next few years.** Thus, the **State Budget is expected to increase by 4% a year, and revenues from services are expected to continue to grow by 15% annually** (as occurred over the last 3 years), reflecting the recent improvement of facilities and equipment that triggered increasing demand for our services by society. Likewise, the improvement of the socio-economic conditions of the country allows us to expect more funds from the government in competitive areas such as research projects and opportunities for proposal submission for national and international incentive programs. Thus, as shown in Table 2.1.7., we expect revenues and expenditures to increase by around 10% per year. For the years 2018 and 2019, the remaining of old facilities' funds will not be reflected, as they are expected to be totally spent by that time.

Table 2.1.7. Annual balance between expenditures and revenues (in Euros)

Academic year	TOTAL EXPENDITURES	TOTAL REVENUES	Balance *
2017	13,000,000	13,600,000	600,000
2018	14,300,000	14,900,000	600,000
2019	15,700,000	16,300,000	600,000

\* Total revenues minus total expenditures

In the **coming years** it is expected that FMV will have to carry out **several works of buildings' recovery and maintenance**, for which the increase of the budget will be essential. However, it is also expected to continue to **invest heavily in the quality of teaching**, namely in the acquisition of models and simulators to be used in clinical training. Thus, revenues generated in these years should be fully used in expenditure, with virtually no balance being anticipated other than what is strictly necessary to meet the expenses of January each year.

### 2.1.8. Description of how and by who expenditures, investments and revenues are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

**The financial process has basically two paths depending on the public or private origin of resources.** Thus, **with regard to State Budget**, as previously mentioned, the value attributed annually to ULisboa is communicated by the ministry to the rectorate. Then the Rector promotes a meeting with the University Coordinator Council, composed by the Rector team and the Deans of the 18 organic units of the university, where the amounts to be attributed to each faculty are discussed and approved. Usually these meetings take place in August, referring to the budget for the following year. The Dean is informed of the amount attributed to FMV, and convenes the Management Board, which prepares the budget proposal, where the expected values from FMV's own revenues are added. This initial proposal is sent to the Government financial services (General Directorate of the Budget-DGO) for evaluation. Once the annual budget is revised and approved, a distribution by the various activities, items and budget lines is proposed by the Management Council, and discussed and approved by the School Council, the body responsible for the approval of all strategic decisions. Monthly accounts are reported to DGO, which, after thorough analysis, approves them and releases the financial part of the budget to be used in the following month. The overall financial process is audited on a regular basis (annually or whenever superiorly decided) by several public entities.

**Funds from private sources**, such as amounts generated by the VTH and through the provision of other services, managed by ACIVET, are accounted for and managed through joint meetings between FMV's Management Council and the Board of ACIVET, held monthly or whenever necessary. ACIVET approves its annual report and its budget at a general assembly of its associates. In this annual meeting, a presentation is made by the President of the Board (Dean of FMV) of the previous year's activities, prospective for the following year and financial analysis.

## 2.2. Comments

**In the last decade, as a consequence of the financial crisis and austerity measures imposed to Portugal, ULisboa suffered a very significant reduction in its real budget** (cut of about 50% between 2006 and 2016). This reduction in funding



occurred in two ways. On one hand, there was a decrease in the budget assigned to ULisboa and, on the other hand, universities were forced to cover with their own funds new expenses like contributions to retirement funds, which had a major impact on the University budget. In addition to budgetary cuts, the crisis period also brought austerity measures, which resulted in:

- a) Decrease in salary and freeze of career progress for civil servants;
- b) Strong restrictions in the use of public revenues to purchase goods and cover expenses, imposed by law and seriously affecting the autonomy of the universities.

Faced with this financial crisis that could drastically compromise the viability and quality of the institution, **FMV's management bodies were forced to take urgent measures to overcome the budget cuts**, including:

- 1) Containment of costs;
- 2) Continuous political pressure on the University and the Ministry of Education to recognize the specialization of veterinary education carried out by FMV and the need that funding per student reflects this level of demand, namely by matching its students' funding to the level applied in Human Medicine and Dentistry (see 2.1.1). After years of pressure this recognition was translated positively in the budget allocated to FMV since 2016;
- 3) Celebration of an institutional protocol with a private non-profitable association, ACIVET, through which FMV transferred to ACIVET the management of the VTH and other services that generate revenues. This protocol came into effect in 2011, making it possible to:
  - a) Increase revenues from the provision of services;
  - b) Contract committed differentiated and competent clinical staff and personnel, particularly essential to work in the VTH in a regime of 24h/365d/y;
  - c) Maintain the capacity to acquire materials and equipment indispensable for preserving the quality of its teaching, research and services provided.

**This action allowed not only to stabilize the activity of the VTH, enabling the teaching of veterinary medicine with a strong component of practical training, but also to overcome budget constraints as a result of increasing revenues.** These results would have never been achieved through Public Administration since new contracts have been prohibited for a long time and acquisition of goods and equipment has been drastically restricted.

**Education in veterinary medicine is by far the most expensive worldwide.** Moreover, veterinary medicine became increasingly sophisticated over the years, especially in the last two decades. Thus, education in this field requires very expensive equipment and plenty of resources. However, **this reality is seldom recognized by governments, university rectorates, and counterparts responsible for other fields of education.** This situation is rather common worldwide.

Bearing in mind the importance of this recognition, **the Dean has made a great effort over the years, to explain to other schools of ULisboa the need for increasing funding for veterinary education.** After many years of pledge to get veterinary education recognized at the level of Medicine and Dentistry (level U1) as far as funding per student is concerned, FMV finally achieved this recognition by the University in 2015, reflected on 2016 and 2017 state budgets. Raising the student level to U1 should allow an overall increase of around 24% of the current budget if there were no increase limit. However, there is a growth limitation of 4% per year, imposed by the university to avoid major unbalances, since the increase in the budget of one school implies an equivalent decrease in the budgets of others. Nevertheless, in the next four years, FMV expects an increase in budget of 4%/year.

**In the last years, the revenues obtained from selling FMV old facilities have been used for investment in modernization of equipment and facilities, mainly the VTH.** The clinical services benefitted greatly from this modernization, which reflected both in the quality of education and in the financial income generated by VTH. Not being overly optimistic, FMV's financial situation in the coming years is expected to grow steadily and securely, ensuring a positive evolution of education, research and services provided to the community.

### 2.3. Suggestions for improvement

Although funding improvement depends more upon third parties than on the institution itself, **there are opportunities to improve the financial return of FMV's activities**, such as:

- obtain from government the permission to receive international students paying full tuition.** Efforts to achieve this goal are underway;
- expand services provided to the community;**
- intensify efforts to attract sponsors**, in particular by increasing the interaction of FMV with private international veterinary companies;
- increase the incentives to bring "Start-up" companies to FMV**, boosting entrepreneurship;
- improve facilities' profitability**, namely attracting more international entities with dynamics in continuous education training, to promote those actions at FMV. As an example, several courses promoted by ESAVS already took place in 2017 in our premises;
- improve and spread the image/brand of the institution**, as explained above, through the development and sale of more merchandising products.



# 3. Curriculum

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### 3. CURRICULUM

#### 3.1. Factual information

##### 3.1.1. Description of the educational aims and strategy in order to propose a cohesive framework and to achieve the learning outcome

The aim of IMVM is to guarantee a high level of education, grounded in scientific research and hands-on practical training, at the end of which graduates should hold the following general competencies:

- a) Apply their knowledge, reasoning and skills to **understand and solve problems in new situations, in wide multidisciplinary contexts**;
- b) Develop the **ability to integrate knowledge**, handle complex issues, propose solutions and make judgments in situations of limited or incomplete information;
- c) **Be able to communicate findings and conclusions**, and the knowledge and rationale underlying them, in a clear and objective manner;
- d) Develop skills that enable them to **pursue an autonomous lifelong learning career**;
- e) **Ensure the health and welfare of animals**;
- f) **Contribute for a sustainable and competitive animal production**, preserving the environment;
- g) **Protect Man from zoonosis**;
- h) **Ensure the quality and safety of animal products**.

As the IMVM is FMV's main study programme, all the management bodies, in particular the Dean, SC and PC, closely supervise its daily operation and the achievement of these objectives. Below these management bodies, there is a pyramidal framework that monitors the organization of the teaching process from the regents of each US, to the Study Coordinator of each scientific area, until the Scientific Committee of IMVM (see 3.1.3).

As an additional tool to ensure the fulfilment of these objectives and the achievement of learning outcomes, **the list of competencies that the graduates in Veterinary Medicine should hold at the time of graduation was approved by the SC on May 10<sup>th</sup>, 2000. This list was revised for the IMVM on July 30<sup>th</sup>, 2014**, considering European orientations for the teaching/learning of Veterinary Medicine, ESEVT Day One Competences, and the recommendations resulting from national and international evaluations that the IMVM program of FVM has undergone in the past.

Aiming to improve mentoring throughout the clinical training of students, encouraging students to behave proactively, to facilitate and speed up the check-up of clinical skills, **a logbook was adopted in 2014 to record these activities, similarly to other European study programs in Veterinary Medicine**. This logbook complements the evaluation system in place for each US as it demonstrates dynamically the attainment of clinical outcomes by students (see 3.1.9.).

##### 3.1.2. Description of the legal constraints imposed on curriculum by national/regional legislations and the degree of autonomy that the Establishment has to change the curriculum

The only curricular constraint imposed by Portuguese legislation to the *curriculum* has been the definition of its temporal extension and workload resulting from the adaptation to the Bologna process. In fact, the Decree Law No. 74/2006 of 24 March, stipulates that, *"In university education, the master's degree can also be conferred after an integrated study cycle, with 300 to 360 ECTS and a normal duration between 10 and 12 curricular semesters of work, in cases where, for the access to a specific profession, that duration is laid down by legal provisions of the European Union or results from a stable and consolidated practice in the European Union"*. As a result, all the Portuguese *curricula* of Veterinary Medicine were adapted to 330 ECTS and 11 semesters (5.5 years).

**FMV has total autonomy to propose curriculum changes**. If they do not change the total of ECTS of each scientific area, the modifications are approved by the Rector of ULisboa. On the other hand, if the ECTS of a given scientific area are modified, then it must be approved by the General Directorate of Higher Education (Ministry of Education) and communicated to A3ES. These institutions never denied any request for amendment of IMVM's *curriculum*.



### 3.1.3. Description of how curricular overlaps, redundancies, omissions and lack of consistency, transversality and/or integration of the curriculum are identified and corrected

There are several levels and bodies responsible for keeping *curriculum* updated and for identifying and correcting any overlaps, redundancies, omissions or lack of consistency.

At a 1<sup>st</sup> level, every US has a **Scientific and Pedagogic Coordinator (SPC)**, responsible for setting and coordinating its scientific and pedagogic guidance (must be an associate or full professor), **and a Regent (REG)**, responsible for the implementation of those guidelines and for the daily operation of the US (the SPC or other teacher with a minimum of 5-year teaching experience in the US). In order to ensure programmatic coherence and consistency of pedagogic processes, the SPC is responsible for the scientific and pedagogic coordination of all US that share a high programmatic interconnection (e.g. US with a number associated – for example, Anatomy I, II and III).

At a 2<sup>nd</sup> level, the **Study Coordinator of each scientific area** is responsible for the coherence, temporal sequence and interaction of syllabus and materials throughout the programme to make teaching more effective in the area. This position was created when the IMVM *curriculum* was adapted to the Bologna process.

At a 3<sup>rd</sup> level, the **Scientific Committee of IMVM** is responsible for the evaluation of the study programme operation, ensuring that its objectives are met. It coordinates and harmonizes US syllabus and propose changes to the *curriculum* and regulations.

Finally, at a 4<sup>th</sup> level, the **SC** ensures the overall quality of education, establishes the *curriculum*, approves the syllabus of the various US, and proposes teacher's academic load **and PC** oversees the pedagogic quality of training, pronounces itself about educational guidelines and methods of teaching and students' assessment, promotes inquiries to assess the functioning of study programmes, US and teachers' pedagogic performance, and proposes the academic calendar, schedule and timetable of classes and exams.

**The role of students in this multilevel intervention process is very important.** No one better than them can identify overlaps or redundancies and their presence in these bodies (5 in PC, 1 in the IMVM Scientific Committee) is crucial to properly monitor the system.

### 3.1.4. Description of the core clinical exercises/practicals/seminars prior to the start of the clinical rotations

**Students are trained to handle and restrain livestock species and companion animals since their 1<sup>st</sup> year** in Complementary Activities I and II and in Animal Behaviour and Welfare US (2<sup>nd</sup> year). They learn to perform physical examinations, recognize animal's health status, critically evaluate clinical signs and to propose adequate diagnostic plans, decide upon probable diagnosis and prognosis in the US Medical Propaedeutic I (3<sup>rd</sup> year) and Medicine I and II (4<sup>th</sup> year). All these skills are trained initially in faculty animals before being carried out on privately-owned animals.

**In addition, students learn to collect, pack, label and store biological samples** at Anatomical Pathology (2<sup>nd</sup> and 3<sup>rd</sup> years) and Medical Propaedeutics II (3<sup>rd</sup> year); Reproduction and Obstetrics, Pathology and Clinics of Parasitic Diseases, Pathology and Clinics of Infectious Diseases (4<sup>th</sup> year). These skills are first trained in animal cadavers and organs, manikins and models, then in faculty animals, and finally in privately-owned animals.

In Anaesthesiology and Analgesia and in Surgical Propaedeutics (3<sup>rd</sup> year) **students are trained on anaesthesia techniques, basic principles of surgery, main sutures, key pads and euthanasia.** Again, these skills are initially learned in animal cadavers, manikins, models, and only then in privately-owned animals in Surgery (4<sup>th</sup> year) at the VTH and ambulatory clinics (5<sup>th</sup> year).

**Students also develop skills in analytical thinking and reflective judgment through case-based learning (CBL) and problem-based learning (PBL) methodologies** at the practical classes of Medical Propaedeutics I; Pharmacology and Therapeutics I; Radiology (3<sup>rd</sup> year); Medicine, Pathology and Clinics of Parasitic Diseases, Pathology and Clinics of Infectious Diseases (4<sup>th</sup> year). Groups of 5-6 students use triggers from real clinical cases selected from the VTH electronic medical records or from teacher's personal archives. Subsequently, they perform independent and self-directed study. Finally, they present and discuss their findings to their class colleagues and teachers, and refine their acquired knowledge.

**Students attend 6-hours seminars about Veterinary Communication Skills** at Clinical Rotations I and II (3<sup>rd</sup> year) and make sham consultations, in which teachers evaluate and grade their anamnesis skills. They also attend two short courses on Basic and Advanced Life Support, at Clinical Rotations III.



### 3.1.5. Description of the core clinical rotations and emergency services and the direct involvement of undergraduate students in it

**Core clinical rotations and emergency services take place at the 5<sup>th</sup> year.** Students are distributed in 6 practical classes (A to F), each one with ≈25 students. Each class is then divided into 4 groups of ≈6 students. For each group 1 teacher/practitioner is assigned either at the VTH or at the ambulatory clinics of equine and food animals.

On Mondays and Wednesdays from 8 am to 6 pm, and on Thursday mornings from 8 am to 1 pm, 5<sup>th</sup> year students are fully dedicated to practical classes. The learning model is based upon weekly rotations to allow students to follow-up the clinical condition of the patients.

**All clinical rotations of companion animals are carried out at the VTH, 24h/day, all year around.** On arrival, each class is split into five services: Surgery, Internal Medicine, Diagnostic Imaging, in-house patients and IDIU, keeping the average group size per teacher/practitioner to ≈5 students, except at IDIU that only takes in 4 students simultaneously due to biosecurity reasons. During the day, students rotate between these five services. A practitioner is responsible for their welcome, check-in and distribution by individual teachers/practitioners and services. Twelve teachers, 25 practitioners and 12 veterinary nurses are involved in students' teaching and training, continuing education programs, research, and providing clinical service and instruction. There is no Ambulatory Clinics for companion animals.

**Clinical rotations of horses take place at the VTH, 24h/day, all year around (4<sup>th</sup> and 5<sup>th</sup> year students) and extramurally as part of the Equine Ambulatory Clinics (5<sup>th</sup> year).** Horse care is provided through protocols with public institutions (National Cavalry Police – GNR; Forest Police; Portuguese School of Equestrian Art – EPAE; National Stud – CN) and also with private clients. Four teachers and 2 practitioners are involved in teaching and training, continuing education programs, research, and providing clinical services and instruction.

**Clinical rotations of food animals are carried out by the Ambulatory Clinics (5<sup>th</sup> year), which provide routine and emergency veterinary services to farms within 150 km of Lisbon.** These include care of individual cattle, small ruminants and swine, as well as implementation of production medicine programs in ruminant herds and flocks. Dairy cattle and goat flocks account for a large part of student's caseload.

**Veterinary students accompany teachers on farm calls,** as part of their clinical instruction in primary care of food animal's clinics. Five teachers provide clinical services and instruction and are involved in teaching and training, continuing education programs and research.

### 3.1.6. Description of the teaching in slaughterhouses and in premises for the production, processing, distribution/sale or consumption of food of animal origin

**Core teaching in slaughterhouses and in premises for the production, processing, distribution/sale or consumption of food of animal origin takes place at the 5<sup>th</sup> year,** in parallel with core clinical rotations and emergency services. As explained in 3.1.5., students are distributed in 6 practical classes (A to F), each one with ≈25 students. For each slaughterhouse or premise visited by each class, 2 teachers are assigned. Therefore the average group size per teacher is 13 students.

**Slaughterhouse visits** occur on Mondays, Wednesdays and Thursdays from 8 am to 1 pm, due to labour shifts at the abattoirs. Training activities in ruminant, pigs, poultry and rabbit slaughterhouses, and fish and food markets are made **viable due to a protocol established with the Portuguese National Authority for Animal Health (DGAV).** Therefore, all visits are coordinated with the responsible for the Public Health Division of DGAV. These extramural practical classes are performed within 85 km of Lisbon. Three teachers are involved in classroom teaching, continuing education programs and research.

### 3.1.7. Description of the selection procedures of the Electives by the students and the degree of freedom in their choice

Point five of article 4 of IMVM' Regulation stipulates that **elective US:**

- Are defined by SC for each semester of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> years of the *curriculum*, following a proposal from the departments;
- They concern subjects that focus on issues not covered, or insufficiently addressed, by mandatory US;
- They operate in accordance with rules established by SC, in particular with regards to the application, selection and enrolment of candidates and functioning rules, which are announced before each semester in conjunction with the list of optional US offered in that semester.

**Therefore, students must accomplish six elective US of 2.5 ECTS each,** one in each semester of the 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> curricular years, chosen from a list of US distributed among the five scientific areas. Students are free to choose any elective unit from any scientific area. However, they can only apply for the options offered for the curricular year in



which they are enrolled or for the previous ones. For instance, in the 3<sup>rd</sup> curricular year there are only elective US from Animal Production, Food Safety and Morphology and Function scientific areas, since they don't have enough background yet for Clinics or Animal Health elective US.

Students must fill an application form, indicating six elective US in their order of preference. **The enrolment is made considering the following non-cumulative criteria** for grading:

- a) Best overall rating in the mandatory US already accomplished;
- b) Higher number of US already accomplished;
- c) Best rating in the US of the previous year.

### 3.1.8. Description of the organisation, selection procedures and supervision of the EPT

IMVM consists of an organized set of US corresponding to 300 ECTS, distributed by 10 semesters, and a **curricular traineeship including the preparation of a master thesis and its discussion in a public defence accounting for 30 ECTS**. The SC is responsible for the curricular traineeship, coordinating all related procedures through the IMVM curricular traineeships Committee (IMVM-CTC). This Committee includes at least 1 teacher from each scientific area.

**Students are free to choose their supervisors, the scientific area and the location where they wish to accomplish their curricular traineeship.** Students who are not able to find a location for the curricular traineeship should ask CTC to facilitate placement and supervision.

By his/her own initiative, or based upon elements advertised by FMV, each student contacts the supervisor and co-supervisor and presents an application to the Academic Office, in a proper form, containing a **Traineeship agreement**, signed by the student as well as the supervisor and co-supervisor (if applicable). This form is verified by the Academic Office and CTC. If all the information is correct and adequate, the Academic Office notifies the applicant and supervisors of the application approval before July 30<sup>th</sup> of the preceding academic year.

**The supervision of the curricular traineeship and of the thesis is performed by a PhD or a specialist whose merit in the scientific area of the curricular traineeship is recognized by SC**, with a minimum of 5 years of experience in the area. If the supervisor does not work at FMV, the student should indicate a co-supervisor chosen from the FMV staff holding a PhD, MSc or an equivalent degree.

For further information, namely the competencies and duties of the supervisors, please consult articles 8 to 12 of the IMVM' Regulation (Appendix 7).

### 3.1.9. Description of the procedures used to ascertain the achievement of each core practical/clinical activity by each student

**In order to improve the quality control of the mentoring of clinical training and to encourage students to become proactive, a document was created to record students' clinical accomplishments**, designated as **logbook** (Appendix 8), where essential skills required of the new veterinary graduate, commonly called "Day One Competences", are listed and must be all achieved by the end of the 10<sup>th</sup> semester. Their execution is guided and attested by the signature of a FMV teacher/practitioner. The logbook is personal and not transferable, and is given to the students at the beginning of the 3<sup>rd</sup> semester. **It must be completely filled to allow for the final approval in the IMVM**, and should be delivered to the Academic Division until the enrolment in the curricular traineeship. PC may request at any time the delivery of the logbook for verification purposes. The logbook also includes additional pages for the recording of supplementary activities. For further information please consult article 7 of the IMVM (Appendix 7).

### 3.1.10. Description of how and by who the core curriculum is decided, communicated to staff, students and stakeholders, implemented, assessed and revised

**IMVM curriculum has evolved over time to integrate the evolution of knowledge in this area, to accommodate EU Directives and Standards and Guidelines for QA, European Higher Education Area (ESG) recommendations for the teaching/learning of Veterinary Medicine, and also the recommendations resulting from the processes of national (National Council for the Evaluation of Higher Education and Portuguese Agency for Assessment and Accreditation of Higher Education - A3ES - in 1999 and 2004) and international assessments (EAEVE, in 1989, 2000 and 2007).** As a consequence, apart from monitoring the *curriculum*, FMV made some major curricular revisions, which resulted in several *curricular* adjustments.

**The current curriculum of the IMVM was implemented in the academic year of 2007/2008** and resulted from the adaptation of a previous plan (approved in 2005) based on the Bologna process, in accordance with national legislation. This adjustment was relatively minor, as the 2005 *curriculum* already incorporated many of the concepts and principles of the Bologna process. The following guidelines directed this major revision:

- a) **Reorganization of the current subjects into US**, adapted to the evolution of knowledge and following the recommendations of EU directives, ESG, and national and international assessments;
- b) Ensuring the **acquisition of the competences required for professional practice** by veterinarians graduated by FMV, approved by SC on 10<sup>th</sup> May 2000;
- c) Adoption of a **semester system**, seeking greater flexibility in the division of subjects and optimization of schedules and students assessments;
- d) Introduction of **electives**, allowing students to reinforce a particular path of training (5% of total *curriculum*);
- d) Adoption of **ECTS system** - in order to foster students' mobility;
- e) Appointment of a **Study Coordinator per scientific area**, responsible for the adequate integration of subjects and pedagogic methodologies throughout the course.

After this revision, changes in the *curriculum* consisted mainly on the **adaptation to the Integrated Master's model**, the inclusion of the thesis as a result of the final traineeship and small adjustments resulting from the working experience of the 2005 *curriculum*. **In July 2014, the SC revised and approved the Competences required for professional practice by masters in Veterinary Medicine graduated by FMV**, in accordance with ESEVT Day One Competences (Appendix 9).

All these *curricula* revisions were **discussed and approved by SC and PC, approved by the Dean and the Rector**, published in the official government journal and advertised through the website. The *curriculum* is permanently assessed by the bodies described above (3.1.3.) and revised whenever significant changes are necessary. **A new revision is planned for 2018, to accommodate recommendations from the national (A3ES) and European (EAEVE) evaluations, and suggestions from the Advisory Board.**

**Table 3.1.1. Curriculum hours in each academic year taken by each student**

Academic years*	A	B	C	D	E	F	G	H
Year 1	358	14	12	224	86	0	0	694
Year 2	345	36	20	220	70	37	0	728
Year 3	318	64	8	142	0	171	0	663
Year 4	331	11	10	140	24	232	0	748
Year 5	306	71	14	108	36	204	0	739
Electives	119	29	7	38	25	29	24	164
Year 6 (EPT)							840	840

A: lectures; B: seminars; C: supervised self-learning; D: laboratory and desk based work, E: non-clinical animal work; F: clinical animal work; G: others; H: total





Table 3.1.2. Curriculum hours in EU-listed subjects taken by each student

Subjects	A	B	C	D	E	F	G	H
<b>Basic subjects</b>								
Medical physics	35	2	8	8	4	1		58
Chemistry (inorganic and organic sections)	6			4				10
Animal biology, zoology and cell biology	42	2		17	3	8	1	73
Feed plant biology and toxic plants	32			24				56
Biomedical statistics	30	1		26				57
<b>Basic Sciences</b>								
Anatomy, histology and embryology	159			90	67	1		317
Physiology	82		2	50	4	1		139
Biochemistry	65			55				120
General and molecular genetics	70	3		44				117
Pharmacology, pharmacy and pharmacotherapy	31			16		4		51
Pathology	52			17	14			83
Toxicology	45	2		12				59
Parasitology	51	1	4	40		2		98
Microbiology	64	2	4	47				117
Immunology	39	1	4	32				76
Epidemiology	33	4		22				59
Professional communication	4	16						20
Professional ethics	6	1		1			1	9
Animal ethology	51	4			36		2	93
Animal welfare	27				1		3	31
Animal nutrition	67	28	8	14	1		1	119
<b>Clinical Sciences</b>								
Obstetrics, reproduction and reproductive disorders	55					52		107
Diagnostic pathology	108			49	3	88		248
Medicine and surgery including anaesthesiology	232			58	1	88		379
Clinical practical training in all common domestic animal species	59	62	2	10	8	313		454
Preventive medicine	40			14	1	4	1	60
Diagnostic imaging	66				6	38		110
State veterinary services and public health	20	12	18	7	1			58
Veterinary legislation, forensic medicine and certification	21			14				35
Therapy in all common domestic animal species	114			36		16		166
Propaedeutics of all common domestic animal species	82			24		52		158
<b>Animal Production</b>								
Animal Production and breeding	121	5	7	26	19		3	181
Economics	38	20	1	2				61
Animal husbandry	56	10	5		46		3	120
Herd health management	38	1	1	16	3	22	3	84
<b>Food Safety and Quality</b>								
Inspection and control of food and feed	36			11				47
Food hygiene and food microbiology	58	2		61	1			122
Practical work in places for slaughtering and food processing plants				7	39			46
Food technology including analytical chemistry	49		4	22				75
<b>Professional Knowledge</b>								
Professional ethics & behaviour	12	3		3	2		1	21
Veterinary legislation	20			1			1	22
Veterinary certification and report writing	3			6	1			10
Communication skills	6	21		3		2		32
Practice management & business	26	14		1				41
Information literacy & data management	4	8	2	20				34

A: lectures; B: seminars; C: supervised self-learning; D: laboratory and desk based work, E: non-clinical animal work; F: clinical animal work; G: others; H: total



As previously described (3.1.7.), **students must complete 6 elective US (6 x 2.5 ECTS = 15 ECTS), selected from a list of options proposed by the five scientific areas.** Electives are offered in each semester of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> year. The criteria used for accepting students to enrol in an elective US were described in 3.1.7. Therefore, each student chooses 6 electives according to his/her preferences and interests, without any binding restriction of scientific area. Consequently, Table 3.1.3. cannot be filled with the *curriculum* hours taken as electives per subareas as they vary between students, the key-point being that each student takes 168 hours of electives (6 electives of 28h). The number of students enrolled in elective US by scientific area is described below.

**Table 3.1.3.1. Students enrolled on the elective units of study of each of the FMV' scientific areas**

Electives	2016-17	2015-16	2014-15	Mean
Morphology and Function	58	54	56	56
Animal Production	234	251	215	233
Food Safety	0	0	0	0
Animal Health	168	149	118	145
Clinics	276	263	283	274

**Table 3.1.4. Curriculum days of External Practical Training (EPT) for each student**

Subjects	Minimum duration (weeks)	Year of programme
Production animals (pre-clinical)	500 practical hours minimum during the final curricular traineeship	6
Companion animals (pre-clinical)		
Production animals (clinical)		
Companion animals (clinical)		
FSQ & VPH		
Others (specify)		

**Table 3.1.5. Clinical rotations under academic staff supervision (excluding EPT)**

Types	List of clinical rotations (Units of study/Species)	Duration (weeks)	Year of programme
Intra-mural (VTH)	Clinical Rotations I (Dog/Cat/Exotic pets)	1 (8 h/student)	3 <sup>rd</sup>
	Clinical Rotations II (Dog/Cat/Exotic pets)	1 (8 h/student)	3 <sup>rd</sup>
	Surgery I (Horse/Dog/Cat/Exotic pets)	2 (24 h/student)	4 <sup>th</sup>
	Surgery II (Horse/Dog/Cat/Exotic pets)	2 (24 h/student)	4 <sup>th</sup>
	Clinical Rotations III (Horse/Dog/Cat/Exotic pets)	4 (48 h/student)	4 <sup>th</sup>
	Clinical Rotations IV (Horse/Dog/Cat/Exotic pets)	4 (48 h/student)	4 <sup>th</sup>
	Diagnostic Imaging (Horse/Dog/Cat/Exotic pets)	1 (13 h/student)	5 <sup>th</sup>
	Companion Animal Clinics I (Dog/Cat/Exotic pets)	2 (24 h/student+16h CD/student)	5 <sup>th</sup>
	Companion Animal Clinics II (Dog/Cat/Exotic pets)	2(24h/student+16h CCD <sup>1</sup> /student)	5 <sup>th</sup>
	Clinical Rotations V (Dog/Cat/Exotic pets)	2 (23 h/student)	5 <sup>th</sup>
Clinical Rotations VI (Dog/Cat/Exotic pets)	2 (23 h/student)	5 <sup>th</sup>	
Ambulatory Clinics	Food Animal Clinics I (Production animals)	2 (30 h/student)	5 <sup>th</sup>
	Food Animal Clinics II (Production animals)	2 (30 h/student)	5 <sup>th</sup>
	Equine Clinics I	2 (14 h/student)	5 <sup>th</sup>
	Equine Clinics II	2 (14 h/student)	5 <sup>th</sup>
FSQ & VPH	Hygiene and Food Safety	2.2 (26 h/student)	3 <sup>rd</sup>
	Veterinary Inspection I (Ruminants, Swine)	1 (18 h/student)	5 <sup>th</sup>
	Veterinary Inspection II (Poultry, Rabbit, Fish)	1 (18 h/student)	5 <sup>th</sup>
	Technology Animal Products	1 (26 h/student)	5 <sup>th</sup>
	General Technology	1 (26 h/student)	5 <sup>th</sup>
	Veterinary Public Health	1 (8 h/student)	5 <sup>th</sup>
Other	Pathology and Clinics of Infectious Diseases I	1 (4 h/student)	4 <sup>th</sup>
	Pathology and Clinics of Infectious Diseases II	1 (4 h/student)	4 <sup>th</sup>
	Toxicology	1 (26 h/student)	5 <sup>th</sup>
	Herd Health (Food animals)	1 (8 h/student+24 h CS <sup>2</sup> /student)	5 <sup>th</sup>

During the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> curricular years, students must accomplish 6 elective units of study (6x2.5 ECTS = 15 ECTS) from among the following:

<sup>1</sup> CCD = Clinical Case Discussion.

<sup>2</sup> CS = Case-studies.

**Table 3.1.6. Optional courses (elective) proposed to students (not compulsory)**

Subjects	A	B	C	D	E	F	G	H
Food quality from the consumer point of view	24	4						28
Application of genetic engineering in veterinary medicine	28							28
Dog production and uses	24				4			28
Organic animal production	20		4		4			28
Animal production in tropical regions	26							26
Aquaculture	18				10			28
Ocular Manifestations of systemic diseases	10	6		6		6		28
Horse production and use	22				6			28
The picture of alternative medicines	26		2					28
Animal pest control	10	6		4	8			28
Lameness in sport horses	14					14		28
Equine neonatology	20	4				4		28
Antibacterial therapy strategies in veterinary medicine	20			8				28
Pigeon production and pathology	11				6	7		24
Tropical infectious and parasitic diseases	20			8				28
Clinical Toxicology	28							28
New companion animal clinics	28							28
Risk analysis and management	8	7		13				28
Wildlife and conservation medicine	22				2		4	28
Forensic Science in Veterinary Medicine	24			4				28
Food complementary analysis	12			14				26
Dermatology - Evidence Based Approach	20			8				28
Multidisciplinary perspective of pain management	20			2		3		25
Rehabilitation and physiotherapy in small animals	20					8		28
Clinical immunology in companion animals	18			8			2	28
Morphofunctional aspects of the <i>Bravo de Lide</i> breed	20						15	35
Food Biochemistry	20			8				28
Applications of mammalian cells manipulating in Veterinary Science	25			1	1		1	28
Honeybee health	25			1	1		1	28
Cat breeding	24				4			28

A: lectures; B: seminars; C: supervised self-learning; D: laboratory and desk based work, E: non-clinical animal work; F: clinical animal work; G: others; H: total

Beyond electives designed specifically for IMVM students, several lifelong learning (LLL) courses are organized annually by the FMV Continuing Education Commission in various fields of Veterinary Sciences, which are always open to IMVM students. The courses, seminars and workshops proposed in the last 3 years are showed in Appendix 10.

### 3.2. Comments

**Electives offered to students have shown a steady increase in number and diversification of topics over the years.** They allow students to expand their knowledge and skills in their areas of interest or to introduce emerging issues or market niches into their training program.

**The scheduling of electives in a “compact” 1.5 weeks format** at the end of the 1<sup>st</sup> semester and again in the beginning of 2<sup>nd</sup> semester, fully occupying the mornings and afternoons, **proved to be a sound strategy** allowing students to be focussed on the elective and dedicate the rest of the day to study. The approval rate is ≈ 90% at the first exam and the average classification is ≥ 16 out of 20. Moreover, dozens of professionals, mostly veterinarians, from private and public sectors are invited by the SPC of these US to share their knowledge, skills and points of view with IMVM students. This is an enriching experience for all. Electives have also been an inspirational model and a basis for the design and offer of several LLL courses.

**The FMV Continuing Education Programme offers short courses, seminars and workshops, often in a post-labour schedule** to address the needs of professional trainees. In some of these cases, the programme of advanced courses fits in consecutive weekends.

**The current networking experience with joint master’s degrees offered in consortia with other schools of ULisboa,** such as the master in Microbiology with the School of Engineering, the Faculty of Sciences and the Faculty of

Medicine and the master in Clinical Microbiology and Emerging Infectious Diseases with the Faculty of Medicine, should give rise to new electives and new postgraduate courses, seminars and workshops.

### 3.3. Suggestions of improvement

In the last meeting of the **Advisory Board**, held on April 21<sup>st</sup> 2017, **external members representing the social, economic and professional sectors related to FMV's fields of training and research made the following comments / suggestions on:**

#### 1. Graduates in Veterinary Medicine:

- a) Very well prepared technically;
- b) Need to reinforce training towards improvement of soft skills, communication skills and social maturity, although the latter was referred to as a generational setback;
- c) Excessive demand for the area of Companion Animals Clinic, undervaluing other professional areas of the veterinary profession. It was suggested the organization of seminars at FMV by veterinarians working in professional areas with lower attractiveness and visibility.

#### 2. The curriculum:

- a) Inclusion or reinforcement of training on the following topics: Apiculture, Aquaculture, Communication, Legislation, Career prospects, Economic Management and Omics;
- b) Change the positioning of the US "Deontology and Bioethics" from the 1<sup>st</sup> year to the 5<sup>th</sup> year;
- c) Introduce a short internships (1 week) in the first two years of IMVM in livestock farms with the objective of raising awareness and motivating students for food animals;
- d) Rearrange the US of the scientific area of Clinic, considering the areas of specialization consensual in the veterinary practice and already implemented in the VTH.

#### 3. Other topics:

- a) Strengthening of the "One Health" approach;
- b) Give more highlight to the research carried out in the CIISA-FMV with immediate applicability.

**Part of these suggestions was already attained. The other part will deserve our best attention and further development.** The answers and explanations provided by the Dean and SC and PC presidents to the Advisory Board members are listed on Appendix 11.







# 4 • Facilities and Equipment



## 4. FACILITIES AND EQUIPMENT

### 4.1. Factual information

#### 4.1.1. Description of the location and organisation of the facilities used for the veterinary curriculum

The facilities were planned with the goal of offering adequate conditions for a quality education and training, research and provision of services in the various areas of the Veterinary Sciences. A general map of the area used for the veterinary curriculum is provided on Appendix 3. FMV is located in ULisboa Campus of Ajuda at a distance of 9.3 km from the main Campus of ULisboa in Campo Grande. Distances for Ambulatory Clinics and Preventive Veterinary Medicine, Reproduction and Animal Production extramural classes, are provided in item 5.1.4 regarding the most visited livestock farms and horse centres. Maps are provided in Appendix 3. Distances for FSQ & VPH extramural classes, namely to slaughterhouses and foodstuff processing units, are provided in item 4.1.4. and also marked on the map supplied in Appendix 3.

#### 4.1.2. Description of the premises for lecturing (3568 m<sup>2</sup>)

PREMISES	Nº	Area (m <sup>2</sup> )	EQUIPMENT
<b>LECTURING</b>			
Auditorium	1	369	1 desktop computer with Internet connexion. 1 high-quality data show. A 23 m <sup>2</sup> <i>régie</i> fully equipped with modern sound and lighting equipment. Two cabinets for simultaneous translation. Air-conditioning system.
Lecture halls (one of 170 m <sup>2</sup> ; two of 139 m <sup>2</sup> ; two of 94 m <sup>2</sup> )	5	635	1 desktop computer with Internet connexion, 1 fixed data show, sound and lighting equipment, 1 chalkboard, 1 whiteboard, air-conditioning system.
Computers rooms (one with 89 m <sup>2</sup> ; one with 58 m <sup>2</sup> )	2	147	15 desktop computers with Internet connexion, 1 fixed data show, 1 whiteboard, air-conditioning system.
Video transmission of live surgeries	1	-	1 surgery room is equipped with 1 IP AXIS Q1615 network camera, 2 TV sets 4K 55 inches and 1 computer AIO 21.5 inches with HDMI out.
Videoconference system	1	-	Available in room A.10
SUBTOTAL	10	1151	
<b>GROUP WORK</b>			
Classrooms (ranging from 13 m <sup>2</sup> to 46 m <sup>2</sup> ; average 28.2 m <sup>2</sup> )	10	282	1 portable computer with Internet connexion, 1 portable data show and 1 whiteboard.
<b>PRATICAL WORK</b>			
Laboratories (ranging from 46.5 m <sup>2</sup> to 143.2 m <sup>2</sup> ; average size 82.3 m <sup>2</sup> ; mode 93.6 m <sup>2</sup> )	24	1976	The standard equipment available in each laboratory are 3-4 workbenches with PVC-edged laminate working surfaces, 2 refrigerators (clean and dirty material), 1-2 laminar flow cabinets, 1-2 incubators, 10 optical microscopes, 15 Bunsen burners, 1 centrifuge, 10-16 washbasins (4 stainless steel sinks), base and wall cabinets and shelves for storing materials, 3-4 ergonomic high ring chairs, 25-30 laboratory stools. 1 portable computer with Internet connexion, 1 portable data show and 1 whiteboard. Laboratory dress code and biosafety instructions are affixed at the doors of each laboratory equipped with several bio boxes and safety shower stations. Additional equipment is added according to the specific needs of each US.
Rooms for clinical skills on dummies, cadavers, etc. (1 Clinical Skills and Simulation Centre with 144 m <sup>2</sup> and 1 room for surgical techniques and suture training in dog cadavers with 15 m <sup>2</sup> ).	2	159	The Clinical Skills and Simulation Centre has 1 homemade fur calf model for obstetric emergencies training; 2 homemade sponge and cloth dog models to train venipuncture and routes of drug administration; 2 critical care, full-sized, realistic canine manikins, featuring jugular and vascular access, with breath/heart sound simulator, 1 critical care, full-sized, realistic feline manikin, 1 bandaging full-sized dog manikin, 2 K-9 intubation trainers (all from ®Rescue Critters, U.S.A.), 1 full-sized, realistic equine neck venipuncture/IM injection model (®Veterinary Simulator Industries, Canada) and 40 training devices for suture (Blocomed).
SUBTOTAL	36	2417	
<b>TOTAL</b>	<b>46</b>	<b>3568</b>	

### 4.1.3. Description of the premises for animal housing (2302 m<sup>2</sup>)

#### Healthy animals:

PREMISE	Nº	AREA (m <sup>2</sup> )
Covered horse riding arena	1	612
Uncovered horse riding arena (“redondel”)	1	77
Horse stalls with individual paddocks	20	490
Horse stalls	4	40
Cow free stalls	1	231
Sheep and goats stalls	6	36
Kennel <sup>3</sup>	1	94
Cattery	1	58
<b>TOTAL</b>	<b>35</b>	<b>1638</b>

#### Hospitalised animals:

PREMISE	Nº	AREA (m <sup>2</sup> )	Nº PLACES
Hospitalisation & intensive care dog ward	1	21	23
Hospitalisation & intensive care cat ward	1	19	13
Horse hospitalisation	1	160	10
Intensive care horse stalls	1	77	5
Bovine hospitalisation	1	20	2
Sheep, goats, calf and pigs hospitalisation	1	18	12
<b>TOTAL</b>	<b>6</b>	<b>315</b>	<b>65</b>

An Ubiquiti Camera Unifi UVC-3 high-end wireless networking is in place for the surveillance of hospitalized horses plus 1 IP AXIS Q1615 network camera.

#### Isolated animals:

NUMBER
1 premise - Infectious Diseases Isolation Unit (IDIU). Size: 223 m <sup>2</sup> .
EQUIPMENT
IDIU is a multispecies isolation facility located in G0 building. It is organized in species-specific rooms: dogs; cats; medium and large animals; plus one emergency room, a working room, a preparatory room and a warehouse. IDIU full capacity is: dogs (8); cats (5); calves/small ruminants (3); cow/horse (3). All rooms operate autonomously under forced air flow through HEPA filters and with a close circuit surveillance system. All the materials are stainless steel or disposable. Washbasins have foot pedal sinks. The emergency room for cardiopulmonary resuscitation and simple surgical interventions has a kitten/puppy precision incubator, an anaesthesia machine and an oxygen concentrator. The working room has a desktop with QVET software installed to search and update medical records, Internet access, fixed telephone, tables and chairs. Only in this room there are bottles of drinking water available as beverage or food cannot be consumed in IDIU. A washbasin is available in the preparatory room to plunge the contaminated stainless steel material into Virkon solution before putting it into the dishwashing machine. Two new isolation units for horses were recently added to strengthen IDIU installed capacity for equine patients.



<sup>3</sup> There is another kennel, home to four geriatric dogs in an adoption program.

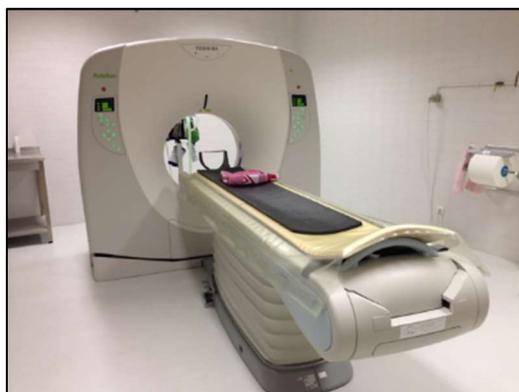


#### 4.1.4. Description of the premises for clinical activities, diagnostic services including necropsy, FSQ & VPH (7243 m<sup>2</sup>)

##### Clinical activities:

PREMISE	Nº	Area (m <sup>2</sup> )	SPECIES	UNITS OF STUDY <sup>§</sup>
Consultation rooms	6	84	Companion animals	Clinical Rotations; Companion Animals Clinics
Dentistry consultation room	1	17	Companion animals	Anaesthesia and Analgesia; Surgical Propaedeutics; Surgery; Clinical Rotations V, VI; Companion Animals Clinics
Reproduction and Obstetrics consultation room	1	34	Companion animals	Reproduction and Obstetrics I
Ophthalmology consultation room	1	17	Companion animals	Companion Animals Clinics; Clinical Rotations III, IV, V, VI
Treatments and wound dressing room	2	44	Companion animals	Surgery; Companion Animals Clinics; Clinical Rotations
Biological samples collection room	1	22	Companion animals	Reproduction and Obstetrics; Clinical Rotations; Companion Animals Clinics
Blood Bank	1	20	Companion animals	Medical Propaedeutics II; Medicine; Surgery
Consultation rooms	2	147	Horses	Clinical Rotations III, IV, V, VI; Equine Clinics
Reproduction and Obstetrics consultation room	1	58	Food animals and horses	Reproduction and Obstetrics I and II
Surgery rooms	4	64	Companion animals	Anaesthesia and Analgesia; Surgical Propaedeutics; Clinical Rotations III, IV, V, VI; Surgery
Surgical patient preparation rooms	2	64	Companion animals	Anaesthesia and Analgesia; Surgical Propaedeutics; Surgery
Rooms for medical gases	2	22	Multispecies	Anaesthesia and Analgesia; Surgical Propaedeutics; Surgery
Operating theatre	1	78	Horses and food animals	Anaesthesia and Analgesia; Surgical Propaedeutics; Surgery
Anaesthesia and recovery room	1	36	Horses and food animals	Anaesthesia and Analgesia; Surgical Propaedeutics; Surgery
Horse riding arenas	2	789	Horses	Clinical Rotations III, IV, V, VI; Surgery; Equine Clinics
Maternity	1	57	Horses and food animals	Reproduction and Obstetrics; Clinical Rotations; Surgery; Equine Clinics; Food Animals Clinics
Biological samples collection room	1	58	Horses and food animals	Reproduction and Obstetrics; Clinical Rotations; Food Animals Clinics; Equine Clinics
Infectious Diseases Isolation Unit	1	223	Multispecies	Infectious Diseases; Clinical Rotations; Companion Animals Clinics
<b>TOTAL</b>	<b>31</b>	<b>1834</b>		

<sup>§</sup> Every time we report, for instance Surgery, it means Surgery I and Surgery II. We took this option to reduce table size and improve its reading





**Diagnostic services including necropsy:**

	Nº	AREA (m <sup>2</sup> )	SPECIES	UNITS OF STUDY
Computed tomography room	1	23	Companion animals	Imagiology; Diagnostic Imaging; Clinical Rotations III, IV, V, VI; Surgery; Companion Animals Clinics
X-ray room	1	35	Companion animals	Imagiology; Diagnostic Imaging; Clinical Rotations III, IV, V, VI; Surgery; Companion Animals Clinics
X-ray processing room	1	11	Companion animals	Imagiology; Diagnostic Imaging; Clinical Rotations III, IV, V, VI; Surgery; Companion Animals Clinics
Dental radiography room	1	17	Companion animals	Imagiology; Diagnostic Imaging; Clinical Rotations III, IV, V, VI; Surgery; Companion Animals Clinics
Ultrasonography room	1	17	Companion animals	Imagiology; Diagnostic Imaging; Clinical Rotations III, IV, V, VI; Surgery; Companion Animals Clinics
Fluoroscopic surgery room	1	17	Companion animals	Surgery
Endoscopy room	1	14	Companion animals	Clinical Rotations III, IV, V, VI; Surgery; Companion Animals Clinics
Electroretinography room	1	17	Companion animals	Imagiology; Diagnostic Imaging; Clinical Rotations III, IV, V, VI; Surgery; Companion Animals Clinics
Radiology room	1	82	Horses and food animals	Imagiology; Diagnostic Imaging; Clinical Rotations III, IV, V, VI; Surgery; Equine Clinics; Food Animals Clinics
X-ray processing visualisation room	1	9	Horses and food animals	Imagiology; Diagnostic Imaging; Clinical Rotations III, IV, V, VI; Surgery; Equine Clinics; Food Animals Clinics
Ultrasonography room	1	23	Horses and food animals	Imagiology; Diagnostic Imaging; Clinical Rotations III, IV, V, VI; Surgery; Equine Clinics; Food Animals Clinics
Blood biochemistry lab	1	49	Multispecies	Biochemistry; Medical Propaedeutics I; Clinical Rotations; Companion Animals Clinics; Equine Clinics; Food Animals Clinics
Endocrinology lab	1	31	Companion animals	Medical Propaedeutics I; Clinical Rotations; Companion Animals Clinics
Chemotherapy room	1	17	Companion animals	Clinical Rotations III, IV, V, VI; Companion Animals Clinics
Radioisotopes lab	1	31	Companion animals	Clinical Rotations III, IV, V, VI; Companion Animals Clinics
Histology & Pathology lab	7	176	Multispecies	Histology; General Pathology; Anatomical Pathology
Parasitology & Parasitic Diseases lab	5	143	Multispecies	Parasitology; Pathology and Clinics of Parasitic Diseases
Virology & Immunology lab	1	30	Multispecies	Microbiology
Bacteriology lab	1	30	Multispecies	Microbiology
Infectious Diseases lab	1	58	Multispecies	Pathology and Clinics of Infectious Diseases
Necropsy room	1	114	Multispecies	General Pathology; Anatomical Pathology; Pathology and Clinics of Infectious Diseases II; Pathology and Clinics of Parasitic Diseases; Veterinary Inspection
Necropsy support lab	1	20	Multispecies	General Pathology; Anatomical Pathology; Pathology and Clinics of Infectious Diseases II
Necropsy lab preparation room	1	20	Multispecies	General Pathology; Anatomical Pathology; Pathology and Clinics of Infectious Diseases II
<b>TOTAL</b>	<b>33</b>	<b>984</b>		

**FSQ & VPH (slaughterhouses, foodstuff processing units):**

Slaughterhouses (and related premises):	Fishing port:
STEC- RAPORAL, in Montijo, 45.2km from FMV. Species: domestic ungulates; SANTACARNES, in Santarém, 85.5km from FMV. Species: domestic ungulates; CASO, in Mafra, 38.9km from FMV. Species: pigs; AVIBOM, in Ramalhal, 64.4km from FMV. Species: poultry; AVIPRONTO, in Azambuja, 59.6km from FMV. Species: poultry; INTERCOELHO, in A-dos-Cunhados, 66km from FMV. Species: rabbits.	DOCAPESCA. Located in Setubal. 63.4 km from FMV. Species: different species of fishes, molluscs and crustaceans.

All these premises (Appendix 3) are used for FSQ & VPH students' training in Veterinary Inspection US.



**Other premises:**

Library (200 m<sup>2</sup>), teachers' offices (1415 m<sup>2</sup>), an area of 1712 m<sup>2</sup> allocated to CIISA network of research labs (N=49), a laboratory animal facilities (403 m<sup>2</sup>), a metabolic pavilion (160 m<sup>2</sup>), a 275 m<sup>2</sup> network of maintenance workshops, warehouses, laundries, technical areas and first aid office, and Students' Union (260 m<sup>2</sup>) (Appendix 3).

**4.1.5. Description of the premises for study and self-learning, catering, locker rooms, accommodation for on call students and leisure (10084 m<sup>2</sup>):**

**Study and self-learning:**

PREMISE	Nº	AREA (m <sup>2</sup> )
Rooms for study and self-learning	3	434
Students' Union Cafeteria & 24-hour study facility	1	281
Group work rooms	4	55
Open space in stage 2 with 36 chairs	1	3,484
<b>TOTAL</b>	<b>9</b>	<b>4,254</b>

All the aforementioned premises have tables and chairs, which can be arranged in the most suitable layout according to students' type of study (study or self-learning *versus* group work). All rooms have free Wi-Fi. Therefore, students have access to all electronic resources through the EDUROAM (Education Roaming) wireless network. It is possible to eat and drink in all these premises, and food and drinks are permanently available either at the cafeteria or through *automatic food and beverage* vending machines.

Type	PREMISE	Nº	AREA (m <sup>2</sup> )
<b>Catering</b>	Students' Union Cafeteria	1	281
	Students' Union Canteen	1	175
	Outdoor space	1	300
	Dormitory cooking facilities	1	16
	<b>TOTAL</b>	<b>4</b>	<b>772</b>
<b>Lockers rooms</b>	For female students	1	24
	For male students	1	24
	<b>TOTAL</b>	<b>2</b>	<b>48</b>
<b>Accommodation for on call students</b>	Dormitories	2	74
	Individual rooms	4	87
	<b>TOTAL</b>	<b>6</b>	<b>161</b>
<b>Leisure spaces</b>	Open space the terrace of Building C, 2 <sup>nd</sup> floor	1	3,484
	Outdoor entrance courtyard	1	905
	Indoor courtyard of building B	1	179
	Students' Union Cafeteria, 24-hour study & leisure space	1	281
	<b>TOTAL</b>	<b>4</b>	<b>4,849</b>

FMV is located within the perimeter of the Monsanto Forest Park. Students often enjoy the Park for tours, entertainment, freshmen reception ceremonies, academic tradition celebrations and outdoor activities promoted by the various nuclei of the Students' Union such as dog walking, bird watching and visits to the Lisbon Wildlife Rehabilitation Centre. Students' Union and the Commission of Finalists regularly organize parties and concerts at the terrace of the 2<sup>nd</sup> floor of Building C.

**4.1.6. Description of the vehicles used for:**

	VEHICLE	Nº	MAXIMUM CAPACITY (Nº passengers)
<b>Students' transportation</b>	Nissan buses	2	28
	Mercedes vans	3	9
	Cars	4	5
	<b>TOTAL</b>	<b>9</b>	<b>103</b>
<b>Ambulatory Clinics</b>	Mercedes vans	3	9
	Hyundai van	1	9
	Jeep Land Rover	1	9
	<b>TOTAL</b>	<b>5</b>	<b>45</b>

**Live animals' transportation:**

VEHICLE	Nº	ADDITIONAL INFORMATION
Jeep Land Rover	1	With 1 trailer for two horses
Hyundai van	1	To pick up dogs and cats' in case of domiciliary emergencies
<b>TOTAL</b>	<b>2</b>	


**Cadavers' transportation:**

This service is provided by a certified company for the transport of cadavers.
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**4.1.7. Description of the equipment used for:**

**Teaching purposes:** Only specialized teaching equipment is mentioned. Moreover, to avoid repetition, the list of the most important equipment used for clinical services reported in the next table, is not included in this item but it must be emphasized that all clinical equipment are used by students since VTH and Ambulatory Clinics are fully integrated into FMV's teaching-learning model.

LIST OF THE MOST IMPORTANT EQUIPMENT USED FOR TEACHING PURPOSES			Nº
Microscopes and magnifying glasses	150	Blood, gas <i>and</i> electrolyte analyser	1
Centrifuges and ultracentrifuges	58	Real Time PCR	2
Incubators	44	Fluorescence microplate reader	1
Laminar flow cabinets	19	Automatic biochemistry analyser	1
Spectrophotometers	14	Electro retinometer	1
Micrometers	6	Ovoscope	1
Semi-automatic nitrogen-protein distillers	5	Microtomes	6
Thermal cyclers	4	Pasteurizer	1
HPLC and HPTLC chromatographs	4	Ham processing machines	3
Protein mineralizers	3	4-5°C refrigerators and -18°C freezers	144
Cryostats	2	-80°C ultra-freezers	3
Densitometers	2	Food texture analyser	1
Smokehouses and ovens	2	Vacuum machine model T4	1
ATP bioluminescence meters	2	Chromatography system for proteins' purification	
Molecular imaging system analysis software and UV fluorescence equipment	1	Microwave oven to determine moisture <i>content</i>	1

**Clinical services (Only specialized equipment used for clinical services is reported):**

LIST OF THE MOST IMPORTANT EQUIPMENT USED FOR CLINICAL SERVICES	Nº
Computed tomography (Toshiba model Astelion Advance 16-row)	1
X-ray apparatus	2
Portable X-ray generator and digital acquisition system DR	1
Potter-Bucky diaphragm (Radiology)	1
Ultrasound scans (one portable)	5
15" high resolution touch screen ExaPad for ultrasound scanner	1
Anaesthesia machines	7
Electrocardiograph device	1
Cardiorespiratory monitors	3
Ultrasound stethoscopes	2
Surgical microscope (Zeiss Opmi Lumera 300 for cataract & retina surgery)	1
Surgical vacuum cleaners	2
Infusion pumps	6
Surgical oscillating saws	2
Helica TPS Stern system of total hip replacement	1
Hamou Endomat 26331020-1 (laparoscopy and hysteroscopy)	1
Oto/ophthalmoscope sets	4
Otoscope video endoscopes sets	2
Phacoemulsification system (cataract surgery and anterior vitrectomy)	1
Vista Scan Combi View for digitisation of image plates (intra and extraoral formats)	1
Ventilator	1
Synthes neurosurgery engine	1
Dynamic respiratory endoscopy for horses	1
Oesophageal pressure sensor	1
Plethysmography system for horses	1
Veterinary video endoscope PV-SG 28-140 Karl Storz	1
Karl Storz 7200B Hopkins Telescope for endoskope, 30°x4mmx18cm	1
Arthroscopic high flow blower, 5.5mm, 13.5cm	1
Hyperbaric oxygen therapy chamber	1
Marchionesses, operating tables and necropsy tables	32
Reflonet clinical chemistry analyser	1
Shearing machines, clippers and trimmers	9
Vacuum clipper	1
Electroejaculator	1
Portable milking machine	1



#### 4.1.8. Description of the strategy and programme for maintaining and upgrading the current facilities and equipment and/or acquiring new ones

As pointed out previously, **due to the low quality of the materials used in the initial construction of FMV's buildings, maintenance work has been a constant in the last fifteen years**, with the predominance of wall sealing and roof-waterproofing works to solve rainwater leakage problems. Renewal of some outer walls and paintings of the buildings' facades are planned for immediate implementation. In the medium term, new multipurpose classrooms will be built in floors 0 and 1 of building C, and FMV will apply for EU funding to improve the energy efficiency of its buildings.

**The strategy of maintenance, modernization and expansion of equipment by FMV respects four main vectors: renovation; Veterinary Medicine advancements; trends in society and market demand; financial sustainability.** These converge towards a major objective of the institution, i.e., to maintain a high quality research-based education, focusing on problem-solving, in permanent contact with the real world. Replacement of equipment that is reaching their life expectancy and the maintenance/renovation of FMV air conditioning network are persistent on-going processes. **The purchase of magnetic resonance equipment for the VTH is planned** and awaits opportunity.

#### 4.1.9. Description of how and by who changes in facilities, equipment and biosecurity procedures are decided, communicated to staff, students and stakeholders, implemented, assessed and revised.

**Proposals of changes in facilities, equipment and biosecurity procedures are made and justified by US SPC or by each Department and submitted to the Dean's office.** Subsequently, proposed budgets are requested from appropriate domestic or foreign suppliers and contracted/purchased at the best price. Ameliorations are communicated to staff and students in regular meetings of the management bodies, through e-mails and to stakeholders on the webpage. Procedures are implemented by the Management Council, assessed and revised by the SC, PC, Scholl Assembly and Advisory Board.

## 4.2. Comments

Although recently built (1999), **the poor quality of construction** led to a rapid degradation of materials and structures, in particular due to water leakage, unfinished details and unsuitable materials. As a consequence, **several improvement actions have been carried out continuously**, such as waterproofing, roof replacement and flooring and insulation repairs. As an example, in the last two years part of the roof of the VTH was replaced and the waiting room restored and expanded.

**Animal facilities areas for livestock species expanded along the years**, in particular with regard to bovine and horses. **In addition, FMV established partnerships with farms in the outskirts of Lisbon and with various public institutions** which are visited on a daily basis by small groups of students (7-8), using transportation provided by FMV.

**To improve students' contact and handling of animal husbandry two paths are being explored:**

a) **Negotiating with the neighbouring ISA sharing the farmland resources**, in particular at *Tapada da Ajuda* (about 100 ha); currently there are ongoing efforts on this matter and an area of 2000 m<sup>2</sup> was already donated by ISA in 2016 for dog exercising and welfare;

b) **Obtaining from Lisbon City Council an authorization to use an area of the Monsanto Forest Park surrounding FMV**, without lumbering the forest, for exercising animals of livestock species and dogs, and so improving their quality of life and increasing students' opportunities to handle and guide animals.

**FMV has a large area of open spaces namely in the terrace of the 2<sup>nd</sup> floor of Building C that is currently under renewal** to install comfortable niches for student's group study and reflection, and also for leisure, relaxation and socializing among students, teachers, practitioners, researchers and support staff after or between classes and work. Portuguese weather favours these opportunities that were not been sufficiently explored in the past. These niches would reinforce the preventive measures designed to ensure social integration of students and staff. A first initiative to meet this goal was carried out in 2017, by placing 36 wooden chairs recovered from the ancient classrooms of the old facilities, on the terrace of the 2<sup>nd</sup> floor of Building C. This initiative will be continued and reinforced.

### 4.3. Suggestions of improvement

**There is a need for 2-3 additional multipurpose class rooms** namely for CBL, PBL and clinical cases discussions that require splitting classes into smaller groups of 5-6 students. **A third computer room is also another necessity** due to the growing number of US (N=10) that integrate computer based learning into their practical teaching-learning methodologies.

**A restructuring of VTH large operating rooms for companion animals**, in vogue twenty years ago when FMV facilities were designed, has been approved and will take place in 2018, allowing for more surgery rooms, and therefore more students' rotations, that will reduce the number of students involved per teacher/surgeon. This restructuring will also increase the area available for general in-patient and post-operative care, very important places for students' training and skills development.

**Other improvements awaiting opportunity are the acquisition of Magnetic Resonance Imaging equipment for the VTH.** This is a self-sustaining investment that will improve the quality of students' training in imaging techniques and will increase FMV's ability to generate its own revenues.

**The use of available space in building C, left unfinished since construction, is planned to build new classrooms, due to the growing number of postgraduate and LLL courses, more postgraduate students' and researcher's offices and to install a Museum nucleus** exhibiting the XIX century library and collection of the old faculty building. This Museum will be unique at the national level and will become an element of historical study of Veterinary Medicine teaching in Portugal.





**5** • *Animal resources and teaching material of animal origin*

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## 5. ANIMAL RESOURCES AND TEACHING MATERIAL OF ANIMAL ORIGIN

### 5.1. Factual information

#### 5.1.1. Description of the global strategy of the Establishment about the use of animals and material of animal origin for the acquisition by each student of Day One Competences

**The principles of the 3Rs (Replacement, Reduction and Refinement) developed over 50 years ago as a framework for humane animal research, have been gradually embedded in the FMV global strategy concerning the use of live animals for teaching, demonstration and training purposes.**

- **R FOR REPLACEMENT:** As previously mentioned, FMV has been developing and opened in 2017 a Clinical Skills and Simulation Centre, where a mix of self-made dog and calf manikins and full-size, realistic and advanced canine and feline manikins and equine models, gives students risk-free and realistic hands-on experience in practical simulation training, used in 8 compulsory US of the 3<sup>rd</sup> and 4<sup>th</sup> years. This represents a considerable financial investment and reflects a serious compromise with the 3Rs policy. In parallel, the “Commission for Revision of FMV strategy for the use of live animals” has been working with PC, Study Coordinator of each scientific area and individual teachers, to replace live animals by cadavers whenever possible.

- **R FOR REDUCTION:** As mentioned in 5.1.3., ≈ 67 animals are kept at FMV premises for teaching, demonstration and training purposes, including 6 dogs and 3 cats. The “Commission for Revision of FMV strategy for the use of live animals” estimated this numbers by inquiring all teachers responsible for US that require live animals for demonstrations and student’s training about the minimum number of live animals needed to attain their general and specific learning objectives and student’s skills development. For example, cadavers used in Reproduction practical classes are later necropsied in Anatomical Pathology classes.

- **R FOR REFINEMENT:** Beyond setting up and monitoring an adequate balance between the reduction to a minimum of the use of live animals, maximizing training alternatives like manikins and animal cadavers, another strategy is in place aiming to reduce the number of live sheep purchased to be euthanized for practical classes and assessments of Anatomy, by replacing them by dog cadavers. Its success depends upon the efficacy of the weekly logistics of dog cadavers’ collection at the Lisbon Council Animal Shelter and private veterinary hospitals of Lisbon. Promising results have been obtained in 2017.

**Finally, the principles of the 3Rs are fully applied for animal research at CIISA, with an Ethics and Animal Welfare Commission** being responsible for monitoring the use of live animals in research according to national and international legislation. The experimental design of all research projects using animals are preliminarily examined by the Ethics and Animal Welfare Commission and only research projects that minimize the use of animals and ensure welfare standards reducing pain and suffering are approved.

**FMV has a modern Lab Animal Facility** approved by the National Authority for Animal Health (DGAV). In a few cases, animal experimentation involves large mammals, such as sheep and pigs. These tend to be short-term research projects run in co-partnership with external institutions.

#### 5.1.2. Description of the specific strategy of the Establishment in order to ensure that each student receives the relevant core clinical training before graduation.

**The 4<sup>th</sup> and 5<sup>th</sup> years of curriculum were designed and adjusted aiming at offering consistent core clinical training opportunities before graduation, namely to ensure that students develop Day One Competences** demanded by international organizations and the global market. To achieve these objectives strong investments have been made to equip and modernize the VTH and to employ teachers, veterinarians, nurses and auxiliary staff to increase FMV teaching capacity, supervision of traineeships and performance of clinical applied research. The quality of services provided and promotion targeted at specific clients, namely second opinion and reference cases, contributed to the sustainable growth and recognition of VTH as a major pillar of FMV’s teaching and learning environment. Besides, this growth was also remarkable because it was partially achieved during a period of severe national and European economic crisis, which effects are still visible. However, the institution was able to cope with this very hard challenge. Indeed, in a counter-cycle trend, the number of first opinion consultations at the VTH increased 16.8% from 2014-2015 to 2015-2016 (5086 to 5942) and the number of referral cases also rose 7.1% (789 to 845).

Mainly to maximize the potential of VTH and of extramural practical classes of Ambulatory Clinics for practical training, **since 2012-2013 theoretical classes are concentrated in 2.5 days of the workweek and the other 2.5 days are fully available for practical classes, allowing setting up a weekly rotations schedule.** An additional measure was taken in 2014-2015, with the use of the **logbook**.



Since 2005-2006, a Herd Health US was included on the 5<sup>th</sup> Year schedule aiming at improving the balance between individual and population medicines. Moreover, two veterinarians specialists on Pig and Avian Health and Production were appointed as invited teachers. They are both consultants of major national economic groups of pork, avian meat and egg producers, and they have been facilitators of visits to intensive units and supervisors of curricular traineeships in Herd Health and Production.

Since 2013-2014, Equine Clinics I and II, two new US were also included in the 5<sup>th</sup> year, to improve the organization and balance of clinical training of horses *versus* food animals. Since 2014-2015, a new extramural activity was included in the practical program of Pathology and Clinics of Infectious Diseases I and II, to further improve the balance between individual and population medicines, namely a 4-hour visit to ruminant farms dedicated to Herd Health and Veterinary Preventive Medicine.

**Clinical US focusing on specific groups of animal species are:** Pathology and Clinics of Parasitic Diseases; Pathology and Clinics of Infectious Diseases; Reproduction and Obstetrics; Medicine; Surgery; Companion Animal Clinics; Equine Clinics; Food Animal Clinics and Herd Health, with an equitable practical training devoted to companion animal species and food animals.

Currently, the **balance between the clinical practical training of different animal species** is the following: companion animal species including exotic pets - 208 hours; equines - 126 hours; food animals - 111 hours. This represents respectively 46.7%, 28.3% and 24.9% of the student clinical training. Only hands-on activities were considered for the previous calculations. Clinical cases discussions, PBL and CBL were not taken into account. This clinical training load per student by animal species is adequate to comply with Day One Competences and adjusted to present trends on the labour market demands.

The **balance between individual and population medicines** is 75% *versus* 25% (companion animal species plus equines - 334 hours; food animals - 111 hours). These percentages also comply with Day One Competences and are adjusted to current market demands.

The **balance between first opinion and referral cases** in 2016/2017 was 70.1% *versus* 20.3% in companion animals plus ornamental birds, rodents and other exotic pets, 93.0% *versus* 7% in food animals and 11.2% *versus* 88.8% in equines. These indicators reflect FMV mechanisms governing the balance between first opinion and referral cases in different animal species and the respect for good referring practices. This allows students to be properly trained both on primary health care and routine procedures common in all veterinary clinics but also in less frequent and more complex cases.

The **balance between consultations (one-day clinic) and hospitalisations** is achieved through the weekly rotations schedule of the 5<sup>th</sup> year. For instance, in the week dedicated to Companion Animal Clinics, they follow that week in-patient cases on Monday, Wednesday and Thursday. The same applies during the week dedicated to Equine Clinics, especially in horses undergoing surgery. These balances are assured because students are always split into 5 services during their stays on VTH: Surgery; Internal Medicine; Diagnostic Imaging; in-house patients and IDIU. Moreover, this distribution scheme begins in the 3<sup>rd</sup> year, 5<sup>th</sup> semester, in Clinical Rotations I and ends on the 5<sup>th</sup> year, 10<sup>th</sup> semester allowing sufficient opportunities for students to follow-up patients.

Regarding the **balance between acute and chronic cases**, unfortunately QVET does not allow for reliable and reproducible descriptive statistics to quantify the frequency of acute *versus* chronic cases. Nevertheless, there is a good exposure of students to both episodes of diseases. Acute cases prevail in emergency, trauma and acute consultations carried out both at the VTH and Ambulatory Clinics, and include among others septic shock, gastric torsion, haemorrhagic shock, heat stroke, cardiorespiratory arrest, colic in horses or downer cow syndrome. IMVM's students are also exposed to plenty of chronic cases, namely enteropathies in dogs and canine skin disorders, chronic kidney disease and FIV and FeLV in cats, chronic idiopathic inflammatory bowel diseases of the horse and chronic obstructive pulmonary disease, mastitis and chronic cystic ovarian disease in cows, just to name a few examples.

### 5.1.3. Description of the organisation and management of the teaching farm(s) and the involvement of students in its running

FMV has a permanent intra-mural herd of farm animals (currently assembling 30 horses, 20 cows, 1 donkey, 10 sheep and 6 goats) which allows for teaching and demonstration of many techniques and skills in the scope of different US. **Extramurally, students visit several farms**, mostly in small groups (7-8 students), where they have the opportunity to observe and participate on procedures and activities, always under the supervision of FMV teachers.



For example, focusing on those three aspects pointed out, **students are frequently involved**, both intramural and extramurally, in:

- a) **Preparing animals for parturition, observing and assisting births and caring for neonates**, performed in Reproduction and Obstetrics as well as during visits to farms in Food Animals Clinics; extramurally, students also **perform routine procedures (vaccination, disbudding, treatments, hoof trimming)** during Food Animals Clinics, Pathology and Clinics of Infectious Diseases and Herd Health, visits to farms, and discuss husbandry issues in Animal Production;
- b) **Milking of the intra-mural herd** is practiced in Animal Production and Reproduction and Obstetrics, and, extramurally, **students visit milking parlours and participate on milking procedures**, especially in the scope of the udder health management in Food Animals Clinics;
- c) **Feeding is practiced in the intra-mural herd and also extramurally** during farm visits and specific study visits in the scope of Plant Biology, Agriculture and Environment, Zootechnics and Animal Production, in which different feed, conservation and distribution techniques are shown.

As stated above, **during the curricular traineeship and according to the scientific area, students also have the opportunity to reinforce the training of these procedures, under the supervision of local practitioners and of academic member of FMV staff.**

With FMV support, Students' Union organized a **volunteer group ("Group of friends of the faculty animals" - GAAF) to help taking care of FMV animals**, aiding in their husbandry and welfare.

#### 5.1.4. Description of the organisation and management of the VTH and ambulatory clinics

The VTH is divided in Companion Animals Hospital, Equine Hospital and Food Animals Hospital.

**Companion Animals Hospital (CAH):** CAH is open 365 days per year, 24 hours a day, relying upon teams that include academic staff, veterinarians, nurses, other support staff and students. **The CAH is organized into several sections:** internal medicine, diagnostic imaging, surgery and hospitalisation. **Besides general consultations (first opinion), referral (specialised) consultations** are offered in the following areas: neurology, orthopaedics, cardiology, dermatology, ophthalmology, oncology, internal medicine, reproduction, infectious diseases, exotics species and behaviour. Cases for referral consultations come from both first opinion consultations in VTH and from outside practitioners, mainly from Lisbon and the south of Portugal.

**Hospitalisation is divided by species, i.e., cats and dogs, in different wards. Patients with infectious diseases are immediately transferred for IDIU**, a special ward in a separate building, distantly located from the main hospital. Daily briefings with owners are made by phone call and follow-up consultations are provided in a specific room of IDIU.

**Emergencies, alerted by call or identified in the admission area, are followed by a nurse or a veterinarian** that verifies the urgency of the case and, if confirmed, the animal is received by a veterinarian and on call students in the first consultation room, equipped with an anaesthetic machine and an emergency trail. After stabilization, the animal goes to the ward with monitoring and oxygen support. The equipment available is adequate for all complementary examinations (radiology, blood analysis, and ultrasonography). Surgery rooms are always available including on week-ends and nights, and a surgeon is on call in case of any emergency surgery. Students on 24h shifts are present in all emergency cases.

**Every day, at 8.30 and 2.30 pm, veterinarians, nurses and students in charge of in-house patients make a briefing to the next shift** about patients' conditions and cases that require special care. **The same procedure occurs when the night shift comes in charge.** Every morning, a nurse checks all equipment, stock availability and hygiene in each room. The clinical director is informed of any deficiency and takes measures to solve it.

**Every Wednesdays, between 2-3 pm, staff has meetings to discuss complex cases, or a seminar is presented about a subject of interest or a representative of the pharmaceutical industry gives a presentation.** Students, especially those in the traineeship, are encouraged to attend. Journal clubs are also conducted. A veterinarian presents an article and implements a discussion about its subject and methodologies. All scientific journals subscribed by FMV are available for clinical staff and students on the hospital's computers terminals.

**QA procedures and protocols are very important in the CAH workflow.** Most frequent diagnostic approaches and treatment plans are available in folders in a clinical room accessible to all clinicians and students. These protocols were written by the most differentiated elements of the staff and ensure that team members adhere to agreed methods when carrying out specific, frequently occurring procedures, achieving uniformity of the performance of a specific function. Their compliance provides public assurance that the rights, safety and well-being of patients are protected. Charts flows of main emergency procedures, drug doses, and treatment protocols are also provided in wards.



**The Clinical Director of CAH handles possible owner complaints** that are registered in a complaint book or by e-mail. He discusses with the clinic staff involved in the particular case and tries to identify the reasons that motivated the complaint and the way to prevent similar occurrences. In cases of unexpected deaths, the Clinical Director performs an in-depth investigation of possible causes and discusses potential improvement of the quality control systems and procedures. In case of modifications, all the staff members are informed about the decisions and new protocols are implemented.

**The Clinical Director also decides about current expenses, organizes labour and human resources, proposes personal recruitment,** and presents the problems, the development plan, and special acquisition options of major investments to the management council. New members are selected according to predefined criteria and are familiarized with the particular requisites of working in a VTH, shown the best ways to interact with the other team members and, in particular, with students. Specific guidance is given to veterinarians how to train and assess students and about the logbook. All new elements enjoy an adaptation period of one week, during which they accompany an experienced member of the staff in order to be acquainted with procedures, protocols and CAH routines.

**The Equine Hospital (EH): EH is open 365 days per year, 24 hours a day,** relying on teams that include academic staff, veterinarians, nurses, technicians and students. Cases are always scheduled by phone or e-mail. Owners usually transport their horses but, if necessary, the faculty can provide transportation.

**Student clinical teaching is provided by three main streams:**

1. **An Ambulatory Clinics** that provides assistance to over 300 horses/year. These are mainly from studs with which the faculty established protocols and contracts, in order to provide students adequate training and exposure to day to day clinical work and routines.
2. **An in house Diagnostic Imaging and Medicine Service,** which works with elective first opinion as well as referral cases from other veterinarians.
3. **A Surgery and Emergency Service,** working exclusively as an in house referral service providing a 24 hour specialized service.

**All efforts are made to maximize students' exposure to clinical cases:** curricular involvement with the EH starts in the 3<sup>rd</sup> year with clinical sessions where hospital routines and procedures are explained (Clinical Rotations I and II); 4<sup>th</sup> year students rotate through the EH and learn and train advanced procedures (for example, catheter placement, nasogastric tubing, nerve blocking principles) during Clinical Rotations III and IV; 5<sup>th</sup> year students are involved with elective cases and daytime emergencies during their practical rotations of Equine Clinics; finally, on an extracurricular voluntary basis, all students have the opportunity to join the out of hours rotations. A group of 7-10 students is assigned an "on call week", and every day and night 2-3 of those students stay at the EH and provide direct assistance to the clinicians on call. All other students assigned to that week are contacted and come to hospital whenever there is an emergency. Students from all years are eligible to join this volunteer program which currently involves approximately 150 highly motivated students.

**Referral cases are mainly related to the EH differentiating skills:** internal medicine, surgery and lameness, diagnostic imaging and reproduction and obstetrics. **Complementary exams available** include radiology, musculoskeletal and medical ultrasound (including abdominal, respiratory and echocardiography), ECG, resting and dynamic video endoscopy of the upper airways, and gastroscopy. **Most advanced surgical procedures** performed routinely include colic surgery, arthroscopy, internal fixation, dental and upper airway surgery and general soft tissue procedures. **A highly detailed respiratory diagnostic service is also provided,** with the use of lung echography, respiratory endoscopy, bronchoalveolar lavage, percutaneous transtracheal aseptic aspiration, dynamic respiratory endoscopy, lung function tests (plethysmography, arterial blood gases and oesophageal indirect pleural pressure measurement) as well as allergy tests.

**Clinical cases are mainly referred by colleagues from studs with which collaboration protocols are in force** (National Cavalry Police – GNR; Forest Police; Portuguese School of Equestrian Art – EPAE; National Stud – CN), from FMV own horses and those from faculty's equestrian centre. The majority of cases are seen in-house. Ambulatory Clinics is mainly provided to institutions involved within the scope of the above mentioned protocols.

**Food Animals Hospital (FAH): This service is open 24 hours a day, 365 days a year,** relying on on-call teams that include academic staff, and students. **The majority of food animal's clinics are provided as Ambulatory Clinics, involving farms with which collaboration protocols were established.** These include several cow and goat dairy farms, beef cattle and one pig farm (Appendix 3). animals are seldom brought into the FAH due to diverse reasons of which the most frequent are: individual clinical work associated with production medicine is better performed at farm; farmers are not willing to let animals return to the farm for biosecurity reasons; students should view and evaluate husbandry and management conditions, while conducting clinical examination or suggesting treatment or preventive measures; communication skills with farmers and farm workers are better developed *in loco*.



**Students participate in general and specialized consultations**, either by individual or Herd Health approach, comprising medical, surgical, infectious, nutritional, reproductive and husbandry issues. They frequently perform complementary exams, like blood and milk analysis (iStat, refractometer, Delvo test) and collect biological samples for subsequent analysis in FMV, to reach definitive diagnosis.

**Clinical cases seen at faculty are mainly brought from farms visited in the Ambulatory Clinics.** Most of them are animals donated by farmers for teaching purposes or brought in for complementary exams and, eventually, cadavers for necropsy, to enlighten the aetiology of rare diseases or outbreaks. Other cases include “new companion animals” (e.g. young sheep, pigmy goats and Vietnamese Pigs), sent by CAH for dehorning, castration or treatments. Finally, some clinical cases come from the resident ruminants’ population in which disease control and procedures such as dehorning and hoof trimming are performed routinely.

### 5.1.5. Description of how the cadavers and material of animal origin for training in anatomy and pathology are obtained, stored and destroyed

**Tree sources are used to obtain animal cadavers: (1) culled ewes, bought from brucellosis-free flocks, specifically for the practical teaching and assessment of Anatomy; (2) cadavers of companion animals and horses donated by VTH clients for teaching and scientific purposes; (3) cadavers donated by private veterinary hospitals.**

From these:

- a) An average of 136 ewes are bought each year for practical teaching and assessments of Anatomy;
- b) An average of 362 cadavers of companion animals are used per year in practical classes and assessments of 8 compulsory US: Anatomy II; General Pathology; Anatomical Pathology; Anaesthesia and Analgesia; Surgical Propaedeutics; Pathology and Clinics of Parasitic Diseases; Reproduction and Obstetrics. Cadavers have two main sources: (i) VTH ≈214 ; (ii) Lisbon Council Animal Shelter and private veterinary hospitals ≈148;
- c) An average of 15 (26 in 2016) cadavers of horses that died or are euthanized per year at the VTH are donated to the faculty by their owners for teaching and scientific purposes. These cadavers are used for practical classes and assessments of Anatomical Pathology.
- d) Other teaching and final assessments materials of animal origin include organs collected at abattoirs or bought in markets. Average data per academic year: (i) organs collected at abattoirs - 75 bovine genitals, 6 small ruminant lungs and 6 pig lungs, 3 small ruminant livers and 3 pig livers, 3 bovine kidneys; (ii) cadavers donated from slaughterhouses: ≈100 rejected broilers; (iii) animals bought in markets: 6 chickens; 6 rabbits; 49 fishes; 32 crustaceous; 11 cephalopods and 75 bivalves.

**The above mentioned materials are stored in freezers and refrigerators until used and residues disposed of through specialized contracted firms.**

### 5.1.6. Description of the group size for the different types of clinical training (both intra-murally and extramurally)

**Intra-murally:** in core clinical rotations and emergency services at the VTH, group size is standardized to 6 students per teacher, except IDIU that only takes in 4 students.

**Extramurally:** at the Ambulatory Clinics (horses and food animals), group size is standardized to 7 students per teacher.

### 5.1.7. Description of the hands-on involvement of students in clinical procedures in the different species, i.e. clinical examination, diagnostic tests, blood sampling, treatment, nursing and critical care, anaesthesia, routine surgery, euthanasia, necropsy, report writing, client communication, biosecurity procedures (both intra-murally and extramurally)

**The hands-on involvement of students in clinical procedures in different species begins in the 4<sup>th</sup> semester, 2<sup>nd</sup> year**, in Anatomical Pathology I; it then follows a progression to more complex tasks until the last semester (10<sup>th</sup>). This learning dynamics can be summarized as follows:

- **2<sup>nd</sup>/3<sup>rd</sup> years:** perform a necropsy of various domestic animals; collect material for complementary exams; perform fine needle aspiration and punch biopsies; write necropsy reports.
- **3<sup>rd</sup> year:** two modules of training in “Veterinary communication skills”, including theatrical simulations of consultations in hospital environment; hands-on routine activities at VTH including perform simple tasks like helping in the contention of animals, weighing, measuring body temperature, collection of biological samples, help nurses and veterinarians preparing and administrating medication.



- **4<sup>th</sup> year:** two modules of training in Basic (BLS) and Advanced Life Support in companion animals; hands-on routine activities at VTH and Ambulatory Clinics, including clinical examinations, collection of biological samples, in-house diagnostics, preparation and administration of medication, vital signs monitoring, registry in QVET of clinical signs, surgeries in groups of 6 students and report writing.
- **5<sup>th</sup> year:** hands-on routine activities at VTH and Ambulatory Clinics, including clinical examinations, in-house diagnostics, collection of biological samples, fill the forms to send biological samples to distinct labs, preparation and administration of medication, wound care, bandages and dressing, vital signs monitoring, assessment of pain, animal anaesthesia and contention for X-ray, CT and ultrasonography, induction and maintenance of anaesthesia, assistant surgeon, registry in QVET of the patient medical data, meeting with owners, euthanasia, cadaver packaging and storing, telephone follow-up of released patients, report writing, and report writing for referral veterinarians.

**All these procedures are supervised by teachers, practitioners and veterinary nurses.**

**VTH curricular traineeship students perform all the procedures mentioned above** and they also participate on two daily transition meetings by the veterinarians in charge of the hospitalisations at 8.30 am and 2.30 pm, and in the weekly discussion of a selection of clinical cases on Wednesday afternoon.

**In the beginning of each year, all students are reminded (refresher session) of the rules for the management of residues**, like syringes, needles, blood, surgery and swabs, and the risk of hospital infections.

### **5.1.8. Description of the procedures used to allow the students to spend extended periods in discussion, thinking and reading to deepen their understanding of the case and its management**

**The use of extended periods of clinical case discussion, thinking and reading by students is a learning methodology in place in the 4<sup>th</sup> and 5<sup>th</sup> years of the curriculum.** They are a strong basis for understanding medicine and provide the basis for LLL. Thus, for 4<sup>th</sup> year students, in the US of Medicine, a clinical case selected on the basis of its didactic interest, is introduced to students twice a week, to trigger an active PBL approach focusing on the development of knowledge acquisition, enhanced group collaboration and communication. These PBL sessions take 4 hours and cover all organic systems.

**In Surgery**, each group of 6 students produces a case report, selected among the surgeries in which they participated, and then present it to their colleagues under the supervision of teachers that act as facilitators.

**In Pathology and Clinics of Infectious Diseases I**, CBL is used to train students regarding individual vaccination schedules in dogs and cats. VTH real cases are used to stimulate and underpin the acquisition of knowledge, skills and attitudes. Cases are written to provide the student with a background of the patient. Supporting information is also delivered, such as latest research articles, vital signs, clinical signs and symptoms, laboratory results, and free Internet access to the electronic database of veterinary vaccines authorized in Portugal.

Finally, for 5<sup>th</sup> year students, CBL is fully explored twice a week, **in Companion Animal Clinics**, where a group of ≈20 students discusses one or two different clinical cases. Similar approaches are used in **Equine Clinics** and **Food Animal Clinics**, with a couple of nuances. In Equine Clinics, before the planning and distribution of daily clinical work, students are asked to review information concerning the cases of hospitalized horses they will be caring and to share their conclusions with their colleagues. Again, teachers act as facilitators. In Food Animal Clinics, a specific activity named **“Weekly Clinical Cases Discussion”** is in place for students to deepen their understanding of the cases they assisted at the Ambulatory Clinic. These presentations are shared with their classmates.

**This sequence of learning methodologies allows students to enhance their problem solving attributes and their clinical performance, to develop a collaborative, team-based approach to their education, hypothesis generation skills and to consolidate and integrate learning activities.**

### **5.1.9. Description of the patient record system and how it is used to efficiently support the teaching, research, and service programmes of the Establishment.**

**The VTH computer program (QVET) stores, validates and processes all dog, cat, exotic species and horse patient records**, including data from radiology, CAT scan, endoscopy, laboratory results, ultrasonography, anaesthesia and necropsy. Food Animals patient records are stored and processed in Excel files developed by teachers.

**Students learn to use QVET in the 3<sup>rd</sup> year during their practical sessions of Clinical Rotations at the VTH. These databases are permanently available for students** to support them with real life data to prepare practical assignments for several US of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> year, such as Clinical Rotations, Medicine, Surgery, Companion Animals Clinics, Equine Clinics and Food Animals Clinics and to complement their study for the final exams of Diagnostic Imaging, Companion Animals Clinics, Equine Clinics or Food Animals Clinics. In addition, QVET records and



Food Animals Excel files patient records are used by all students that make their curricular traineeships at the VTH and become a crucial source of information for their dissertations.

**These patient record systems are also relevant for teachers because they provide clinical cases for their practical classes**, namely for PBL and CBL sessions (Clinical Rotations, Pathology and Clinics of Infectious Diseases, Medicine, Surgery, Imagiology, Diagnostic Imaging, Companion Animals, Equine Clinics, Food Animals Clinics, Reproduction and Obstetrics), as well as data for their exams. A good example are the US of Clinical Rotations V and VI, where students are given a list of 20 clinical cases extracted from QVET, at the beginning of the semester, which will be evaluated at the final exam.

**Regarding research activities, patient record systems are used by CIISA researchers and PhD students in clinical research projects and by teachers and veterinarians engaged in residency-training programmes run by EBVS to fulfil their log needs.**

All the VTH services are dependent upon the quality of the information stored on QVET and on Food Animals Excel files to provide a good customer service.

#### **5.1.10. Description of the procedures developed to ensure the welfare of animals used for educational and research activities**

**FMV has a particular concern and adopts appropriate procedures to ensure the welfare of animals used for educational and research activities** respecting the three Rs leading philosophy underpinning the humane use of animals in teaching and scientific research, the OIE Guiding Principles for Animal Welfare and Portuguese regulatory framework. Moreover, **FMV has an “Ethics and Animal Welfare Commission” and a “Commission for the Revision of the Policy Use of Live Animals”** that monitor and share information regarding the use of animals in education and scientific research at FMV. More information may be found on items 5.1.1 and 5.1.5..

#### **5.1.11. Description of how and by whom the number and variety of animals and material of animal origin for pre-clinical and clinical training, and the clinical services provided by the Establishment are decided, communicated to staff, students and stakeholders, implemented, assessed and revised**

**The number and variety of animals and of material of animal origin used for pre-clinical and clinical training are proposed by the Regent of each US** to the Study Coordinator of the respective scientific area, and informing also the “Commission for the revision of the policy on the use of live animals” led by the PC President. This Commission validates the proposals, and the final decision is taken by the Management Council.

**The number and variety of animals and of material of animal origin used by the clinical services provided by FMV are proposed by the VTH Director** to the Study Coordinator of the scientific area of Clinics, with this information also being addressed to the “Commission for the revision of the policy on the use of live animals”. Procedures implementation is a task of the Regent of each US or the VTH Director advised by the teaching staff/medical team. The assessment of these procedures is a responsibility of the Study Coordinators at departmental level and of the VTH Director at hospital level.

**The assessment and annual revision of the global FMV policy regarding the number and variety of animals and of material of animal origin used for pre-clinical and clinical training, and the clinical services provided by the Establishment, is done by the “Commission for the revision of the policy on the use of live animals”.** Major changes in procedures or policies are communicated to staff, students and stakeholders, through the faculty website and the intranet email network, FenixEdu. PC also channels information through the network of US delegates and the Student Union. Minor changes are dealt between the VTH Director or the Regent of each US and his Study Coordinator, with prior notification to the “Commission for the revision of the policy on the use of live animals”.

**Table 5.1.1. Cadavers and material of animal origin used in practical anatomical training**

Species	2016-17	2015-16	2014-15	Mean
Cattle	0	0	0	0
Small ruminants	136	136	136	136
Pigs	0	0	0	0
Companion animals	12	12	12	12
Equine	0	0	0	0
Poultry & rabbits	0	0	0	0
Exotic pets	0	0	0	0



**Table 5.1.2. Healthy live animals used for pre-clinical training**

Species	2016-17	2015-16	2014-15	Mean
Cattle	60	60	60	60.0
Small ruminants	16	16	16	16.0
Pigs	245	270	213	242.7
Companion animals	12	13	14	13.0
Equine	22	22	22	22.0
Poultry & rabbits	100	100	100	100
Exotic pets	0	0	0	0

**Table 5.1.3. Number of patients seen intra-murally (in the VTH)**

Species	2016-17	2015-16	2014-15	Mean
Cattle	1	3	5	3.0
Small ruminants	0	0	0	0
Pigs	0	0	0	0
Companion animals §	15,446	14,613	13,041	14,366.7
Equine	386	346	259	323.7
Poultry & rabbits	0	0	0	0
Exotic pets	172	227	174	191.0

§ These data correspond to the following sum: 1<sup>st</sup> opinion consultations + Referral consultations + Emergency consultations + Surgeries + Computerized tomography + X-ray + Ultrasound scans. Follow-up consultations complementary diagnostic exams were excluded from the calculation.

**Table 5.1.4. Number of patients seen extramurally**

Species	2016-17	2015-16	2014-15	Mean
Cattle	3,124	3,271	2,316	2,903.7
Small ruminants	1,940	1,791	1,486	1,739.0
Pigs	130	20	1	50.3
Companion animals	0	0	0	0
Equine	67	65	68	66.7
Poultry & rabbits §	80,000	80,000	80,000	80,000
Exotic pets	0	0	0	0

§ These data correspond to the sum of the poultry population census in industrial laying hens and broiler farms visited by students because due to farm extremely rigorous biosecurity plans students only entered in one pavilion per farm, assisted and discussed veterinary routine procedures with the veterinarian in charge.

**Table 5.1.5. Percentage (%) of first opinion patients used for clinical training**

Species	2016-17	2015-16	2014-15	Mean
Cattle	93.0	96.0	95.0	94.7
Small ruminants	96.0	97.0	93.0	95.4
Pigs	100	100	100	100
Companion animals	71.9	78.3	80.0	76.7
Equine	11.3	18.8	26.3	18.8
Poultry & rabbits	67.8	75.0	69.1	70.6
Exotic pets	64.0	58.6	65.8	62.8

**Table 5.1.6. Cadavers used in necropsy**

Species	2016-17	2015-16	2014-15	Mean
Cattle	55	52	59	55.3
Small ruminants	53	49	40	47.3
Pigs	1	19	21	13.7
Companion animals	412	380	365	385.7
Equine	30	14	6	16.7
Poultry & rabbits	197	239	224	220.0
Exotic pets	22	34	30	28.7
Others (specify): Fish	3	3	0	2.0



**Table 5.1.7. Number of visits in herds/flocks/units for training in Animal Production and Herd Health Management Species**

Animal species	2016-17	2015-16	2014-15	Mean
Cattle	9	9	9	9.0
Small ruminants	4	4	4	4.0
Pigs	3	3	3	3.0
Companion animals	2	2	2	2.0
Equine	7	7	7	7.0
Poultry & rabbits	4	3	3	3.3
Exotic pets	0	0	0	0
Others (specify):				
Zoo wild animals	2	2	2	2.0
Oceanarium fish and mammals	2	2	2	2.0
Aquaculture fish farming	3	3	3	3.0

**Table 5.1.8. Number of visits in slaughterhouses and related premises for training in FSQ Species**

Species	2016-17	2015-16	2014-15	Mean
Ruminant’s slaughterhouses	4	4	4	4.0
Pig’s slaughterhouses	5	5	5	5.0
Poultry slaughterhouses	1	1	1	1.0
Related premises*	6	6	6	6.0
Others (specify):				
Rabbit’s slaughterhouses	1	1	1	1.0
Fishing port	1	1	1	1.0

\* Premises for the production, processing, distribution or consumption of food of animal origin

## 5.2. Comments

Tables 5.1.1 and 5.1.2 reflect our **commitment to minimize the purchase of live animals and the positive impact of the use of manikins on reducing the number of live animals used in pre-clinical training.** However, this commitment respects the minimum number of live animals reported to PC by Regents of the US that require live animals for practical demonstrations and students' initial training phases before interacting with customer’s animals at VTH and in Ambulatory Clinics.

Tables 5.1.3 and 5.1.4 are almost inversely proportional and reflect the **dynamics of the VTH, which allows students to access an adequate number of companion animals and horses for training and skills acquisition.** This student exposure is recorded in the logbook, and balances what is achieved in the Ambulatory Clinics with ruminants and pigs, and reinforces the number of horses assisted.

**Table 5.1.5 shows the positioning of VTH as a reference hospital in the Lisbon Metropolitan Area** (2.8 million habitants). Thus, the mean rate of first opinion companion animals patients used for clinical training of students in the report period was 76.7%. **This allows students to contact with a broad range of cases and clients,** ranging from primary health care consultations to rare and/or complex cases referred by other veterinarians. The very low first opinion patients mean rate in horses (18.7%) results from the fact that most of these animals are referred to VHT. In the opposite scenario are the very high rates of ruminant first opinion patients (94.7% cattle, 95.3% small ruminants) and pigs (100%), reflecting the veterinary assistance protocols celebrated between FMV and livestock producers to safeguard a suitable training of students in these animal species.

## 5.3. Suggestions for improvement

**The CAH has planned the expansion of facilities,** with a complete architectural and engineering plan which is ready for execution, whenever financially possible. This expansion aims at increasing the wards for dogs, cats and exotic animals and creating small rooms for treatments, rooms for dentistry and endoscopy, allowing further expansion of patient case-load and hands-on experience by the students.





# 6. Learning resources

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## 6. LEARNING RESOURCES

### 6.1. Factual information

#### 6.1.1. Description of the main library of the Establishment

<b>Staff and qualifications:</b>	1 Librarian (fulltime; Graduation Degree and Master in Documentation and Information Sciences; Professional Technical Course of Library, Archive and Documentation), 1 Librarian Assistant (fulltime; 12 <sup>th</sup> grade Secondary School, Professional Technical Course of Library, Archive and Documentation); and 1 Librarian Technician (fulltime, 12 <sup>th</sup> grade Secondary School).
<b>Opening hours and days:</b>	Monday-Friday, 9.30 am to 6.30 pm.
<b>Annual budget:</b>	15,890 € (without salaries).
<b>Facilities:</b>	Building A; 920 m <sup>2</sup> ; 8 rooms, including 2 large reading rooms, 1 computer consultation area with 24 terminals, 3 reserved offices for study groups, 1 reserved multimedia cabinet (videos and audio), and 1 free access area to periodicals; 150 seats.
<b>Equipment:</b>	18 desktop computers; 2 laptops; 58 connections (electrical outlets) available for laptops; 1 KOHA open-source Integrated Library System (ILS); 1 integrated search platform EBSCO Discovery Service; 1 Research portal: Online Knowledge Library B-On.
<b>Number of veterinary books and periodicals:</b>	47,372 bibliographic records (monographs, thesis, dissertations) in paper and multimedia; 217 periodical titles, from which 20 have a current subscription.
<b>Number of veterinary e-books and e-periodicals:</b>	4 e-books, 3 available at the platform EDS/B-On. 2 e-periodicals.
<b>Number of other e-books and e-periodicals:</b>	It is impossible to quantify data access to databases available online as, for example, SPRINGER; 212 periodicals are available through the EBSCO Discovery Service (EDS) / B-On platform.

#### 6.1.2. Description of the subsidiary libraries

There are no subsidiary libraries.

#### 6.1.3. Description of the IT facilities and of the e-learning platform

**FMV has an "IT Commission" coordinated by the Dean's Office and composed by 3 teachers and 3 technicians.** It is responsible for coordinating and managing all requirements of hardware and software necessary for proper operation, development and management of the internal network and the connections to external networks, maintenance and upgrade of computer equipment, peripherals and the institutional webpage, and to provide support, information and training to FMV users.

**FMV has two computer rooms**, each one with 15 desktop computers that allow for a practical class of 30 students to work in pairs, if necessary. All teachers, veterinarians, and researchers' offices are equipped with a desktop or a laptop computer with cable and wireless free Internet access. The same occurs in all lecture halls, classrooms and teaching laboratories, and at VTH, that already has 30 terminals. In total, the current FMV computer pool gathers 300 computers that are managed daily by 3 computer technicians of the Help Desk Service. VTH customers also have free wireless Internet access.

**An e-learning platform (MOODLE) has been used since 2009** to foster the communication between students and teachers, the delivery of bibliographic support and other learning resources, pedagogic e-learning tools and students' self-assessment or quiz type assessments as part of formative assessment. All staff (teaching, research, veterinarians and support) and students have free access to bibliographic research databases (Web of Science, Medline, EDS, Springer, Willey, through the B-On), allowing a fast and easy access to the latest scientific information.

**IT facilities are also available at the Main Library through 24 terminals.** Their maintenance and upgrade is carried out by the Help Desk Service. The Library team supports students in configuring, accessing and taking full advantage of their e-learning account in MOODLE. All software used in FMV has commercial licenses acquired either by the faculty or by ULisboa, which annually promotes a consultation among its 18 schools for requests and suggestions for new software acquisitions.



#### 6.1.4. Description of the available electronic information and e-learning courses, and their role in supporting student learning and teaching in the core curriculum

For available electronic information please see 6.1.1. Various three-hours **workshops and short courses are provided by the University e-Learning Lab**, available to students, teachers and anyone belonging to the academy. These workshops are available in five categories: MOODLE Platform, e-Learning Pedagogy, Massive Open Online Courses (MOOC), e-Learning support tools and in other tools.

#### 6.1.5. Description of the accessibility for staff and students to electronic learning resources both on and off campus

**All students and staff have free access to all FMV electronic resources through the EDUROAM (Education Roaming) wireless network within FMV. Outside the institution, all accesses are provided through easy-to-use high speed Virtual Private Network (VPN).** Paper and electronic guidebooks are available on the website to help students and staff with the configuration of their VPN access.

#### 6.1.6. Description of how the procedures for access to and use of learning resources are taught to students.

**Access to and use of learning resources are taught to students through 4 convergent procedures:** (1) the study plan of the IMVM has a **US named Biomathematics, Computing and Documentation, strategically placed at the 1<sup>st</sup> semester of the 1<sup>st</sup> year**, in which students are trained to access electronic information; (2) the **Library team provides students personalized or at distance training** on access and use of information resources, through personalized assistance with the configuration of their equipment, including PDA, laptop, smartphone and tablet PC. This training takes various formats, namely personal sessions, telephone aiding or electronic mail counselling; (3) **tutorials available at the Library's electronic webpage** and on paper at the Library's Service Desk; (4) **monthly bibliographic Bulletin delivered by email**. Moreover, most students present well-developed skills on the use of computers and electronic devices in general.

#### 6.1.7. Description of how and by whom the learning resources provided by the Establishment are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

**The committee structure with the responsibility of deciding, communicating, implementing, assessing and revising the learning resources is the following:** the PC designates a full-time professor to be the Coordinator of the Library and Document Centre for a 4-year period. He works in close collaboration with the Librarian and the Presidents of the Departments. Proposals for acquisitions are made and justified by the SPC each US. Then book price estimates are requested by the Librarian from book retailers and purchased at best price. The titles of the periodicals are also proposed by teachers and researchers. The signatures are renewed annually.

**Databases subscription is done by ULisboa Rectorate, negotiating joint contracts for all schools, thus minimizing costs.** Interest assessment of databases for FMV is done by the Coordinator of the Library and the Librarian, and procedures are streamlined by the Librarian. In case of a positive appreciation, a proposal is made to Management Council that authorizes purchase of the new learning resource.

**The updating of book editions included in the list of recommended bibliography of each US are proposed and grounded by the Librarian directly to the Management Council.** The acquisition of new learning resources is communicated to staff and students through the Library's electronic webpage at the submenus "News" and "Bibliographic Novelties", and through paper support at the Service Desk. Teachers and researchers also receive a monthly librarian newsletter Bulletin via email.

## 6.2. Comments

**The use of e-learning modules within US is low in comparison with the number of teachers that already attended University e-Learning Lab courses.** It is expected that this scenario will change in the near future, supporting improved student e-learning and interaction.

## 6.3. Suggestions for improvement

**The electronic learning management system environment needs further improvement and user-friendly development**, namely taking into consideration portable terminals like smartphones. Investing more in and taking advantage of the rapid development and accessibility of e-learning modules should be another priority.



**7** *Student admission,  
Progression and welfare*

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## 7. STUDENT ADMISSION, PROGRESSION AND WELFARE

### 7.1. Factual information

#### 7.1.1. Description of how the educational programme proposed by the Establishment is advertised to prospective students

The educational programme in Veterinary Medicine of FMV is well known among potential Portuguese candidates since it is the oldest in Portugal and Veterinary Medicine is a very popular and fashionable profession. **Beyond the information on Erasmus+ Programme on FMV website**, where most visitors are potential candidates seeking information about the IMVM, **the educational programme is advertised through the following:**

- a) **Press:** annual special issues about offer of Graduation Courses published on the major weekly (*Expresso*) and daily (*Público*) newspapers in Portugal;
- b) **Mass events organized or participated by ULisboa in Portugal:** “*Futurália*” (largest national education and training fair, 79,573 visitors in 2017); “*Descobre a ULisboa*” (Discover ULisboa); “*Verão na ULisboa*” (Summer at ULisboa, a one week programme takes place in FMV aimed at high school students from the 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup> grades, to make them aware of IMVM characteristics and FMV’s facilities);
- c) **Overseas mass events participated by ULisboa:** “*Salão do estudante*” (Student Hall), one of the main international fairs of higher education in Latin America and the oldest education fair in Brazil, and other initiatives namely in Portuguese-speaking African countries or high potential markets for international students (China), although, as reported above, the access of international students to IMVM is still prevented by law;
- d) **Events organized by FMV:** FMV’s open day (students and parents); visits requested by secondary schools;
- e) **Other mass events:** *PetFestival* (animal owners/ general public, 35,000 visitors in 2017), for disclosure of FMV and VTH services in particular.
- f) **GAP YEAR Portugal** (1 or 2 students -spend 2 weeks at FMV, attending classes with regular students).

#### 7.1.2. Description of the admission procedures for standard students:

The selection process for IMVM candidates is fully accomplished by the General Directorate of Higher Education (Ministry of Education), through a National Higher Education Access Contest. Students can apply for a higher education programme when they meet the following criteria:

- a) Completed secondary education (holders of 12<sup>th</sup> year), or a legally equivalent qualification;
- b) Approval at national exams required by the higher education institution for that specific programme (e.g. Biology and Chemistry for Veterinary Medicine) with a classification equal to or higher than the minimum required for that programme;
- c) Application rating equal to or higher than the minimum value set for that programme by the higher education institution.

**FMV only participates on this selection process by defining:**

- a) *Numerus clausus/year* (115);
- b) National exams that candidates must accomplish (*Biology and Geology* and *Physics and Chemistry*);
- c) Weighting applied to the final classification of secondary education (50%) and to the grades obtained on national exams (50%);
- d) Minimum grades in national exams (12 in 20) and final result (12 in 20) obtained through the application of the formula used to determine the final admission grade;
- e) Pre-requisite to access the IMVM (Group B - Interpersonal Communication - absence of psychic, sensory or motor deficiencies that seriously interfere with the functional capacity and of interpersonal communication to the point of preventing learning).

**All these criteria and procedures, including the appeal processes, are advertised on FMV and General Directorate of Higher Education websites.** As a result of these procedures, **the classification of the last student enrolled in IMVM was 152.8 (out of 200) in 2014-2015, 156.0 in 2015-2016 and 159.8 in 2016-2017, revealing the high level of the IMVM students.** Since *numerus clausus* was first established in 1976, **all vacancies have been filled every year.** Beyond this general access, there are still some extra vacancies for special application regimes (Appendix 12).

**All buildings comply with accessibility requirements for disabled individuals**, such as facilities entrance accessible to wheelchair users and lecture halls, library, common areas, canteens, cafeterias, bathrooms, student dormitories, recreational and sport facilities accessible to physically disabled individuals, through ramps or lifts. An emergency evacuation plan for individuals with disabilities is in action as well as accessible parking.



**Students with chronic diseases or minor impairments can turn to ULisboa Health Centre, located either in the Ajuda Campus on the premises of CEDAR (the unit with the mission of promoting Health and Sport within ULisboa) or at the main campus downtown. Furthermore, psychological counselling is provided by the Office of Psychological Support (GAP) also at CEDAR.** PC is permanently available to help students facing problems in their educational route and, if appropriate and necessary, also serves as mediator between them and the institution, and guides them to GAP or to ULisboa Health Centre. **This work is done in partnership with the Board of the Students Union** that has a representative to support the physical, emotional and welfare needs of students. All students identified by PC with prolonged illness or impairment are monitored at least twice per semester, or whenever a new medical evaluation report is delivered by the student. These reports are confidential, being stored at the secretariat of PC and shared only with the Head of the Academic Division, since all these students are allowed to take exams during the Special Exams Season in September. They have therefore an additional opportunity per year to get approval in US until 20 ECTS.

**The protection mechanisms for students with serious episodes of disease or impairments are the following:** (1) students may enrol in part-time in order to adequate their study load to their illness or impairment, with a proportional reduction of fees; (2) students may suspend their academic activity without losing their vacancy and without paying any tuition fees. Moreover they can always return as soon as they have medical permission.

### 7.1.3. Description of the admission procedures for full fee students

Although specific legislation was settled in 2014 for the admission of international students with full fees, the educational programmes of Medicine, Dental Medicine and **Veterinary Medicine are not allowed by law to enrol this type of students.**

### 7.1.4. Description of how the Establishment adapts the number of admitted students to the available educational resources

**The number of students admitted/year has changed over time, with an increase in the period from 2012/2013 to 2013/2014, followed by a steady decline since 2014/2015,** for reasons explained in 2.1. and below in 7.1.7.. The increase in students' number was made up for hiring more human resources namely teachers, veterinarians and nurses, purchase of additional minibuses for Ambulatory Clinics and extra-mural visits, acquisition of more resident animals (in particular horses), providing further biological material for training (cadavers, organs) or manikins, and developing schedules adapted to the number of students. This is especially relevant in VTH, because the number of patients attended increased significantly during this period.

**In terms of facilities, the management of existing spaces was improved and some areas were temporarily adapted to small classrooms only during the lecturing of optional US (7 days per semester).**

**Student's safety and welfare have always been safeguarded.** At the descending phase of students' number, the priority is to improve the quality of learning and training, by taking advantage of the mentioned raise in teachers, veterinarians and nurses, by reducing group size and by offering more student centred approaches such as PBL and CBL. The contractual link with clinical staff that demonstrated good performances was improved and new hiring have been performed according to the growth of VTH case load.

### 7.1.5. Description of:

- **the progression criteria and procedures for all students:** The transition between curricular years and enrolment in the curricular traineeship are laid down in article 6 of the IMVM's Regulation that, as a main rule, stipulates that students with overdue US by more than 20 ECTS are not allowed to pass to next curricular year. For more details see IMVM's Regulation (Appendix 7).

- **the remediation and support for students who do not perform adequately:** Students that do not perform adequately are followed up by PC that tries to identify the main reasons for school failure. Guiding is given mainly regarding methods of study, needs to improve previous knowledge, relational thinking and reasoning, and time management during exam seasons. Their FMV "godmother" or "godfather"<sup>4</sup> is also committed in this coaching scheme. Complex cases are guided to ULisboa Health Centre or GAP and may end up being authorized by PC to take exams in September during the Special Exams Season until 20 ECTS.

In addition students are directed to fill a logbook to self-support their hands-on skills development and studies since the 2<sup>nd</sup> year of the IMVM. The logbook proved to be a valid preventive mechanism to reduce school failure, mainly amongst less proactive students.

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<sup>4</sup> An older student assigned in their 1<sup>st</sup> Year, 1<sup>st</sup> Semester as their personal mentor.



- **the rate and main causes of attrition:** A complex set of personal, social and institutional factors promote attritions leading to lengthened graduation times or even withdrawals. Students main causes of attrition, as recorded by the PC, are: (1) the content of the programme not matching students' expectations, namely among those that their first study option was Human Medicine; (2) feeling of injustice with exam results; (3) economic problems due to parents' unemployment, which in some cases forces students to work part-time; (4) family disturbances, especially divorces and death of relatives; (5) long term depression disorders.

Despite all efforts made by PC and the Academic Office, rates of attrition are difficult to assess and are surely underestimated. In the period 2014-2017, the annual average withdrawal rate among IMVM students was 3.2%, with ≈95% of these cessations occurring in the 1<sup>st</sup> and 2<sup>nd</sup> year due to students' decision to return to secondary school to repeat national exams in order to retry entering Medicine courses.

Another related indicator is the average time need to complete the programme, which was of 6.8 years in the period of 2014-2017. This reflects mainly student's opinion to lengthen their curricular 6-month traineeship into a 12-month program, converting a 5.5 years integrated master degree into a 6-year training period, either because they want to make the most of this opportunity to improve their skills or because they need to become more self-confident to fight for a job in a very competitive labour market. The overall impact of mentioned causes of attrition is ≈2.9 months.

- **the exclusion and appeal procedures:** The exclusion procedures are described on article 6 of IMVM regulation (Appendix 7). In summary, students with overdue US above 20 ECTS are not allowed to pass to next curricular year. Specific adjustments are taken into account whenever accreditation of prior training in other universities has been obtained.

The access to the curricular traineeship is restricted to students approved in all remaining US of IMVM *curriculum* (300 ECTS) though, exceptionally, students missing US corresponding to a maximum of 10 ECTS may start it if those US do not belong to the scientific area of the curricular traineeship they have applied for.

The appeal procedures are circumscribed to exam results of US and are fully explained on article 11 of the "Knowledge and competency assessment regulation and admission to final exam of the 1<sup>st</sup> and 2<sup>nd</sup> Cycles of Studies of FMV". Summing up, students who fail more than three times a US exam may, upon request addressed to PC President, appeal for the constitution of a special jury to repeat that exam. PC President will analyse each application together with the Study Coordinator of the respective scientific area and SC President. The decision shall be communicated to the applicant within a maximum of ten working days. In addition to the previously appointed examination jury, this special jury will also integrate the Coordinator of Studies of the scientific area of the US and a teacher member of PC of that scientific area, appointed by the PC President.

Finally, national legislation establishes the criteria for student time-barred, the act by which a student's enrolment is suspended for two consecutive semesters following repeated school failure. According to this Law the maximum number of annual registrations in the IMVM that a student may have is eight.

- **the advertisement to students and transparency of these criteria/procedures:** The previously mentioned exclusion and appeal procedures are advertised to students in different key-moments: (1) permanently on the webpage, submenu "Study/Masters/IMVM"; (2) at their first registration in FMV all freshmen receive a brochure with specific instructions to consult the academic degree regulations and to read the "Student Guide"; (3) PC asks for the SPC to communicate to students at the first theoretical class of each US the assessment methodologies that will be followed, as well as general course exclusion and appeal procedures.

### 7.1.6. Description of the services available for students

**The Academic Office, in close collaboration with PC and SC, manages student's registration and teaching administration.** Mentoring and tutoring is in place for all students enrolled in the Curricular Traineeship (11<sup>th</sup> semester). This is a duty of the Traineeship Committee shared with students, as in the vast majority of the situations (>99%) they propose their own external and/or internal supervisor. In cases of extramural traineeships, either domestic or abroad, the Traineeship Committee always assigns a co-supervisor among teachers of the Scientific Area of the topics to be covered by the student project. If a student does not propose any supervisor, then the Traineeship Committee will appoint one considering the traineeship scientific area.

**Careers opportunities guidance sessions are promoted once per semester by the Student Union initiative "Veterinarian, and now?"**, in which they invite professionals and companies from different areas of the Veterinary Sciences to share with students their experience and views on labour market trends.

**Listening and counselling is mainly a PC task**, for which students apply through email addressed to any member of PC requesting a meeting. Counselling is mainly focussed upon vocational skills, difficulty in dealing with the pressure and expectations of exams seasons, perception of injustice with exam results, and coaching for low-performing



students. The Mobility Office also participates in student's advice, namely concerning study abroad opportunities and student's exchange programs.

**Assistance in case of illness, impairment and disability is warranted by ULisboa Health Centre, including the Office of Psychological Support (GAP),** either at Ajuda Campus or at the main campus downtown.

**Clubs and organisations are managed by the Student Union** that hosts the following nuclei: Fauna; Buiatrics; Equidae; Bullfighting; Group of friends of faculty animals; VeTuna; plus several sports teams such as football, futsal, volleyball and basketball.

### 7.1.7. Prospected number of new students admitted by the Establishment for the next 3 academic years

**FMV aims to decrease the number of undergraduate students to further increase the quality of their education.** For this purpose, **the number of vacancies in special regimens was reduced over the last years** (less 6 in 2014/2015; 5 in 2015/2016, 3 in 2016/2017, and 5 in 2017/2018) (see point 7.1.2.).

As stated above (2.1.1.), the classification of veterinary students for state funding purposes was finally increased from U3 to U1, equivalent to that of Human Medicine, which implies a significant budget increment. However, the university stipulated that this increase will be reflected gradually, in a continuous 4% annual increase of the budget, which will delay its effects but will also allow for the reduction of students and/or the increase of teaching and support staff. If the budget reinforcement occurs faster the pace of this drop will be proportionally speeding up. In conclusion, **FMV has the prospect to decrease the number of students enrolled in IMVM for the next years until a total number of 100-110 students/year is reached**, to allow for an increase in quality of education and a better use of resources.

### 7.1.8. Description of how and by who the admission procedures, the admission criteria, the number of admitted students and the services to students are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

As stated above (7.1.2.), **admission procedures and admission criteria are established by national legislation and accomplished by the General Directorate of Higher Education (Ministry of Education).**

**FMV only contributes to this process by defining:** number of vacancies, national exams candidates must overcome; weighting applied to final grades obtained in secondary education and national exams. These options are discussed in SC, taking into account available educational resources (facilities and equipment, staff, healthy and diseased animals, material of animal origin, etc.), biosecurity and welfare requirements and the budget estimate for the following year, and proposed to Dean and School Council for final approval.

**Following approval, these vacancies, criteria and procedures are advertised** as described above (7.1.1.) **and communicated internally to staff and students.**

**Several services have been created and are made available to the students by ULisboa** (welfare services, medical assistance, financial aid and scholarships, sports and cultural activities, etc.), **by FMV** such as PC (pedagogic issues, day-to-day coaching to students, etc.), **Academic Division** (administrative procedures) and **Mobility Office** (organization of student arrival and leaving procedures; advise on language courses, assistance in accommodation), **and FMV Students' Union** (organization of cultural, sportive and out-of-class activities, welcoming events, academic traditions, etc.). **All these services are communicated through the websites ([www.ulisboa.pt](http://www.ulisboa.pt) and [www.fmv.ulisboa.pt](http://www.fmv.ulisboa.pt)) and social networks.**

**Table 7.1.1. Number of new veterinary students admitted by the Establishment**

Type of students	2016-17	2015-16	2014-15	Mean
Standard students	124	129	133	128.7
Full fee students	0	0	0	0
Total	124	129	133	128.7

**Table 7.1.2. Number of veterinary undergraduate students registered at the Establishment**

Year of programme	2016-17	2015-16	2014-15	Mean
First year	131	132	132	131.7
Second year	118	141	134	131.0
Third year	156	132	136	141.3
Fourth year	136	156	146	146.0
Fifth year	145	148	154	149.0
Total (without final traineeship/EPT)	686	709	702	699.0
Sixth year (final traineeship / EPT)	236	216	225	225.7
Total including EPT	922	925	927	924.7

**Table 7.1.3. Number of veterinary students graduating annually**

Type of students	2015-16	2014-15	2013-14	Mean
Standard students	106	113	70	96.3
Full fee students	0	0	0	0
Total	106	113	70	96.3

**Table 7.1.4. Average duration of veterinary studies**

Duration	% students graduated on 2016	% students graduated on 2015	% students graduated on 2014	Mean
+ 0**	44	14	37	31.7
+ 1 year	36	61	57	51.3
+ 2 years	10	13	6	9.7
+ 3 years or more	9	12	0	7.0

\*\* The total duration of the studies is 6 years

**Table 7.1.5. Number of postgraduate students registered at the Establishment**

Programmes	2016	2015	2014	Mean
Master in Food Safety	37	37	22	32.0
Master in Zootechnical Engineering	24	29	27	26.7
Master in Microbiology	26	14	22	20.7
PhD students	45	59	66	56.7

## 7.2. Comments

Comments have been added in each of the previous factual information points presented above and due to document length constraints are not repeated here.

## 7.3. Suggestions for improvement

On the last meeting of the **Advisory Board**, external members suggested to include a vocational test in the criteria access to IMVM. This suggestion will deserve our best attention. However, according to legislation, this component would have a low weight in the final grading, being also important to mention that vocational tests are very complex to design and time consuming.





# 8. Student assessment

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## 8. STUDENT ASSESSMENT

### 8.1. Factual information

#### 8.1.1. Description of the global student's assessment strategy of the Establishment

**There are no examinations concerning theoretical topics during the class period not to disturb students' focus and learning flow.** Therefore, the theoretical component of the teaching-learning model is exclusively evaluated in final exam.

**Practical exams are carried out before or after the theoretical exam** according to SPC criteria previously communicated to students. They are usually oral and involve the demonstration of skills and deductive, inductive and abductive reasoning. Some US carry out written exams regarding practical aspects of their training. The practical component may also be assessed through quizzes at the end of each topic or requesting additional evaluation elements, such as reports, essays, descriptions of clinical cases, individual or group presentations. These interim practical assessments take place during the semester and exempt students from part of the topics listed for final practical exam. The component of the teaching-learning model regarding the acquisition of practical skills by students is daily assessed by attesting their achievement in the logbook and through final practical exams. This methodology reduces the number of days dedicated to practical exams in each exam season.

**The offer of final examinations is subject to the national legislation, which establishes three examination seasons: Normal, Appeal and Special. Examination seasons are defined by PC and included in the Academic Calendar.** The participation of students on the setting of exams schedule and sequence in each season is relevant as exam calendars are proposed by students year delegates to teachers and finally to PC by student year representative. Then the members of PC analyse, debate and approve the final version of exam calendars for all seasons.

**The Normal and Appeal Seasons occur at the end of each semester. The Special Season takes place during the first two weeks of September, according to the schedule announced in the Academic Calendar.** Apart from final-year students, it provides a third opportunity to groups of students with special statutes under Portuguese legislation or by ULisboa regulations: working students; finalists; students on international mobility programs; students members of the ScC and PC; students under maternity or paternity leave; high performance athletes, etc..

There are no limitations for the number of exams students can take in Normal Season. In Appeal Season, students can only take exams for US that make up to 20 ECTS. The same limit applies to Special Season, except for final-year students that may carry out examinations to US that make up to 30 ECTS. Working students are free from these restrictions due to specific legislation.

**Examination panels of the US are approved by SC,** on the proposal of the respective Department, chaired by the SPC and composed by a minimum of three teachers.

#### 8.1.2. Description of the specific methodologies for assessing theoretical knowledge, pre-clinical practical skills, clinical practical skills

**Theoretical knowledge is evaluated in final written exams.** Generally, exams are composed of several sections and different types of questions: (i) true or false, multiple-choice, short-answers; (ii) open-ended answers with limited writing space; (iii) 1-2 page essays. PC recommends this format to the Study Coordinator that discuss and monitor it at departmental level. The aim is to safeguard that students develop good writing skills that are a very important part of communication, and prevent students from being mostly evaluated by true-false or multiple-choice questions due to easy scoring.

**Therefore, in Part 1 of the written exam, true-false, multiple choice or short-answer exam questions** are used to test recall, comprehension of simple logic or understanding. Wrong answers may or may not be subject to a penalty. Multiple-choice questions usually involve a phrase followed by three to five options. Short-answer exam questions generally also require students to remember and reproduce knowledge rather than interpretation. The length of short answers on the IMVM is quite flexible. It ranges from one word, to a phrase, to a sentence or to a paragraph. Then, **in Part 2 of the written exam, open-ended questions with limited writing space or 1-2 page essays** are frequently used to test the student's ability to read or interpret complex sentences or understand and describe complex problems. Open-ended questions help students build confidence by problem solving are more adequate to assess students' reasoning ability, their level of achievement and the quality of teaching; but the most important benefit is promoting profound learning.



**The acquisition of pre-clinical skills is assessed on a daily basis**, both in conventional practical classes by teaching staff of each US and at VTH by teachers and veterinarians who record in each student's **logbook** the successful completion of required competences, **and by a practical final exam. The acquisition of clinical competences is monitored and evaluated daily**, during clinical rotations activities at VTH and in Ambulatory Clinics by teaching staff and veterinarians that record in the logbook of each student the successful accomplishment of clinical competencies.

### **8.1.3. Description of the assessment methodology to ensure that every graduate has achieved the minimum level of competence, as prescribed in the ESEVT Day One Competences**

**The IMVM study plan is designed to ensure that all FMV graduates have the knowledge and skills to accomplish the ESEVT Day One Competences.** To cope with specific Clinical Sciences ESEVT Day One Competences, each clinical US has specified which preclinical competencies students should master, and each preclinical US listed which core competencies students should develop in the first two years of the course. This ongoing dynamics of competency learning is discussed and applied at departmental level, and it is the responsibility of Study Coordinators of the Animal Health and Clinical scientific areas to monitor the syllabus and evaluation methods in order to achieve these objectives. It is also safeguarded that the competency assessment strategy is adapted to the teaching-learning method. Therefore, as in the clinical US, teaching and assessment of clinical competences are evidence-based upon real clinical cases of VTH or Ambulatory Clinics.

**With regard to development and assessment of specific competences of the scientific areas of Animal Health, Animal Production and Food Safety**, required by the ESEVT Day One Competences, **an inter-departmental work is carried out, evaluated and upgraded annually by the Study Coordinators, in order to apply the “One Health” concept** as an anchor of the teaching-learning model in a wide range of US of these 3 scientific areas, enhancing the collaborative efforts of multiple US and their interactions. Therefore, at this multilayer level of training and competences development, the assessment is dual, focusing on general and specific competences of each US. Consequently, student assessment makes use of numerous alternatives, from individual oral practical exams in the laboratory, to final written theoretical-practical exams, to individual or group essays, writing reports and technical opinions, presenting short communications based on bibliographic research in simulated international congress formats, to case-based assessment or computer-based assessment.

**Concerning the assessment of Basic Sciences ESEVT Day One Competences, its main focus is to evaluate student’s knowledge on structure, function and behaviour of animals and their physiological and welfare needs.** This multi-step knowledge and competence development is planned at departmental level. It is the responsibility of the Study Coordinator for Basic Sciences to monitor the various syllabus and their evaluation methods, in order to reach these aims, and to promote inter-US interactions and coordination. As the most frequent teaching-learning method in the 1<sup>st</sup> and 2<sup>nd</sup> year is based on lectures, laboratory and non-clinical work, this scenario is reflected on ESEVT Day One Competences assessment, relying predominantly on final written theoretical exams and individual oral practical exams in laboratories and dissection rooms. However, with the agreement and supervision of the Study Coordinator and PC, in some strategic US students are already fully or partially evaluated by e-learning methods, and by critical reading of scientific papers, written reports and summaries, and individual or group essays.

### **8.1.4. Description of the processes for:**

- **ensuring the advertising and transparency of the assessment criteria/procedures:** The examination seasons are announced in July of the previous academic year. The calendar of exams of the Normal and the Appeal Seasons, for the US of the 1<sup>st</sup> semester and the 2<sup>nd</sup> semester, is worked out by PC and disclosed in September in the faculty website, in each year's folder in Moodle and posted in a notice board next to the Academic Office. The calendar of exams of the Special Season is published in July and covers US of 1<sup>st</sup> and 2<sup>nd</sup> semesters. The Normal Season of 1<sup>st</sup> semester for compulsory US take place in January, the Appeal Season in February. The Normal Season of 2<sup>nd</sup> semester for compulsory US take place in June, the Appeal Season in July. The evaluation of elective US follows another scheme because as they are clustered in seven consecutive days, their evaluation takes place on the last day of classes. The assessment of 1<sup>st</sup> semester elective US takes place at the end of the 2<sup>nd</sup> week of December. The assessment of 2<sup>nd</sup> semester elective US takes place at the end of the 3<sup>rd</sup> week of February. Again, all these dates are advertised in the faculty website, on each year's folder in Moodle and posted in a notice board next to Academic Office.

- **awarding grades, including explicit requirements for barrier assessments:** Only those students who have attended at least 4/5 of practical and theoretical-practical classes of the US are admitted to final exam. For this purpose, attendance registration in practical and theoretical-practical classes is compulsory.



In all written and oral examinations, the minimum approval grade is 10 on a scale of 0 to 20. Whenever requested to students, additional assessment elements (reports, essays, descriptions of clinical cases) should have a minimum weight of 20% of the final mark. The final classification is the weighted average of results obtained in theoretical exam, practical exam and in any other elements required for evaluation. The coefficients to weight each exam are presented to students in the first theoretical class of each US and are stated in the short syllabus of each US on faculty website.

**- providing to students a feedback post-assessment and a guidance for requested improvement:** Classifications obtained in examinations of Normal Season must be published on a provisional list in Moodle, within a maximum period of 10 days, from the date of the examination. The grades obtained in examinations of the Appeal Season of the US of the 2<sup>nd</sup> semester should be available on a provisional list in Moodle until 27<sup>th</sup> of July. In the case of practical oral exams, the Regent publishes a provisional list in Moodle at the end of each day of practical exams.

Students have the right to consult their written examinations in the three days following the publication of results, at a time to be defined and publicized by the US Regent. During these sessions the Regent gives students guidance for requested improvement that may involve supervised self-learning or, for instance, clinical animal extra training at VTH or Ambulatory Clinics, during evenings, weekends and holidays. Finally, up to 72 hours after the end of exams' consultation period, the Coordinator shall enter the final classifications in the academic electronic system (FenixEdu), print the list, have it signed by US teachers and send it to the Academic Office.

**- appealing:** If the student continues to disagree with the grade, after receiving feedback post-assessment by the US Regent or SPC, she/he may present a complaint to the PC President, who, together with the Coordinator of Studies of the scientific area and SC President, will analyse it and inform the applicant of their decision within a maximum period of 10 days.

Moreover, students who have failed more than three times to a US may, upon request addressed to the PC President, appeal for the constitution of a Special Jury to repeat that exam. The PC President analyses each application together with the Study Coordinator of the respective scientific area and the SC President. The decision shall be communicated to the applicant within a maximum of 10 days. In addition to the previously appointed examination panel, the Special Jury includes the Coordinator of Studies of the scientific area and a member of PC of that Scientific Area, appointed by the PC President. The Special Jury is approved by SC and the examination is carried out during official seasons.

#### **8.1.5. Description of how (procedures) and by who the student's assessment strategy is decided, communicated to staff, students and stakeholders, implemented, assessed and revised**

**FMV statutes assign to PC the responsibility for the guidance of the pedagogic policy of the faculty**, namely the promotion and evaluation of guidelines, methods and results of teaching activities, ensuring the smooth running of the programmes, their quality and relevance, and career prospects, beyond implementing, monitoring and communicating strategic options of the ScC and Dean. The overall student assessment strategy is discussed first in each US by teaching staff, then at departmental level where it is structured by the Study Coordinator, and finally by PC and SC. It is the competence of PC to ensure the existence of a fair and rigorous student assessment system of knowledge and competences, capable of guiding the study and the training of students to the achievement of the programmes general and specific learning objectives, rewarding the effort of the most diligent students. In the case of the IMVM, the diversity and novelty of the global student assessment system should ensure the achievement of ESEVT Day One Competences.

**The implementation and monitoring of student assessment system of knowledge and competences is a task of PC**, which requests to Academic Office at the end of each semester the submission of indicators by US (approval and failure rates; average grades of theoretical and practical exams, etc.). These indicators are then discussed and analysed at PC. Deviant cases are discussed with the SPC of these US and their Coordinators of Studies. Remedial measures are decided, implemented and monitored in the following academic year. A trio consisting of 1 teacher member of PC, 1 student member of PC and the Student Delegate of that US, is constituted to monitor the implementation and efficacy of new policies that are revised annually by PC. The Scientific Committee of each programme is informed of these situations, the corrective measures that were implemented and the results obtained.

## 8.2. Comments

The fairness and accuracy of the **FMV students' assessment system of knowledge and competences has improved over the years and achieved a high standard**. It is a fact that IMVM exams take up a lot of time of the academic year (4.5 months - January, February, June, July and the 1<sup>st</sup> fortnight of September) but this gives teachers the necessary time to carry out practical individual exams, which are one of the best ways of assessing the acquisition of pre-clinical and clinical skills. This assessment system grants to every student a double opportunity to try to obtain approval in a US, also allowing a period of 14 working days in the academic year for the lecturing and evaluation of electives. **It has the advantage of training students in various models of evaluating knowledge and skills, ranging from conventional theoretical written exams and oral exams to the use of e-learning methods, case-based assessment or clinical case reports and discussion**. Moreover it is current practice for students to ask feedback post-assessments and guidance for improvement to US Coordinators. In addition, a few students use appeal mechanisms at all seasons of exams, proving that the system works. Its time of response was also enhanced since the establishment of strict deadlines in the last revision of the "Knowledge and Competency Assessment Regulation and Admission to final exams of the 1<sup>st</sup> and 2<sup>nd</sup> cycles of studies of FMV" in 2014.

## 8.3. Suggestions for improvement

Limitations on the number of teachers, due to financial constraints, made it very difficult to improve the support for students who do not perform adequately, namely individual coaching with appointed tutors, although this would be very beneficial for at-risk students. While teaching-assessment models based on PBL and CBL are widespread, **the use of e-learning is still scarce and should be increased**, namely on Basic Sciences US. An improvement would also come out from **converting paper based theoretical examinations into individual computer based examinations** that would be environmental-friendly and allow for a faster correction. Financial appraisal of this option is under assessment.





9

*Academic and support staff*



## 9. ACADEMIC AND SUPPORT STAFF

### 9.1. Factual information

#### 9.1.1. Description of the global strategy in order to ensure that all requested competences for the veterinary programme are covered and that staff are properly qualified and prepared for their roles

As stated above (e.g. 3.1.1., 3.1.3.), the list of competencies that graduates in Veterinary Medicine should hold at time of graduation was approved by the SC on 10<sup>th</sup> May 2000, and revised on 30<sup>th</sup> July 2014 for the masters in Veterinary Medicine (Appendix 9), considering European guidelines and recommendations resulting from national and international evaluations that IMVM has undergone. In the same way, in 2014, a logbook was adopted to record and attest pre-clinical and clinical training and skills of students, complementing the evaluation system in place for each UC (see 3.1.9.).

**There are several levels and bodies in place to ensure that all competences are covered.** The SPC of each US and the Study Coordinator of each scientific area monitor and update teaching syllabuses and pedagogic methods, ensuring that those competences are reached. They communicate any problems to the Scientific Committee of IMVM and/or the SC and PC. Regularly, these aspects are discussed at the Scientific Committee of IMVM and solutions adopted or proposed to the Dean.

**The qualification of the teaching staff is a main priority.** Currently, 94% of teachers hold a PhD degree in Veterinary Sciences and 87% are at full time, ensuring they have time to teach, assist students, upgrade knowledge and conduct research. The renewal of teaching staff is taking place through contracting new teachers in international recruitment calls (in force with national legislation), with well-defined criteria, aiming at selecting individuals with a PhD degree in the area, good *curricula vitae* and whenever possible, with Veterinary Specialist diplomas.

**The pedagogic quality of teaching and assessment is promoted by PC that recommends and discloses pedagogic courses organized by the ULisboa and other universities, new teaching methodologies, and new teaching and assessment new equipment.** For instances, PBL methodology was introduced several years ago in some US (mainly in Clinics), stimulating new approaches and student's curiosity. The e-learning platform (MOODLE) facilitates the communication between students and teachers, the delivery of bibliographic support and other learning resources, quizzes assessment, and other e-learning pedagogic tools. Other more advanced e-learning resources are also available from the university. All staff (teaching, research, support) and students have free access to bibliographic research databases allowing quick and easy access to the latest scientific information.

**Biosecurity is another important aspect with which we are committed.** From long ago, FMV has a full-time biosecurity technician that ensures rules compliance. Students and staff are aware of biosecurity guidelines and so facilities, equipment and animals are safely used and handled.

**QA procedures on teaching quality are followed since a long time ago.** From 1991, PC conducts inquiries to students about the functioning of the study programme and its US, and on the pedagogic performance of teachers. These inquiries are important tools to identify problems and promote continuous improvement. The results of those inquiries are taken in consideration on teachers' performance evaluation system, in force since 2010.

#### 9.1.2. Description of the formal programme for the selection, recruitment and training to teach and assess students of the academic staff

Through the structures and mechanisms already described, **each scientific area identifies the need to appoint a teacher to a specific US**, for instance due to teachers' retirement, introduction of new subjects as a result of syllabus update, or the need to promote interaction with others US to enhance students development of transdisciplinary skills. The scientific area makes a proposal for a new teacher, who often begins as an invited teacher (part-time) in order to demonstrate his/her suitability for the desired position. The new contract is proposed to SC based on a report referring the reasons of the specific need, including the opinion of two teachers of the area. In case a full-time contract is needed, the scientific area proposes the opening of an international call for assistant teacher, specifying the criteria to be used in the selection and indicating the composition of the selection panel, in accordance with the legislation in force. In both situations, **SC analyses the proposal and, if approved, makes a proposition to the Dean.**

**New teachers are integrated in the US teaching team, who will support them in the preparation of classes and in the assessments of students.** The Study Coordinator will monitor the integration process. Nowadays, new teachers usually have already some experience in teaching, but pedagogic courses organized by ULisboa are used to reinforce



teaching competences. Subsequently, the opinion of students expressed in inquiries performed by PC will help to identify specific pedagogic training needs.

**Teachers are also encouraged by PC and their Study Coordinators to assist to refreshing or LLL courses in a perspective of their continuous education.**

**After being recruited, new teachers are integrated into the teaching team of a US.** Each US has a SPC, proposed by the respective Department and approved by SC, who is responsible for the integration, training and follow-up of the new recruited teachers, including the assessment of knowledge and competences skills. **In the 1<sup>st</sup> year of collaboration, the SPC assists the new teacher in the preparation of teaching-learning materials and questions for written exams, attends theoretical classes, co-teaches practical classes, and co-evaluates themes of the practical syllabus.** This methodology allows the SPC to integrate gradually the new teacher into the team and the teaching-learning environment that is set up, to guide and correct any deficiencies of the new teacher and to identify what kind of training courses offered by ULisboa the new teachers must attend to improve and to expand their skills. **From the 2<sup>nd</sup> to the 5<sup>th</sup> year of teaching the SPC maintains the measures of support and supervision, safeguarding increasing space for the empowerment of the new teacher** and suggestions for syllabus updating, evaluation methods, integration of research and services outputs into the teaching dynamics, etc. At the end of 5<sup>th</sup> working year, teacher must write an activity report that is evaluated by SC, after which the teacher training period is considered to be completed. The teacher then signs an undefined period contract or, otherwise, if expected levels of performance have not been reached, the contract is not renewed. SPC of the US, the Head of the Department and the PC President take part in this decision process.

### **9.1.3. Description of the formal programme for the selection, recruitment and training to perform their specific duties of the support staff**

**Support staff is recruited according to needs and financial availability.** Calls are open with well-defined selection criteria and evaluation panels, seeking to select the best *curricula*, both in terms of training and experience. After selection, they integrate the working team that helps them to become acquainted with the faculty and perform their specific duties.

**VTH veterinarians attend PC training seminars, specifically designed to improve their techniques of communication with students, and to assess students' performance in the logbook.** If interested in reinforcing and / or expanding their abilities, **support staff may also attend training courses** offered by ULisboa.

### **9.1.4. Description of the formal programme for the appraisal, development, promotion criteria and procedures, supporting and mentoring of both academic and support staff**

According to the specific legislation and regulations of ULisboa and FMV, **teachers are evaluated according to a system which aims to guide their performance, to improve the quality and the enhancement of their skills, urging their dedication, commitment and continuous knowledge updating, rewarding the merit with awards and career progressions.** This system:

- a) Defines the parameters and evaluation criteria for each component of the teachers' work;
- b) Defines the rules for setting performance benchmarks, through goals and upper limits set for each scientific area;
- c) Specifies the evaluation function, the relative weight of the evaluation criteria for each component and the relative weight of each component in the combined components of the teachers' activity;
- d) Defines the methodology to estimate the final grade and the corresponding qualitative classification of the performance assessment.

**The classification on the top grade (Excellent) in two successive 3-year periods should imply an increase of the salary in one step within the category to which the teacher belongs** (Full, Associate or Auxiliary Professors; each category has 4 steps). The requirements to achieve each grade increased after each evaluation period. For further details see Appendix 13.

**Regarding the support staff, the official assessment system for the majority of public workers (SIADAP- Integrated System of Management and Performance Assessment in Public Administration) was established in 2004, and reviewed in 2007.** This system focus on the results of performance evaluation of leaders (SIADAP 2) and employees (SIADAP 3) which depends on defined objectives for each working position and the degree of their accomplishment, compelling the performance assessment of employees, managers and services.

**The consequences of SIADAP evaluation is the change in remunerative position in a category,** as a rule, to the position immediately above, depending on the result of performance evaluation, or to an even higher position where the reward of a performance with merit is intended.



However, for both evaluation systems, teachers and support staff, in the face of the economic crisis that Portugal has gone through, government decided in 2011 to implement significant wage cuts and to suspend all career progressions. Those wage cuts were only progressively removed since 2016 and the reintroduction of career progressions and merit awards starting in 2018 is now under discussion.

#### **9.1.5. Description of the formal rules governing outside work, including consultation and private practice, by staff working at the Establishment**

**According to Portuguese legislation, teachers should carry out their duties in full-time and under exclusive dedication. At their request, they can also perform their duties in just full-time regime without exclusivity.** The regime of exclusive dedication implies the renunciation of the exercise of any remunerated function or activity, whether public or private, including the practice of liberal professions. However, there are some exceptions to this rule, such as the remuneration of copyright; conferences, lectures, short courses, travel expenses, functions in bodies of the FMV, and participation in evaluations and selection boards. The full-time regime corresponds to 35 hour working week. In both cases, any accumulation with other functions, whether public or private, remunerated or unpaid, requires prior Rector's authorization. Teachers on exclusive dedication earn more 33% than teachers in just full-time, in equal category.

**Support staff is hired on a full-time regimen, without exclusive dedication. Any accumulation with other functions, whether public or private, remunerated or unpaid, requires Dean's prior authorization.**

#### **9.1.6. Description of the formal programme of the Establishment for the assessment of teachers by students and its outcome**

**Since 1991, PC conducts inquiries to students about the functioning of the study programme and its US, and concerning pedagogic performance of teachers.** Teachers are evaluated in different items: attendance, punctuality, exposition clarity, exposition certainty, capacity to stimulate interest, availability to students, development of reasoning / critical thinking, and overall assessment.

**The results of these inquiries are sent to and analysed by PC, SC and Dean.** They are key documents for internal control of teaching quality patterns as they allow for early identification of irregular working of certain US. To investigate and to amend these situations, PC meets with the US students' delegate, the student delegate of that year, the US PSC and the Study Coordinator of the scientific area where that US is located. This "quadrumvirate" solves the majority of these pedagogic failures. The SC and the Student's Union are involved in the discussion and decision-making of complex cases. These procedures are consolidated and they promote student involvement on the continuous improvement of the teaching/learning process. Thus, they are considered by all school bodies of utmost importance.

**The results from these inquiries are also valued on teachers' performance assessment described above.** Students' appraisal of teachers averaged 4.13, on a scale of 0 to 5, in the three-year period 2014 to 2016 (4.12 in 2014, 4.12 in 2015, 4.14 in 2016), which is a very good indicator of overall teacher quality and of the friendly teaching-learning environment that is experienced and cultivated in the faculty.

**Up to now, the inquiries have been filled by the students anonymously and in paper at the end of the US, preferably during practical classes to ensure high adherence.** Although not compulsory, the proportion of students filling up inquiries has been rather high (>70%). The paper method and interpretation of results are both time consuming and expensive as special OCR equipment is required to read the inquiry sheets. Other ULisboa schools recently moved to on-line enquiry but they are reporting a substantial drop in the proportion of students that complete the inquiries. **PC is also implementing an on-line enquiry to allow for automatic data storing and faster data analysis,** but is working close to students to avoid significant decrease of their participation.

#### **9.1.7. Prospected number of FTE academic and support staff of the veterinary programme for the next 3 academic years**

**To further rise the quality of veterinary education, FMV aims to increase the number of academic and support staff but, especially, decrease the number of undergraduate students since a lower number will suit better FMV facilities and laboratory and clinical rotations.**

**For the next three academic years, FMV intends to continue appointing new teachers, all with a PhD degree, a good *curricula* and, preferentially, with a Specialist diploma to renew the teaching staff,** since some teachers will soon retire and the average age is high (52.2 years). Part of these calls will be directed to hire invited teachers that have demonstrated their quality and deserve an opportunity to join the academic career. At the same time, it is vital to open calls for career promotion, rewarding those with highest merit. This effort must be carried out in a concerted way, since all calls are mandatorily international in scope and financial resources are scarce.



**Introduction of a system to train Interns and Residents will also be implemented**, as part of a strategy to boost VTH dynamics and more specialized services, important for the attraction of more referral cases and, thus, contributing to improve training quality.

In conclusion, for the next 3 academic years the prospective number of FTE academic and support staff of the veterinary programme are:

Type of contract	2017/18	2018/19	2019/20	Mean
Academic staff (FTE)*	99	100	101	100
Interns (FTE)	2	4	6	4
Residents (FTE)	1	2	3	2
Support staff	83	84	85	84
Total (FTE)	185	190	195	190

\*Include teachers, VTH veterinarians, researchers and technicians with PhD

### 9.1.8. Description of how and by whom the strategy for allocating, recruiting, promoting, supporting and assessing academic and support staff is decided, communicated to staff, students and stakeholders, implemented, assessed and revised

As referred above (e.g. 9.1.2., 9.1.3.), the main structures responsible for detecting any shortcomings or weaknesses in human resources available are, primarily, the SPC of the US and the Study Coordinator of the scientific area, the Departments and the PC. The SC has also an annual opportunity to assess human resources adequacy when it receives Departments’ proposals for the distribution of teaching load amongst teachers. As regards to support staff, departments manage all human resources, requesting any changes or reinforcements to the Dean when necessary. **Once the need is identified, and financial availability confirmed, the recruitment is promoted by a public call, with straightforward and clear rules, defined in the legislation.** In the case of teachers, the SC defines the terms of the call, namely admission requirements, selection criteria and jury. In the case of support staff it is the Management Council that establishes those parameters.

**Performance of teachers and support staff is assessed through official evaluation systems** (see 9.1.4.) which must recognize and reward merit through wage progression. Unfortunately, although those evaluations have been performed, it was not possible to draw the expected consequences since in 2011 the government has decided to suspend all wage increases.

**The other promoting component in teacher’s career is the progression in categories: Auxiliary, Associate and Full professor. SC promotes a regular (annual) analysis, comparing the 5 scientific areas regarding:**

- a) Higher number of internal candidates with a *curriculum* of high merit;
- b) Lower number of Full and/or Associate professors in the area;
- c) Longest period without opening calls in the area.

**When financial support is available, SC proposes to the Dean opening a call in a specific scientific area for the category of Associate or Full professor**, with well-defined criteria and panels composed mostly by members external to FMV. These calls have not been suspended over the last years, but the corresponding salary increase was hindered.

**All these systems of performance assessment and career progression are official and well-known of staff and published in the official government journal.** Calls are also obligatorily advertised in several official websites (Public Employment Board, EUcareers (<https://epso.europa.eu/>), FMV website).

**Table 9.1.1. Academic staff\*\* of the veterinary programme**

Type of contract	2016-17	2015-16	2014-15	Mean
Permanent (FTE) *	67	63	61	63.7
Temporary (invited)	5.7	7.9	5.8	6.5
Interns (FTE)	0	0	0	0
Residents (FTE)	0	0	0	0
PhD students (FTE) **	0	0	0	0
VTH Veterinarians (FTE)	25	23	22	23
Total (FTE)	97.7	93.9	88.8	93.8

\*Include teachers, researchers and technicians with PhD

\*\*PhD students are not generally included in the academic staff; only a few participate in a very limited way in the veterinary programme.

**Table 9.1.2. Percentage (%) of veterinarians in academic staff**

Type of contract	2016-17	2015-16	2014-15	Mean
Permanent (FTE)	94.9	94.7	94.7	94.7
Temporary (FTE)	0	0	0	0

**Table 9.1.3. Support staff of the veterinary programme**

Type of contract	2016-17	2015-16	2014-15	Mean
Permanent (FTE)	82	79	73	78.0
Temporary (FTE)	0	0	0	0
Total (FTE)	82	79	73	78.0

**Table 9.1.4. Research staff of the Establishment**

Type of contract	2016-17	2015-16	2014-15	Mean
Permanent (FTE)	8	8	6	7.3
Temporary (FTE)	2	2	2	2.0
Total (FTE)	10	10	8	9.3

## 9.2. Comments and 9.3. Suggestions for improvement

In the last decade, FMV made a huge effort to raise funds from less traditional sources, in particular the VTH, which allowed to maintain the quality of education and, in particular, the appointment of invited teachers, veterinarians and nurses to work at VTH. Thus, although this is not the ideal solution due to particular requirements of career and functions, invited teachers and VTH veterinarians allowed for a quality increase on students’ clinical training and to reach adequate ratios. The positive response to longstanding demand for equivalent funding to Human Medicine education will certainly allow employing more teachers and the renewal of the faculty staff.

The weak age stratification of faculty teachers and support staff results from the irregularity of the appointing process, dictated by the aforementioned budgetary or legislative restrictions, aspect that we hope to resolve, in part, due to anticipated reinforcement of public funding.

**Scarce performance incentives for teachers and other staff should also be solved**, in whole or in part, over the next few years as a result of the announced reinforcement of public funding and the loosening of limitations to update salary positions, given the expected improvement of Portuguese economy and public finances.







**10.** *Research programs,  
continuing and postgraduate education*

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## 10. RESEARCH PROGRAMMES, CONTINUING AND POSTGRADUATE EDUCATION

### 10.1. Factual information

#### 10.1.1. Description of how the research activities of the Establishment and the implication of most academic staff in it contribute to research-based undergraduate veterinary education

As stated in its mission, **FMV aims to be an internationally recognized institution of excellence in veterinary education and research, permanently adapted to the needs of society, contributing for the advancement of the frontiers of knowledge.** The general objectives of FMV are to promote an adequate research-based medical and veterinary practice that enables students to diagnose and treat sick animals and to contribute to animal production in an environment of comfort and welfare, to protect humans from zoonosis and to ensure high-quality animal products for human consumption. Thus, **FMV teaching is based on the principles and methods of scientific research**, practiced by its teachers and researchers, stimulating the contact of students with these activities since their 1<sup>st</sup> year and showing them how knowledge is built.

**With the purpose of developing and coordinating R&D activities conducted at FMV, an interdepartmental research centre was formed in 1992, the Centre for Interdisciplinary Research in Animal Health (CIISA).** CIISA's activities are in accordance with Europe's increasing concerns with animal health related issues that have considerable impact on global economy and public health and also with general claims for development of novel environmentally sustainable systems for animal production and agriculture. Along 25 years of activity, high quality fundamental and applied multidisciplinary research has been pursued with major impacts on veterinary sciences at scientific, economic and social levels. Contributions to improve animal and human quality of life, under the "One Health" concept, are noticeable through the development of novel strategies for diagnosis and therapeutics, innovative biotechnological products, sustainable production systems and safe animal products of high quality.

**CIISA has been the research face of FMV in the last 25 years, applying successfully for pluri-annual research funding from the relevant government institution, the Foundation for Science and Technology (FCT).** CIISA supports, among others, research projects associated with exploratory research lines, which are not easily funded by external institutions. CIISA also promotes publication of research results and communications presentation by its researchers in scientific meetings, supporting registration, travelling and accommodation expenses. **International panels regularly evaluate CIISA activities, which has been ranked by the FCT with "Very Good".**

**CIISA currently has 158 members, including 105 PhD entitled researchers, 44 PhD students, 9 technicians and a financial and communication office.** PhD entitled researchers are mainly FMV teachers and researchers, but CIISA also hosts 24 external invited researchers. **Nowadays, CIISA is organized into two major research groups, each developing two main thematic lines:**

**a) Animal Health and Veterinary Medicine:** Disease surveillance, prevention and control towards a sustainable animal health; and Clinical research towards novel diagnosis and therapeutic strategies

**b) Animal Science and Food Safety:** A sustainable Animal Production for the 21st century; and Advanced food processing, quality and safety: new challenges

**Research is mainly funded through national and international projects attracted by CIISA researchers from very competitive programmes.** The implementation of these projects allows students to engage in more or less complex activities, from the visit to the laboratory and brief understanding of the project, to the voluntary collaboration in laboratory activities or in a curricular traineeship with the consequent thesis preparation. Some international projects with European partners have even allowed small internships in foreign laboratories, some with the help of mobility programmes, constituting a very rich experience in students training. **To promote research activities among students and attract them to research, CIISA yearly launches a call for funding 12 IMVM research thesis.** Several students' thesis whose traineeship occurs at FMV is performed within the scope of CIISA's research lines. Some of these students later enrol in a doctoral program or start a research career with a research initiation grant.

#### 10.1.2. Description of how the postgraduate clinical trainings of the Establishment contribute to undergraduate veterinary education and how potential conflicts in relation to case management between post- and undergraduate students are avoided

VTH and associated laboratories are attended by students of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> curricular years, trainees (6<sup>th</sup> year of IMVM), PhD students and Postdoctoral researchers. **Student's collaborative learning is a PC and VTH Board policy.** The aim is encouraging students to reach out to each other to solve clinical problems and share knowledge because not only builds collaboration skills, it leads to deeper learning and understanding. Three brief examples of this policy:



(1) PhD students or Postdoctoral researchers give **seminars** about their research projects in some mandatory US of IMVM but specially in **electives**; (2) VTH trainees are integrated in undergoing VTH research projects where Postdoctoral researchers and PhD students help their colleagues to improve their clinical and/or laboratory expertise necessary for their **thesis**; (3) trainees and 5<sup>th</sup> year students help their 3<sup>rd</sup> and 4<sup>th</sup> year colleagues in **high-risk interventions** such as preparing animals for surgery or life support measures. Patient's integrity and wellbeing are always safeguarded and increased attention is given to minimize clinical errors. **All student's collaborative activities take place under supervision of a veterinary or a nurse.**

**VTH Board allows students access to QVET electronic patient record system in accordance with their needs.** Trainees, PhD students and Postdoctoral researchers' supervisors, monitor their activities and solve any conflict at first instance. **Serious conflicts, in relation to case management, forcing PC to make internal enquiries and to apply disciplinary proceedings are rare.**

### 10.1.3. Description of how undergraduate students are made aware of the importance of evidence-based medicine, scientific research and lifelong learning

**Veterinary Sciences are based on knowledge arising from scientific research and evidence-based medicine, and, consequently, their teaching is permanently linked with scientific activities.** Teachers use in classroom, results obtained in their research projects, and the collaboration of CIISA researchers and VTH veterinarians in seminars, practical classes and coaching of small groups or individual students is common, allowing them to show innovative techniques being used or developed.

**There is a permanent stimulus for students to develop their scientific interests**, early from the 2<sup>nd</sup> year of IMVM at Complementary Activities III and IV, when they visit research labs in small groups according to a defined schedule, and **meet researchers and the research lines of CIISA.** During the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> years and on the curricular traineeship, **students have the opportunity to perform research activities and, retrospectively or prospectively, use VTH cases that will be the core of their thesis.** At VTH, students are present and discuss clinical cases and best works are submitted in posters or oral communications in national and international veterinary congresses, with the support of teachers and VTH veterinarians. **This strategy also intends to show them how research produces knowledge and how ephemeral and in permanent evolution science is**, to foster their interest for scientific work and to demonstrate how crucial a permanent update is to become a competent professional.

Therefore, **students are very aware of the need of LLL. In addition to teachers' initiatives, students organize various training activities** such as seminars, workshops, the annual Veterinary Medical Conferences (51 editions) and even international meetings like FAUNA International Conference (5 editions), in the frame of Student's Union, with the participation of not only FMV teachers but also national and international professionals, with a special concern on graduates updating.

### 10.1.4. Description of how the continuing education programmes provided by the Establishment are matched to the needs of the profession and the community

**The LLL program is organized taking into account suggestions or external requests from professional or scientific organizations, suggestions from colleagues or alumni and the initiative of teachers**, aware of the areas where knowledge faster advanced and, therefore, where the need for professionals update is more urgent. In addition, an effort is made to offer courses in all main areas of employment, Clinics, Animal Health, Animal Production and Food Safety. Short to medium duration courses are organized, resorting to external teachers whenever necessary, in a schedule feasible for professionals. Courses offered over the last three years are described on Appendix 10.

Another way of matching LLL programme to the needs of the profession and the community was established by legislation that create **the possibility for students from other study programs and other interested individuals to attend single US from any study programme.** FMV approved its own regulation, establishing access requirements for each US (previous training considered indispensable for the minimum knowledge and understanding and for acquisition of competences) and the fee due. This path has not yet been widely used to spread and update knowledge, probably because schedules are not compatible with professionals' activity. This path is used by 5-10 persons per year. Overall, in the last four years (2013/2016), 589 students attended continuing education programmes at FMV.

### 10.1.5. Prospected number of students registered at post-graduate programmes for the next 3 academic years

The number of scholarships granted by FCT decreased significantly since 2013, which greatly affected the number of PhD students enrolled in FMV (see Table 7.1.5). Although nowadays more students enrol to a PhD programme without a scholarship, that lack of support affects significantly their number. Despite this reality, considering the



increasing interest on research careers, the scholarships offered by other programs, such as ULisboa grants, and some saturation of Companion Animals Clinics market, mainly in urban areas, **FMV expects that the number of PhD students will reach the following values in the next years:**

Post-graduate students	2017-18	2018-19	2019-20	Mean
PhD students already enrolled in 2017	38	26	16	26.67
New PhD students	6	12	18	12
Total	44	38	34	38.67

#### 10.1.6. Description of how and by who research, continuing and postgraduate education programmes organised by the Establishment are decided, communicated to staff, students and stakeholders, implemented, assessed and revised

**Research:** SC is the body responsible for scientific policy, in respect with strategic options of the ScC and the functions and powers of the Dean and PC. CIISA, with SC President in its Coordination Committee, is responsible for developing and coordinating R&D activities. The main research areas and strategies are regularly discussed, decided, assessed and revised by CIISA's bodies (Coordinator, Coordination Committee and Scientific Council), in particular when the plan for next years is prepared and proposed to the Scientific Council of CIISA. These decisions are communicated (by e-mail) to all CIISA members and FMV teachers and researchers, and to students and stakeholders through CIISA's website.

**Postgraduate education programmes:** Postgraduate programmes are discussed and recommended by SC, with a favourable opinion of PC, to the Dean, who proposes them to the Rector for homologation.

FMV collaborates in programmes involving other schools of ULisboa (Bachelor and master degrees in Zootechnical Engineering through a joint organization of FMV and ISA; Master degree in Microbiology with 3 other schools; Master degree in Clinical Microbiology and Emerging Infectious Diseases with the Medicine Faculty; a PhD degree in Sustainability Science – Resources, Food and Society with 11 other schools). However, FMV's major PhD programme is the PhD in Veterinary Sciences (DVS), fully organized by FMV, in the specialties of Clinics, Animal Health, Animal Production, Food Safety and Biological and Biomedical Sciences. This study programme is coordinated by a scientific committee, chaired by the SC President, or a teacher appointed by SC, also including:

- A teacher with a doctoral degree from each scientific area of FMV;
- A student enrolled in this study programme, elected by peers for a term of two years.

The Scientific Committee is appointed by SC and has the competences described in DVS' Regulation, including:

- Evaluate the programme operation, ensuring that objectives are met, including the quality of teaching and students' acquisition of skills;
- Coordinate and harmonize the US syllabus of the doctoral programme;
- Propose to SC any changes to the study programme or the rules of its operation.

Postgraduate programmes are communicated by official organizations such as General Directorate of Higher Education - Ministry of Education, ULisboa and FMV, through their websites, and are also advertised in Press special issues regarding Graduation Courses (see 7.1.1). Postgraduate programmes are implemented, assessed and revised by SC and PC.

**Continuing education programmes:** Continuing education programmes are discussed in the SC and implemented through its Continuing Education Commission, which organizes the annual offer of courses and stimulates teachers and researchers to bring up new courses, in collaboration with students and external organizations like scientific societies, professional organizations and alumni. Continuing education programmes are implemented, assessed and revised by the Continuing Education Commission and advertised in FMV website and e-mail to stakeholders and customers.

FMV does not have resident students because at present there are insufficient EBVS specialists to offer residences. Currently there are seven specialists in FMV: one in Pathology, one in Internal Medicine of companion animals, one in Surgery of large animals, three in Bovine Health Management (all EBVS specialists); one in Dentistry (Fellow of the American Academy). The figure of interns does not exist, although students that remain 6 months in the VTH to complete the IMVM degree develop work similar to that of interns. These students make rotations in the services of Internal Medicine, Diagnostic Imaging and Surgery, as well as in the different consultations of second opinion and care patient. They are responsible for receiving animals for surgery and assist surgeons, for the administration and



treatment of animals under the supervision of a veterinarian, for receiving the animals for consultation, anamnesis, rotations at nights and weekends.

**Table 10.1.1. Number of students registered at postgraduate research training**

Degrees	2016-17	2015-16	2014-15	Mean
PhD	45	59	66	55.7

**Table 10.1.2. Number of students registered at other postgraduate programmes (including any external/distance learning courses)**

Programmes	2016-17	2015-16	2014-15	Mean
Master in Food Safety	37	37	22	32.0
Master in Zootechnical Engineering	24	29	27	26.7
Master in Microbiology	26	14	22	20.7

**Table 10.1.3. Number of attendees to continuing education courses provided by the Establishment**

Courses	2016-17	2015-16	2014-15	Mean
Antibiotherapy of pets, birds and exotic		40		13
Cardiorespiratory evaluation, endoscopy and ultrasound of the musculoskeletal apparatus in the horse		11		4
Dermatology		32		11
Non-evasive maxillofacial osteosynthesis in dogs and cats	10			3
Therapeutic strategies in dogs and cats - Ophthalmology module			19	6
Laboratory animal science	22		20	14
Horse feeding		19		6
Management of a Stud farm	45			15
Body condition in horses		19		6
The horse seen by Inside		30		10
Reproduction in dairy cattle			44	15
Reproduction in beef cattle			34	11
Scientific bases for <i>Brava</i> breed selection			50	17
Traditional Portuguese meat products: strategies to improve safety and quality		27		9
Pig feeding	45			15
Medicine and management in rabbit production	15			5

**Table 10.1.4. List of the major funded research programmes in the Establishment which were on-going during the last full academic year prior the Visitation**

Scientific topics	grant/year (€)	Duration (Yrs)
CIISA's UID/CVT/00276/2013 FCT funding for multidisciplinary research support	200.000,00	3
WallTrack-Project nº 263916 European funding for cellulose vegetal wall structural unravelling and related biotechnological applications	140.000,00	3
PT 2020 - SI I&DT Co-promotion Project nº 3399 MICROSUINO European (FEDER) and national funding for applied research on use of Microalgae in animal nutrition	280.000,00	3

## 10.2. Comments

As stated above, FMV aims to promote an adequate research-based medical teaching and training to enable students to prevent diseases, to diagnose and treat sick animals, to contribute to a sustainable animal production, to protect humans from zoonosis and to ensure high-quality animal products for human consumption. Therefore, **the role of CIISA is crucial to make students aware of the importance of research in knowledge development and of continuous learning to become a competent veterinarian.**

## 10.3. Suggestions for improvement

The **attraction of more funding** to support and develop research and the **appointment of young researchers** to stimulate new lines of interest are undoubtedly two essential pillars for the future of FMV and for the quality of its teaching and graduates.



ÁGUA IMPROPRIA PARA  
CONSUMO



# 11 Outcome Assessment and Quality Assurance



## 11. OUTCOME ASSESSMENT AND QUALITY ASSURANCE

### 11.1. Factual information

#### 11.1.1. Description of the global strategy of the Establishment for outcome assessment and Quality Assurance (QA).

**FMV has a culture of QA and continuous improvement of quality from a long time ago**, especially for IMVM. For instance, as stated above (9.1.1.), PC has conducted inquiries to students about the functioning of US and the pedagogic performance of teachers since 1991. **As IMVM is the main study programme of FMV, the system of QA is largely provided by management bodies themselves, particularly PC and SC.** The Scientific Committee of IMVM fulfils a closer monitoring, ensuring that objectives are met, including quality of teaching, acquisition of skills and academic success. The IMVM Curricular Traineeship Committee oversees all procedures of the curricular traineeship.

**A formal system of QA was established in 2011 by the UTL through the approval of the “Regulation of the Integrated System of QA of UTL”, followed by the approval of the corresponding regulations on each Faculty** (in FMV it was approved on the 28<sup>th</sup> September 2012, in the "Regulation of the Integrated System of Quality Assurance of FMV").

**The merger of UTL with UL entailed the review of all regulations of both Universities, a process that has not yet been completed in what concerns QA.** The Regulation of the Integrated System of Quality Assurance of the University of Lisbon was approved on 14<sup>th</sup> December 2015, and is now in preparation the Quality Manual, the Quality Plan and the Manuals of Procedures of ULisboa and the adaptation of the Regulation of the Integrated System of Quality Assurance of each faculty.

Meanwhile, **FMV has continued to conduct its routine quality control procedures and developed its own QA system** in a simple way that meets basic requirements and will certainly integrate well with ULisboa's future system. **Once ULisboa QA system is effective** (predictably by the end of 2017), **FMV will proceed to the adaptation of its QA system**, in a coherent and functional way with that of ULisboa.

**The responsibility of the coordination and management of the Integrated System of Quality Management of FMV is under the Council for the Quality Assurance (CQA) of FMV.** This council is chaired by the Dean, also comprising SC and PC Presidents, the President of the Clinics Department, the Executive Director of FMV and the Student's Union President.

**The collection of information are coordinated by SC and PC and analysed by these bodies and by the Scientific Committee of IMVM.** SC approves the creation or modification of compulsory and optional US, proposes the allocation of academic service and the US teaching teams and analyses and decides upon any problems or amendment proposals. PC analyses the information collected by the Academic Office on student's academic success and promotes inquiries about the functioning of study programmes, US and pedagogic performance of teachers, which are key documents for the quality control, being also analysed by SC and the Scientific Committee of IMVM. When necessary, aspects of IMVM functioning are discussed in the meetings of these bodies, in order to find solutions deemed necessary.

**It is also important to note that, since 1992, the FMV Presidency prepares every year the Annual Activity Report regarding the previous year and the Annual Plan of Activities.** In the Activity Plan, indicators and goals are defined for the following year, the fulfilment of which is verified later and reported in the Annual Report. If those goals are not achieved, justifications are presented and, eventually, new proposals are added. These documents are discussed and approved by the School Council.

**As mentioned in the Regulation of the Integrated System of Quality Assurance of FMV, this regulation was drawn up taking into account:**

- a) The European Quality Assurance in Higher Education (ENQA);
- b) The report prepared by ENQA in 2006, at the request of the Portuguese Government, on QA in higher education in Portugal, which evaluated the practices in this field carried out within the framework of the National Council for the Evaluation of Higher Education and made recommendations to the Government on the organization, method and processes of a new accreditation system, according to European Standards and Guidelines;
- c) The Evaluation Report of the Portuguese Higher Education System, published in 2006, prepared by the OECD at the request of the Portuguese Government;
- d) The principles and process of Evaluation and Standard Operating Procedures of EAEVE and the FVE, revised in May 2016 in Uppsala, which regulate the evaluation of Veterinary educational establishments through the European Committee on Veterinary Education (ECOVE).



**IMVM was submitted to several external evaluations (see Chapter 1.) and was approved in all of them.** The preparation of self-evaluation reports was a process of deep analysis, reflection and procedures improvement. In addition, the analysis of results and recommendations provided important guidelines for the supervision of a continuous process of improvement. The EAEVE evaluations motivated significant changes in important aspects, such as students/teacher ratio, a greater attention to some issues insufficiently addressed and the reinforcement of the hand-on training. These aspects have been discussed in SC and Commissions appointed for this purpose. Recommendations and increasing demands by EAEVE provided very important guidelines and stimuli for the improvement of the course.

**Concerning research, scientific and technological activities they are regularly assessed, either in competitive applications for project funding or through formal systems of evaluation of research units.** CIISA was evaluated 3 times (1999, 2008, and 2015) by FCT, having approved in all evaluations with the rate of Very Good. Apart from external evaluations, CIISA coordination team monitors the activity funded by CIISA, seeking the best results for the money invested, within a predefined development strategy. The results of these assessments and monitoring are subject of reflection by FMV governing bodies, in particular by the Presidency and SC, in order to find appropriate answers and strategies for the recommendations of the evaluators. As a result, the amount and quality of research activity may increase, thus supporting higher quality teaching and community provision of services.

#### **11.1.2. Description of the form by which the strategy, policy and procedures are made formal and are publicly available**

**The strategy, policy, manuals and procedures of QA are elaborated, verified and approved by the ScC and the Dean and made publicly available on the private network and FMV website.**

#### **11.1.3 Description of the regular publication of up to date, impartial and objective information, both quantitative and qualitative, about the educational programmes and awards the Establishment is offering.**

All up to date information about FMV's educational programmes and awards are disclosed on FMV's website. General Directorate of Higher Education, through the National Higher Education Access Contest, also publicizes all the information about first cycle educational programmes, including IMVM, referring several useful indicators for candidates regarding course quality in the last 3 years, such as: number of candidates in each application phase; classification of last applicant enrolled; average classification of applicants enrolled; gender ratio; geographical origin; and whether this was the candidate's first choice or not. As stated in 7.1.1., beyond Erasmus+ Programme and FMV's website, the educational programme is also advertised by other means, as newspapers and mass events promoted by ULisboa or other organizations.

Final reports and/or self-evaluation reports of national and international evaluations are available on the website of Agency for Assessment and Accreditation of Higher Education (A3ES, and EAEVE).

#### **11.1.4. Description of the QA processes not yet described in the other 10 Standards, when and by whom they are completed)**

**FMV, like ULisboa, adopts the QA processes approach, identifying and managing them, as well as the sequence and interaction between them, thus promoting a greater transparency in the activities carried out, better communication and interaction between the different functional units and unifying the objectives to achieve.** The main processes are Graduate and Postgraduate Education; Research and Development; Education and Science outreach; Internationalization; Human, Material and Finance Resources. The indicators and goals of these processes, which are established in FMV-ULisboa Quality Plan, should guarantee temporal stability for the characterization of the school's performance, measuring its accomplishments in defined processes and contributing to strategic decisions and evaluation of achievement of objectives by FMV. Finally, the CQA collects the information about the indicators and goals and elaborates an annual evaluation report (Quality Report).

### 11.1.5. Description of how and by who the QA strategy of the Establishment is decided, communicated to staff, students and stakeholders, implemented, assessed and revised

The QA strategy of the Establishment is discussed and decided by the CQA, in which are present the main FMV bodies (see 10.1.1.). QA strategy is in tune with the strategic plan of FMV, being its most important form of auto control, and it is implemented, assessed and revised by the CQA in conjunction with management bodies. QA strategy is communicated through the internal network and FMV website.

### 11.2. Comments and 11.3. Suggestions for improvement

As mentioned in 10.1.1.1, the recent creation of ULisboa led to the need to revise and merge all regulations of both Universities, a process that is still going on in what regards QA. The precursor's Universities had already approved regulations of integrated quality management systems, as did FMV, in line with UTL regulations.

As explained, the new Regulation of the Integrated System of Quality Assurance of ULisboa was approved on the 14<sup>th</sup> December 2015, being in preparation the Quality Manual, the Quality Plan and the Manuals of procedures of ULisboa and the adaptation of the Regulation of the Integrated System of Quality Assurance of each faculty, crucial to the quality control of all procedures and processes required by evaluation systems of teaching and research. The standardization of systems for collecting and managing information in ULisboa is also a key step in this process. FMV follows closely the developments of this issue and as soon as those documents are approved, it will immediately make the necessary adjustments to its own rules. Until then, the management bodies of FMV will continue to promote quality control measures to processes and procedures related to the IMVM.







# 12. *ESEVT Indicators*

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## 12. ESEVT INDICATORS

### 12.1. Factual information

	Raw data from the last 3 full academic years	2016-17	2015-16	2014-15	Mean
1	n° of FTE academic staff involved in veterinary training	97.67	93.94	88.77	93.46
2	n° of undergraduate students	686	709	702	699.00
3	n° of FTE veterinarians involved in veterinary training	93.93	94.68	94.37	94.33
4	n° of students graduating annually	106	113	70	96.33
5	n° of FTE support staff involved in veterinary training	75	73	68	72.0
6	n° of hours of practical (non-clinical) training	1,112.6	1,112.6	1,112.6	1,112.6
7	n° of hours of clinical training	672.8	672.8	672.8	672.8
8	n° of hours of FSQ & VPH training	348	348	348	348.0
9	n° of hours of extra-mural practical training in FSQ & VPH	45	45	45	45.0
10	n° of companion animal patients seen intra-murally	15,446	14,613	13,041	14,366.7
11	n° of ruminant and pig patients seen intra-murally	1	3	5	3.0
12	n° of equine patients seen intra-murally	386	346	259	330.3
13	n° of rabbit, rodent, bird and exotic patients seen intra-murally	172	227	174	191.0
14	n° of companion animal patients seen extramurally	0	0	0	0
15	n° of individual ruminants and pig patients seen extramurally	5,194	5,082	3,803	4,693.0
16	n° of equine patients seen extramurally	67	65	68	66.7
17	n° of visits to ruminant and pig herds	76	72	75	74.3
18	n° of visits of poultry and farmed rabbit units	15	14	14	14.3
19	n° of companion animal necropsies	412	380	365	385.7
20	n° of ruminant and pig necropsies	109	120	120	116.3
21	n° of equine necropsies	30	14	6	16.7
22	n° of rabbit, rodent, bird and exotic pet necropsies	186	240	218	214.7
23	n° of FTE specialised veterinarians involved in veterinary training	7	5	4	5.3
24	n° of PhD graduating annually	19	11	5	11.7

	Calculated Indicators from raw data	FMV-ULisboa values	Median values	Minimal values	Balance
I1	n° FTE academic staff involved in veterinary training / n° undergraduate students	0.134	0.16	0.13	0.008
I2	n° FTE veterinarians involved in veterinary training / n° students graduating annually	0.979	0.87	0.59	0.389
I3	n° FTE support staff involved in veterinary training / n° students graduating annually	0.747	0.94	0.57	0.181
I4	n° hours of practical (non-clinical) training	1,112.55	905.67	595.0	517.6
I5	n° hours of clinical training	672.8	932.9	670.0	2.8
I6	n° hours of FSQ & VPH training	348.0	287.0	174.4	173.6
I7	n° hours of extra-mural practical training in FSQ & VPH	45.0	68.0	28.8	16.200
I8	n° companion animal patients seen intra-murally / n° students graduating annually	149.1	70.5	42.0	107.1
I9	n° ruminant and pig patients seen intra-murally / n° students graduating annually	0.031	2.69	0.46	-0.432
I10	n° equine patients seen intra-murally / n° students graduating annually	3.43	5.05	1.30	2.13
I11	n° rabbit, rodent, bird and exotic seen intra-murally / n° students graduating annually	1.98	3.35	1.55	0.44
I12	n° companion animal patients seen extra-murally / n° students graduating annually	0.00	6.80	0.22	-0.22
I13	n° individual ruminants and pig patients seen extra-murally / n° students graduating annually	48.72	15.95	6.29	42.42
I14	n° equine patients seen extra-murally / n° students graduating annually	0.692	2.11	0.60	0.097
I15	n° visits to ruminant and pig herds / n° students graduating annually	0.772	1.33	0.55	0.224
I16	n° visits of poultry and farmed rabbit units / n° students graduating annually	0.149	0.12	0.04	0.104
I17	n° companion animal necropsies / n° students graduating annually	4.003	2.07	1.40	2.603
I18	n° ruminant and pig necropsies / n° students graduating annually	1.208	2.32	0.97	0.237
I19	n° equine necropsies / n° students graduating annually	0.173	0.30	0.09	0.080
I20	n° rabbit, rodent, bird and exotic pet necropsies / n° students graduating annually	2.218	2.05	0.69	1.525
I21	n° of FTE specialised veterinarians involved in veterinary training / n° of students graduating annually	0.055	0.20	0.06	-0.008
I22	n° of PhD graduating annually / n° of students graduating annually	0.121	0.15	0.09	0.033

## 12.2. Comments

The ESEVT indicators are overall positive, and globally reflect the efficient activity of FMV-ULisboa and the effort to provide hands-on practical skills to its students. In general terms, effectiveness has been high since FMV has achieved its main mission, to train veterinarians in compliance with high standards of acknowledged quality, although the available financial resources are markedly below those accessible to other similar European institutions.

However, some indicators appear below EAEVE Minimal values, but they cannot be interpreted individually but rather combined with other indicators achieving the same goals. Particularly:

- I9 - N° of ruminant and pig patients seen intra-murally - These animals are seldom brought into our premises because: a) individual clinical work associated with Production Medicine is better performed at farm; b) farmers are not willing to let animals return to farm for biosecurity reasons; c) students should get acquainted and evaluate husbandry and management conditions, while conducting clinical examination, suggesting treatment or preventive measures; d) communication skills with farmers and farm workers are better developed *in loco*. **Therefore, veterinary practice in food animals is mainly acquired extramurally in ambulatory** (Chapter 5);
- I12 - N° of companion animal patients seen extramurally equals zero, due to the high case-load of these animals attended intra-murally at the VTH, and considering no Ambulatory Clinics is offered for companion animals. **Companion animals are always encouraged to be brought to the VTH**, often relying on VTH special transport;
- I21 - N° of FTE specialists involved in veterinary training is also under EAEVE minimal values. In fact, the number of Specialists in Portugal is lower than in other European countries and academia has mainly attracted PhDs rather than Specialists. **Despite the recent increase in the number of Specialists working at FMV this indicator remains under minimal values.**

## 12.3. Suggestions for improvement

Improvement is expected to be achieved in next years in the number of Veterinarian Specialists involved in clinical training (I21). This increase will reflect the recent institutional policy to request from potential candidates to clinical teaching positions to hold both a Specialist Diploma and a PhD degree. This improvement will also trigger an increase in the number of referral clinical cases and will ultimately allow achieving the goal of starting interneer and residencies programs.



**GLOSSARY**

<b>A3ES</b>	Agência de Avaliação e Acreditação do Ensino Superior (Agency for Assessment and Accreditation of Higher Education)
<b>CAH</b>	Companion Animals Hospital of the VTH
<b>CBL</b>	Case-based learning
<b>CIISA</b>	Centro de Investigação Interdisciplinar em Sanidade Animal (Centre for Interdisciplinary Research in Animal Health)
<b>CIQA</b>	Committee on Internal Quality Assurance (of EAEVE)
<b>CQA</b>	Council for the Quality Assurance of FMV
<b>DC</b>	Departamento de Clínica (Department of Clinics)
<b>DGAV</b>	Direção Geral de Alimentação e Veterinária (National Authority for Animal Health and Feeding)
<b>DMF</b>	Departamento de Morfologia e Função (Department of Morphology and Function)
<b>DPASA</b>	Departamento de Produção Animal e Segurança Alimentar (Department of Animal Production and Food Safety)
<b>DSA</b>	Departamento de Sanidade Animal (Department of Animal Health)
<b>EAEVE</b>	European Association of Establishments for Veterinary Education
<b>EBVS</b>	European Board of Veterinary Specialisation
<b>ECCVT</b>	European Coordination Committee on Veterinary Training
<b>ECOVE</b>	European Committee on Veterinary Education
<b>ECTS</b>	European Credit Transfer and Accumulation System
<b>EH</b>	Equine Hospital of the VTH
<b>ENQA</b>	European Network for Quality Assurance in Higher Education
<b>EPT</b>	External Practical Training
<b>ESEVT</b>	European System of Evaluation of Veterinary Training
<b>ESG</b>	Standards and Guidelines for Quality Assurance in the European Higher Education Area
<b>ExCom</b>	Executive Committee (of EAEVE)
<b>EZN</b>	Zootechnical National Institute
<b>FAH</b>	Food Animals Hospital of the VTH
<b>FCT</b>	Fundação para a Ciência e a Tecnologia (Foundation for Science and Technology)
<b>FMV</b>	Faculdade de Medicina Veterinária da ULisboa (Faculty of Veterinary Medicine of ULisboa)
<b>FSQ</b>	Food Safety and Quality
<b>FTE</b>	Full-Time Equivalent
<b>FVE</b>	Federation of Veterinarians of Europe
<b>GA</b>	General Assembly (of EAEVE)
<b>IDIU</b>	Infectious Diseases Isolation Unit of FMV
<b>IMVM</b>	Integrated master in Veterinary Medicine of FMV
<b>ISA</b>	Instituto Superior de Agronomia da ULisboa (School of Agriculture of ULisboa)
<b>IT</b>	Information Technology
<b>JEC</b>	Joint Education Committee (joint committees between EAEVE and FVE)
<b>MC</b>	Management Council of FMV
<b>MRI</b>	Magnetic Resonance Imaging ( <i>Ressonância Magnética</i> )
<b>OIE</b>	World Organization for Animal Health
<b>PBL</b>	Problem-based learning
<b>PC</b>	Pedagogic Council of FMV
<b>QA</b>	Quality Assurance
<b>QVET</b>	The VTH computer program
<b>SC</b>	Scientific Council of FMV
<b>ScC</b>	School Council of FMV
<b>SER</b>	Self Evaluation Report
<b>SOP</b>	Standard Operating Procedure
<b>SPC</b>	Scientific and Pedagogic Coordinator of a unit of study
<b>SWOT</b>	Strengths, Weaknesses, Opportunities, Threats
<b>UL</b>	Universidade de Lisboa (Lisbon University – before de merge with UTL)
<b>ULisboa</b>	Universidade de Lisboa (Lisbon University – after de merge between UL and UTL)
<b>US</b>	unit of study
<b>UTL</b>	Universidade Técnica de Lisboa (Technical University of Lisbon, extinct in 2013)
<b>VPH</b>	Veterinary Public Health
<b>VTH</b>	Veterinary Teaching Hospital

## LIST OF APPENDICES

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