



Standard 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 main goal of the **FVETUM** is to ensure an adequate training of our students based on a curriculum that full fills the Spanish legal requirements for the verification of the official university qualifications that qualify for the exercise of the profession of Veterinarian (ORDEN ECI/333/2008, http://www.boe.es/diario_boe/txt.php?id=BOE-A-2008-2675) and in accordance with the EU Directive 2005/36/EC (<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32005L0036&from=ES>), and accredited twice by ANECA for **FVETUM**. With regard to the training with animals and material of animal origin, the global strategy of the **FVETUM** is to continue and, if necessary, to increase the use of these resources in order to get a correct hands-on preclinical and clinical training. This strategy is based on 4 different pillars: **clinical training, preclinical training, teaching farm and learning based on animal training models.**

The **clinical training** is mainly supported by the **VTH** and the first goal is to maintain or increase the casuistic in the areas of both small and large animals, as the main source for the clinical training of the students. Other significant priority is to correct the possible imbalance among different animal species. Concerning small animals, even if the number of cases is adequate, the **VTH** speciality appointments are scheduled in the mornings (9:30-15:00 h). Since (2005), first opinion consulting rooms have extended the work to 5 days per week in the afternoon and ER service to 24/7/365. At the same time and trying to achieve the same objective, new specialties and services have been opened at the **VTH**, such as the CT Unit, the Stem Cells Unit, the Unit of Minimally Invasive Surgery in Cardiology and Frozen Canine Semen International Exchange. These measures have resulted in an increase in the number of first-opinion and referral cases.

The **FVETUM** is located in an urban area and, thus, the number of small animals attended intra-mural is higher than that of horses and, especially, food-producing animals. Being aware of this situation, another important strategic line has been to strengthen the clinical training in horses and cattle. This goal is being addressed by increasing the number of teachers attending cattle extra-mural, and increasing the number of horses attended intra-mural. The biological material of animal origin necessary for **preclinical training** comes mainly from Zoonosis Service of the City Council of Murcia, donation programs and agreements signed with external entities, as well as the **VTH**, as detailed in chapter 5.1.5.

Other strategic pillar related with **preclinical/ clinical/animal production** training is the **Teaching Farm. VTF** is an independent facility located at 2 km south of the main campus in the close location of Guadalupe. **VTF** structure has a central building subdivided into two areas: teaching pavilion with general classrooms, computer room, lecture hall, library and laboratories, and a changing area. The Farm is organized in a total of 12 livestock units (pigs, poultry, rabbits, equine, dairy cattle, calves, goats, sheep, beekeeping, forage unit, feed factory and sewage plant). Likewise, it has its own research facilities such as the experimentation vessel and others (kennels, primates and ship of nutrition and animal reproduction).

Finally, we are working on the acquisition of **animal dummies** and simulators, with the purpose of completing the training of our students. This kind of training does not expect to replace the hands-on training on live patients, but it is based on an effort to reduce the use of live animals in veterinary training, when possible. Within this programme, the **FVETUM** is working in acquired animal models, especially for teaching small animal clinical examination, vein puncture, cardiology, reproduction/obstetrics, traumatology, orthopaedics and anaesthesiology.

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.

e.g. numbers of patients examined/treated by each student, balance between species, balance between clinical disciplines, balance between first opinion and referral cases, balance between acute and chronic cases, balance between consultations (one-day clinic) and hospitalizations, balance between individual medicine and population medicine.

The number and distribution of cases is evaluated annually by the **VTH** Board, Teaching Clinical Council and by the Faculty Council in order to communicate significant changes and/or to propose new strategies, if needed. The **VTH** assures that the students receive an adequate practical training, taking into account the extensive portfolio which allows the students to acquire the clinical Day One Competences.

The distribution of the clinical training hours by subject is based on the official distribution of the **FVETUM** syllabus.

The number of intra-mural cases attended at the **VTH** is, in general, high, as expressed in Chapter 12 (ESEVT Indicators). As mentioned, the **VTH** receives a higher number of small animals and horses, in comparison to ruminants and food-producing animals in general.

With regard to **small animals**, 30% of the cases attended in the General Medicine Consultation are **first-opinion cases**. This allows an adequate training of the student in the clinical approach of common diseases, from the beginning of a case. The average of **referral cases** attended in Specialty Consultations is 70%. The percentage of first opinion cases in **large animals** is around 70%, while referral cases attended is 30%. Hundred percent food-producing animals are attended extra-mural by the Associate Teachers working in the Mobile Clinic.

The percentage of **acute and chronic** cases has been estimated in 63.2% and 36.8% respectively within the last 3 years. A mean of 12,5% of small animals attended in consultations remain hospitalized. On the other hand, 80% percentage of horses need to be hospitalized, while 20% are attended on a one-day clinic basis. Finally, around 12.5% of our clinical activities are focused on population medicine, while 87.5% rely on individual medicine.

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

The management of the **VTF** is based on a Management team (Director and Secretary, both academics), and teaching and other strategic activities are ruled by the Governing Council (GC), composed by the Dean and representatives of the different Units: Swine, Poultry, Rabbit, Sheep, Goat, Dairy and Beef, Primates, Equine, Feedstuff Production, Students' Residence and Apiculture. Beyond the Dean (President of the GC), the Director of Animal Production Department, the Vice-Dean of Students, the Delegate and Sub-Delegate of Faculty and a Representative of the Veterinary Degree are natural members of the GC. Minor decisions are taken on a daily basis by the Management Team, but major decisions are subjected to the decision of the GC.

The teaching activities have to be supervised and approved by the GC, and the Management Team have to elaborate an annual report regarding the teaching activities and the rest of activities developed in the **VTF** (changes in the number of animals, in facilities or in the relations with the managers of the units integrated in companies). Finally, several Committees support the decision of the GC and are reported to the Faculty Board (see [Standard 1 for further information](#)).

The main Department that support teaching activities at the **VTF** is Animal Production, and also other Departments like Animal Health, Animal Medicine and Surgery, Physiology, Food Technology, Human Nutrition and Food Science, and Zoology and Physical Anthropology. The involvement of the students in the **VTF** is:

- **Swine:** is the most visited unit, and hold practical teaching of different subjects such as *Reproduction and Obstetrics, Clinics of Livestock, Animal Production, Ethology, Welfare and Animal Protection, Animal Nutrition, Infectious Diseases II, Physiology I and II, Parasitic Disease and Practicum*. On these topics the students collect different samples (blood, faeces, skin and BALF), are instructed in how boar management and semen collection, evaluation and preservation; artificial post-cervical insemination, heat detection, ultrasound pregnancy detection, gilts and sow husbandry, farrowing attention, animal identification (tags), neonatal attention, new-born attention (teeth reduction, iron delivery and tail clip), nursery management, welfare assessment, environmental evaluation, behaviour evaluation and feeding.
- **Goats:** This unit is used for subjects like *Animal Nutrition, Reproduction and Obstetrics, Physiology I, Physiology II, Epidemiology, Zoonosis and Sanitary Policy, Animal Production, Clinics of Livestock, Pharmacology and Pharmacy, Food hygiene, Inspection and Control and Practicum*. In this unit, the students are involved in several processes: milking, feeding, ultrasound pregnancy detection, offspring care, and milk quality assessment (food and health quality) and milk hygiene. Some of them will attend podiatry activities (seasonal activity).
- **Sheeps:** Different subjects are involved in this unit: *Animal Nutrition, Animal Production, Clinics of Livestock and Practicum*. During the practical teaching the students will be acquired competencies like management, husbandry, clinical evaluation and some students (due to seasonality) will learn to identify sheep (electronically and tags), routinely podiatry, anti-parasitic deliverance, shearing, ultrasound pregnancy diagnosis and lambing.
- **Poultry:** Animal Nutrition, Ethology, welfare and animal protection, Animal Production and Practicum.
- **Dairy and beef:** This unit is mainly used by subjects like *Animal Nutrition, Animal Production, Ethology, welfare and animal protection, Clinic Propaedeutic, Animal Production, Physiology II and Practicum*. The students will attend practical lessons of clinical examination, external evaluation, feeding, rectal reproductive exploration, and some of them will attend milking and routinely podiatry activities.
- **Equine:** Animals in this unit are involved in the practical teaching of Ethology, welfare and animal protection, *Animal Nutrition, Clinic Propaedeutic, Animal Production, Ethnology and Animal Management and Practicum*. The student will learn management, behaviour, welfare assessment, feeding and routinely podiatry activities (seasonal activity).
- **Rabbit:** Several subjects like *Animal Nutrition, Epidemiology, Zoonosis and Sanitary Policy, Animal Production and Practicum* developed their practical training to the students in this unit. The student will learn breeder and offspring management, farrowing care, pregnancy diagnosis by palpation.

5.1.4. Description of the organization and management of the **VTH** and ambulatory clinics

The following Table shows the timetable of the different **VTH** Services where the students practice intra-mural.

Areas	Service	Days/week	Opening Hours	Weeks/year
Small Animals	Internal Medicine	By appointment M-F/ ER M-S	By appointment 9:30-15:00/ 17:00-20:00/ ER 24 h	52
	Ophthalmology	By appointment M-F/ ER M-S	By appointment 9:30-15:00/ ER 24 h	52
	Cardio-respiratory	By appointment M-F/ ER M-S	By appointment 9:30-15:00/ ER 24 h	52
	Dermatology	M-F	9:30-15:00	52
	Neurology	By appointment M-F/ ER M-S	By appointment 9:30-15:00/ ER 24 h	52
	Surgery	By appointment M-F/ ER M-S	By appointment 9:30-15:00/ ER 24 h	52
	Hospitalization/ER	M-S	24 h	52
Large Animals		By appointment M-F/ ER M-S	By appointment 9:30-15:00/ ER 24 h	52
Central Services	Diagnostic Imaging	By appointment M-F/ ER M-S	By appointment 9:30-15:00/ ER 24 h	52
	Anaesthesiology	By appointment M-F/ ER M-S	By appointment 9:30-15:00/ ER 24 h	52
	Pharmacy	M-F	Tu-Th-F 9:15-15:00/ M-W 9:15-20:00	52

- In the **Small Animal Area**, the Emergency Service is available for all animals having a medical record at the **VTH**. Life-threatening emergencies are always admitted. The interns on duty are responsible for evaluating emergencies and calling the emergency surgeon/anaesthetist/specialist, if necessary. This ER Service is available 7 days a week, 24 hours a day during the entire year.
- In the **Large Animal Area**, the Emergency Service receives medical and surgical emergencies 24 hours, 365 days a year. There is always a Medicine clinician, a surgeon and an anaesthetist on call; the interns on duty receive the emergency patient (or emergency phone call) and, if necessary, call in the rest of the clinical team.
- **Ambulatory clinic** is carried out by part-time Associate Teachers that are private practitioners of recognized standing. There are 3 teachers participating in the Ruminant Mobile Clinic. Large animals requiring immediate attention must be brought to the **VTH**. The teachers responsible for the Mobile Clinic visit different farms.

Management and administration of the **VTH** corresponds to the **VTH** Board (Director, Manager and Secretary) and the **VTH** Council composed by the **VTH** Board, the Rector of Murcia University, Vice-rector of teaching planning, the Dean, the Major of Murcia and several representatives of Murcia Region's Government, the President of the Veterinary College of Murcia, and two representatives of the Faculty Council. The **VTH** Council meet twice every year. On the daily management, the **VTH** is ruled by the **VTH** Board.

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

During the practical sessions of Gross **Anatomy** students directly work on anatomical specimens (bones, prosections or plastinated specimens) or dissect whole body cadavers (dogs, mainly). The cadaver donation program established with the Zoonosis Service of the City Council of Murcia supplies the necessary number of dogs for students' training. Equine material comes mainly from private donations through the **VTH** as well as from local abattoirs. Isolated organs and body regions of ruminants and pigs, and whole cadavers of cockerels and hens are obtained from local abattoirs. Biological material for Embryology practices such as pregnant uterus and fetuses come from donations of local abattoirs and private veterinarians.

Topographic dissection of the whole dog is performed in groups of 4-5 students per dog. Cadavers are embalmed by specialized staff in the Dissection Room with an embalming solution with minimal amount of formalin. This ensures that the levels of exposure to toxic products are kept below the levels allowed by European regulations.

The students of Anatomy use for their learning the **Museum of Veterinary Anatomy**, with one of the most important collections of osteology and plastinated specimens in Europe. An agreement with the Animal House of the University allows to perform a practice of Clinical Anatomy based on the palpation of anatomical structures in living dogs, in compliance with the European rules of animal welfare.

Cadavers and samples for the practices in **Anatomical Pathology** come from donations of the Zoonosis Service of the City of Murcia, abattoirs, **VTH**, farms, and private veterinarians that send the corpses for a post-mortem diagnosis. Necropsies are performed as soon as the corpse arrives; if necessary they can be conserved a few hours before in the cold room. The post necropsy material and slaughterhouse organs are frozen at -18 ° C until removed for destruction. The biological material used in the Anatomy and Anatomical Pathology practices is eliminated by an external company to the University that is responsible for its collection and incineration according with established regulations.

5.1.6. Description of the group size for the different types of clinical training (both intra-mural and extra-mural).

Students are distributed in modules (5 modules with a mean of 20 students each per year in the last three years). The number of students per module can slightly vary depending on the number of enrolled students. Modules are usually subdivided in different groups, and each group subdivided in different simultaneous intra-mural activities (Specialty clinics or other activities from the same Service) supervised by different teachers, in order to reduce the student: teacher ratio, that is never higher than 5 in clinical practices and 10 in laboratory practices. The maximum number of students per professor in the Mobile Clinic is 2-4. The following Table summarizes the size of the groups in each clinical rotation.

	No. students-to-teacher (and per clinical case, if appropriate)	Maximum ratio*
Small Animal Medicine	Students distributed in 4 Specialty Consultations every day.	5:1
Small Animal Surgery	Students distributed in 2 Specialty Consultations and, at least, 2 Surgery Operating Rooms every day.	5:1
Animal Reproduction	Students distributed in small animals Specialty Consultation, porcine units and small ruminants.	5:1
Anaesthesiology	Students distributed by clinical case and professor.	5:1
Diagnostic Imaging	Students distributed in Radiology, Ultrasound and CT Units.	5:1
Pathology	Necropsy room attended by 2 professors every day. Maximum ratio 5:1	5:1
Large Animal Area (Intra-mural)	Students distributed in 4 non-simultaneous groups. Maximum ratio 5:1	5:1
Ambulatory Clinics	Cattle: Students distributed in 3 groups (3 professors). Ethology: Students distributed in 2 non-simultaneous groups	4:1 3:1
Population Medicine	Complete group/professor	

*Ratio students: 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-mural and extra-mural)

The students are directly involved in all the clinical procedures developed both in the **VTH** and extra-mural. Specific activities depend on the area where the student is working, and at least include:

- First-opinion and Specialty Consultations, both medical and surgical, in all animal species
 1. To carry out the patient (or the population) anamnesis and complete physical examination, including neurologic, orthopaedic and ophthalmologic exam, depending on the clinical case.
 2. To analyse the nutritional and welfare status in individual and population medicine.
 3. To prepare the list of problems, differential diagnoses, working plan and therapeutic approach.
 4. To effectively communicate with the client.
 5. To make diagnosis procedures: fine-needle aspiration cytology, blood and urine sample collection, blood pressure, Schirmer test, ocular tonometry, skin scrapings, electrocardiogram, faecal smear, Pap smear, etc.
 6. To apply therapy: through different routes of drug administration (PO, SC, IM, IV).
 7. To assist in other diagnostic and therapeutic procedures, such as endoscopic protocols, cerebral spinal fluid analysis, skin biopsy, chemotherapy administration, euthanasia, etc.
 8. To put bandages and other immobilization techniques.
 9. To write medical records and to elaborate reports.
- Hospitalization and emergencies, both medical and surgical, in all animal species
 1. To perform first aid procedures, when necessary.
 2. To review the history, to evaluate the patient through physical exam (TPR) and to actualize the clinical record.
 3. To prepare the list of problems, differential diagnoses, working plan and therapeutic approach.
 4. *To carry out routine diagnosis procedures in hospitalized animals: blood and urine sample collection, blood pressure, etc.*
 5. *To work in different therapeutic procedures: placement of IV catheters, fluid therapy (choice of fluid, dose calculation and administration), drug administration by different routes, placement of urinary catheters, bandage, wound cleaning and dressing, and other post-surgical care procedures.*
 6. To design and to administrate nutritional therapy for hospitalized cases.
 7. To assist in other diagnosis/therapeutic procedures, such as feeding tube placement, drainage tube placement and effusion drainage, blood transfusion, endotracheal intubation and mechanical ventilation, euthanasia, etc.
 8. To apply biosecurity procedures, and more especially in isolated cases.
 9. To effectively communicate with the client.
- Surgery Operating Rooms (in all animal species)
 1. To participate in the preparation of surgeries (surgical Material, room and patient), taking into account biosecurity rules and the concept of aseptic surgery. To perform by themselves easy surgical procedures (ovariohysterectomy, orchietomy).
 2. To assist the surgeon in complex surgeries (assistant surgeon).
 3. To suture the surgical wounds and to place bandages and drains, when necessary.
 4. To be responsible for the immediate post-operative care of surgery cases.
 5. To effectively communicate with the client.
 6. To write medical records and to elaborate reports.
- Anaesthesia (in all animal species)
 1. To evaluate the pre-anaesthetic status of the patient.
 2. To discuss and to design the anaesthetic protocol to apply in every case and procedure.
 3. To carry out all the complementary work, including fluid therapy administration and orotracheal intubation.
 4. To administrate the anaesthetic protocol validated by the teacher.
 5. To monitor the anaesthetic procedure induction, maintenance and recovery.
 6. To assist the anaesthetist in taking decisions, when necessary.
- Diagnostic Imaging (in all animal species)
 1. To collaborate with patient positioning.
 2. To start ultrasound studies and to assist the teacher in complete studies.
 3. To discuss and to interpret results of radiological and ultrasound studies and to write reports based on diagnostic imaging.
 4. To participate in computed tomography, when necessary.
- Necropsies (in all animal species)
 1. To review the animal individual/population history.

2. To make a complete and systematic necropsy, discussing the macroscopic findings and determining their relationship with the clinical findings.
- Large animal reproduction
 1. To make rectal palpation.
 2. To assist in different procedures usually performed in cattle reproduction (especially, ultrasound).
 - Preventive Medicine/Population Medicine (cattle, small ruminants, pigs and poultry)
 1. To assess the biosecurity measures on farms of different animal species.
 2. To evaluate the welfare conditions of animals of different ages and physiological states.
 3. To assess the possible role of environmental conditions as predisposing factors for disease in animals of different ages and physiological states, and to evaluate environmental control systems in poultry and pig farms.
 4. To clinically evaluate animals in order to identify potential disease indicators.
 5. To evaluate the body condition of animals and the feeding programme of the population.
 6. To review the health and preventive medicine programmes implemented in different farms.
 7. To collect biological samples (especially blood and milk), significant in Medicine Population for diagnosis of different types of diseases.
 8. To perform necropsies (in case of any casualty in the operation).
 9. To review mastitis control programmes in ruminant dairy farms.
 10. To describe and to analyse data record (including the use of management programmes in farms in which they are routinely used).
 11. To apply sanitary programmes.
 12. To perform different on-farm common practices as reproductive control (pregnancy diagnosis, insemination).
 13. To perform boar management and semen collection, evaluation and preservation.
 14. To perform artificial post-cervical insemination.
 15. To detect pregnancy by palpation and the use of ultrasound scan.
 16. To perform neonatal attention (teeth reduction, iron delivery and tail clip).

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

Within the daily activity in all the Consultations, Hospitalization, Anaesthesia and Surgery Operating Rooms, students have a round with the responsible teachers. In this round, they review the appointed cases and, if previously attended, they discuss about the procedures that have already been performed, and the approach for the next visit. At the end of the consultation, students analyse and discuss with the teacher about the patients they have attended. Beyond the daily rounds, the students are exposed to deeper discussion of clinical situations in their off-clinic days. All of this information exchange is backed by evidence-based medicine that encourages students to manage.

During the rotation of the students at necropsies, they analyse the diagnosis and therapeutic performed in each clinical case, and finally correlate this information with the lesions found during the necropsy.

As explained in [Chapter 3 \(3.1.9\)](#), when finishing a specific rotation, students select and present a **clinical report** about a clinical case/group of animals among those directly attended by them. They should include their personal participation, and a complete critical discussion based on the literature, which allows them to improve their understanding of the case.

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

All patients' information has traditionally been registered on their personal files. Every **VTH** Service has its own case-book where a fast review of the patient visit can be consulted in order to obtain the file number and the date. This information is open to staff and students. Within the last couple of years, the **VTH** has been working on the design of its own computerized record software, which is available since April 2017. This software will replace the traditional system and will allow staff and student to have access to the most relevant patient's information.

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

The use of animals for experimental and education purposes is regulated by the Spanish transposition of the Directive 2010/63/EU on the Protection of Animals used for Scientific Purposes. Therefore, all procedures must be approved by the institutional Research Ethics Committee and, finally, the competent authority (<http://www.um.es/comisioneticainvestigacion>). Such approval requires the application of the 3R concept of reduction in the number of animals employed, refinement of the procedures employed, and replacement by alternative methods. Exemptions are those procedures below the established threshold, such as those where moderate animal handling is performed (e.g., basic physical exam). The animal facilities of the Establishment are under the institution administrative responsibilities. All the facilities are managed by qualified animal facility directors. Currently most teaching clinical procedures are performed at the **VTH** with client-owned patients, and the number of practical activities with experimental animals has been significantly reduced.

5.1.11. Description of how and by who 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 teachers responsible for each preclinical and clinical subject of the Degree design a teaching programme on the basis of the syllabus contents. The approximate number and variety of animals and animal materials to be used for optimal training is defined. This programming is done five to six months before the academic year starts. The programming is raised for discussion and approval to different governing bodies such as the Department Council, the **VTH** Board and the Faculty Council. These schedules are made public on the **FVETUM** website. All the information is evaluated annually by the Committee for Assessment and Improvement of the Curriculum, which is responsible for preparing a report that is submitted for the approval of the Faculty Council. All the Faculty collectives (academic staff, support staff and students) are represented in the governing bodies.

Table 5.1.1. Cadavers and material of animal origin used in practical anatomical training				
Species	2016-17	2015-16	2014-15	M
Equine	<ul style="list-style-type: none"> 1 complete embalmed cadaver 3 complete skeletons 25 skulls 9 collections of isolated bones 30 Joint collections (20 wet and 10 plastinated) 14 collections of locomotor neuromuscular prosections (6 wet and 8 plastinated) 32 collections of head dissections (20 wet and 12 plastinated) 1 complete plastinated foal with dissections of corporal cavities 19 hearts (13 wet, 6 plastinated) 6 lungs (4 wet, 2 plastinated) 4 livers (3 wet, 1 plastinated) 9 stomachs (5 wet, 4 plastinated) 16 kidneys (10 wet, 6 plastinated) 5 spleens (5 wet) 12 uterus (6 wet, 6 plastinated) 6 penises (4 wet, 2 plastinated) 18 brains (12 wet, 6 plastinated) 6 fetuses of different ages with placenta (5 wet, 1 plastinated) 	<ul style="list-style-type: none"> 3 complete skeletons 22 skulls 9 collections of isolated bones 26 Joint collections (20 wet and 6 plastinated) 14 collections of locomotor neuromuscular prosections (6 wet and 8 plastinated) 28 collections of head dissections (18 wet and 10 plastinated) 1 complete plastinated foal with dissections of corporal cavities 18 hearts (13 wet, 5 plastinated) 6 lungs (4 wet, 2 plastinated) 4 livers (3 wet, 1 plastinated) 6 stomachs (3 wet, 3 plastinated) 16 kidneys (13 wet, 3 plastinated) 5 spleens (5 wet) 10 uterus (6 wet, 4 plastinated) 6 penises (5 wet, 1 plastinated) 14 brains (10 wet, 4 plastinated) 6 fetuses of different ages with placenta (5 wet, 1 plastinated) 	<ul style="list-style-type: none"> 3 complete skeletons 20 skulls 9 collections of isolated bones 22 Joint collections (18 wet and 4 plastinated) 14 collections of locomotor neuromuscular prosections (6 wet and 8 plastinated) 25 collections of head dissections (15 wet and 10 plastinated) 16 hearts (13 wet, 3 plastinated) 5 lungs (4 wet, 1 plastinated) 4 livers (3 wet, 1 plastinated) 6 stomachs (5 wet, 1 plastinated) 12 kidneys (10 wet, 2 plastinated) 4 spleens (4 wet) 10 uterus (8 wet, 2 plastinated) 6 penises (6 wet) 12 brains (10 wet, 2 plastinated) 5 fetuses of different ages with placenta (4 wet, 1 plastinated) 	ean
Companion animals	<ul style="list-style-type: none"> 12 live dogs 50 dog complete embalmed cadavers 6 complete skeletons (4 dogs, 2 cats) 15 skulls 12 collections of isolated bones 3 Dog joint collections (wet and plastinated) 5 collections of dog locomotor neuromuscular prosections (wet and plastinated) 10 collections of dog head cavities dissections (wet and plastinated) 6 complete plastinated dogs with dissections of body cavities 1 complete vascular injected plastinated dog, horizontally sectioned 24 dog thoracic cavities (16 wet, 8 plastinated) 12 dog hearts (8 wet, 4 plastinated) 2 sets of dog echocardiographic plastinated heart 21 dog abdominal and pelvic cavities (15 wet, 6 plastinated) 12 lungs (4 wet, 8 plastinated) 10 livers (8 wet, 2 plastinated) 12 stomachs (5 wet, 7 plastinated) 10 kidneys (6 wet, 4 plastinated) 5 spleens (5 plastinated) 5 uterus (5 plastinated) 17 brains (12 wet, 5 plastinated) 15 fetuses of different ages with placenta (11 wet, 4 plastinated) 	<ul style="list-style-type: none"> 10 live dogs 50 dog complete embalmed cadavers 6 complete skeletons (4 dogs, 2 cats) 15 skulls 12 collections of isolated bones 3 Dog joint collections (wet and plastinated) 5 collections of dog locomotor neuromuscular prosections (wet and plastinated) 10 collections of dog head cavities dissections (wet and plastinated) 6 complete plastinated dogs with dissections of body cavities 1 complete vascular injected plastinated dog, horizontally sectioned 18 dog thoracic cavities (12 wet, 4 plastinated) 12 dog hearts (8 wet, 4 plastinated) 2 sets of dog echocardiographic plastinated heart 18 dog abdominal and pelvic cavities (15 wet, 3 plastinated) 10 lungs (4 wet, 6 plastinated) 10 livers (8 wet, 2 plastinated) 10 stomachs (5 wet, 5 plastinated) 10 kidneys (6 wet, 4 plastinated) 5 spleens (5 plastinated) 4 uterus (4 plastinated) 15 brains (12 wet, 3 plastinated) 11 fetuses of different ages with placenta (9 wet, 2 plastinated) 	<ul style="list-style-type: none"> 50 dog complete embalmed cadavers 5 complete skeletons (4 dogs, 1 cat) 15 skulls 12 collections of isolated bones 3 Dog joint collections (wet and plastinated) 5 collections of dog locomotor neuromuscular prosections (wet and plastinated) 10 collections of dog head cavities dissections (wet and plastinated) 6 complete plastinated dogs with dissections of body cavities 1 complete vascular injected plastinated dog, horizontally sectioned 12 dog thoracic cavities (10 wet, 2 plastinated) 12 dog hearts (8 wet, 4 plastinated) 2 sets of dog echocardiographic plastinated heart 15 dog abdominal and pelvic cavities (12 wet, 3 plastinated) 10 lungs (4 wet, 6 plastinated) 10 livers (8 wet, 2 plastinated) 9 stomachs (5 wet, 4 plastinated) 10 kidneys (6 wet, 4 plastinated) 5 spleens (5 plastinated) 3 uterus (3 plastinated) 14 brains (11 wet, 3 plastinated) 11 fetuses of different ages with placenta (9 wet, 2 plastinated) 	
Cattle	<ul style="list-style-type: none"> 1 complete skeleton 15 skulls 4 collections of isolated bones 5 Cow joint collections (wet and plastinated) 1 collection of head neuromuscular prosections (wet and plastinated) 1 collection of head cavities (wet and plastinated) 6 hearts (4 wet, 2 plastinated) 3 livers (3 wet) 1 stomachs (1 plastinated) 9 kidneys (6 wet, 3 plastinated) 5 spleens (5 wet) 15 uterus (10, wet, 5 plastinated) 7 brains (5 wet, 2 plastinated) 	<ul style="list-style-type: none"> 1 complete skeleton 15 skulls 4 collections of isolated bones 4 Cow joint collections (wet and plastinated) 1 collection of head neuromuscular prosections (wet and plastinated) 1 collection of head cavities (wet and plastinated) 5 hearts (4 wet, 1 plastinated) 3 livers (3 wet) 1 stomachs (1 plastinated) 9 kidneys (6 wet, 3 plastinated) 5 spleens (5 wet) 14 uterus (10, wet, 4 plastinated) 7 brains (5 wet, 2 plastinated) 	<ul style="list-style-type: none"> 1 complete skeleton 15 skulls 4 collections of isolated bones 3 Cow joint collections (wet and plastinated) 1 collection of head neuromuscular prosections (wet and plastinated) 1 collection of head cavities (wet and plastinated) 4 hearts (4 wet) 3 livers (3 wet) 6 kidneys (6 wet) 5 spleens (5 wet) 13 uterus (10, wet, 3 plastinated) 7 brains (5 wet, 2 plastinated) 18 fetuses of different ages with 	

	<ul style="list-style-type: none"> 18 fetuses of different ages with placenta (9 wet, 9 plastinated) 	<ul style="list-style-type: none"> 18 fetuses of different ages with placenta (11 wet, 7 plastinated) 	<ul style="list-style-type: none"> placenta (11 wet, 7 plastinated) 	
Small ruminants	<ul style="list-style-type: none"> 4 complete skeletons 10 skulls 2 collections of isolated bones 6 hearts (4 wet, 2 plastinated) 15 brains (10 wet, 5 plastinated) 5 lungs (2 wet, 3 plastinated) 4 livers (wet) 6 stomachs (2 wet, 4 plastinated) 7 kidneys (5 wet, 2 plastinated) 5 spleens (5 wet) 5 uterus (5 plastinated) 17 brains (12 wet, 5 plastinated) 14 fetuses of different ages with placenta (9 wet, 5 plastinated) 	<ul style="list-style-type: none"> 4 complete skeletons 10 skulls 2 collections of isolated bones 5 hearts (4 wet, 1 plastinated) 12 brains (10 wet, 2 plastinated) 5 lungs (2 wet, 3 plastinated) 4 livers (wet) 5 stomachs (2 wet, 3 plastinated) 5 kidneys (5 wet) 5 spleens (5 wet) 5 uterus (5 plastinated) 19 brains (15 wet, 4 plastinated) 14 fetuses of different ages with placenta (9 wet, 5 plastinated) 	<ul style="list-style-type: none"> 4 complete skeletons 10 skulls 2 collections of isolated bones 4 hearts (4 wet) 15 brains (10 wet) 4 lungs (2 wet, 2 plastinated) 4 livers (wet) 5 stomachs (2 wet, 3 plastinated) 5 kidneys (5 wet) 5 spleens (5 wet) 5 uterus (5 plastinated) 15 brains (12 wet, 3 plastinated) 11 fetuses of different ages with placenta (9 wet, 2 plastinated) 	
Pigs	<ul style="list-style-type: none"> 1 complete Skeleton 5 skulls 3 collections of isolated bones 5 Joint collections (wet and plastinated) 25 hearts (10 wet, 15 plastinated) 6 lungs (3 wet, 3 plastinated) 4 livers (wet) 10 stomachs (5 wet, 5 plastinated) 10 kidneys (5 wet, 5 plastinated) 5 spleens (5 wet) 12 uterus (6 wet, 6 plastinated) 15 brains (10 wet, 5 plastinated) 35 fetuses of different ages with placenta (12 wet, 23 plastinated) 	<ul style="list-style-type: none"> 1 complete Skeleton 5 skulls 3 collections of isolated bones 5 Joint collections (wet and plastinated) 20 hearts (10 wet, 10 plastinated) 5 lungs (3 wet, 2 plastinated) 4 livers (wet) 13 stomachs (5 wet, 3 plastinated) 9 kidneys (5 wet, 4 plastinated) 5 spleens (5 wet) 10 uterus (6 wet, 4 plastinated) 15 brains (10 wet, 5 plastinated) 18 fetuses of different ages with placenta (9 wet, 9 plastinated) 	<ul style="list-style-type: none"> 1 complete Skeleton 5 skulls 3 collections of isolated bones 5 Joint collections (wet and plastinated) 20 hearts (10 wet, 10 plastinated) 5 lungs (4 wet, 1 plastinated) 4 livers (wet) 13 stomachs (5 wet, 3 plastinated) 10 kidneys (6 wet, 4 plastinated) 5 spleens (5 wet) 10 uterus (6 wet, 4 plastinated) 15 brains (10 wet, 5 plastinated) 18 fetuses of different ages with placenta (9 wet, 9 plastinated) 	
Poultry & rabbits	<ul style="list-style-type: none"> 50 poultry fresh complete cadavers 3 complete skeletons 6 skulls 4 collections of isolated bones 	<ul style="list-style-type: none"> 50 poultry fresh complete cadavers 3 complete skeletons 5 skulls 4 collections of isolated bones 	<ul style="list-style-type: none"> 50 poultry fresh complete cadavers 3 complete skeletons 5 skulls 3 collections of isolated bones 	
Exotic pets	<ul style="list-style-type: none"> 3 complete skeletons 6 skulls 	<ul style="list-style-type: none"> 3 complete skeletons 6 skulls 	<ul style="list-style-type: none"> 3 complete skeletons 6 skulls 	

Table 5.1.1.a Material of animal origin used in practical anatomical training from abattoir.

	Cattle	Small ruminants	Swine	Equine
Respiratory	70	239	85	7
Hearts	17	13	60	
Digestive	5	6	10	1
Liver	68	167	31	9
Urogenital	39	74	51	6
Skin	10	4	19	
Muscular join	6	7	2	
Spleen	3			
Thoracic cavity		4	1	

Table 5.1.2. Healthy live animals used for pre-clinical training (at VTF).

Species	2016/17	2015/16	2014/15	Mean
Cattle	175	37	72	95
Small Ruminants	157	122	144	141
Swine	2,200	2,200	2,200	2,200
Companion Animals	100 +4*	60 +3*	60 +3*	73 +3,3*
Equine	6	6	6	6
Poultry	10,840	10,840	10,840	10,840
Rabbits	350	350	0	237
Exotics pets (primates <i>Papio hamadryas</i>)	50	50	50	50
Bee (hives)	50	50	50	50
Others (<i>Canarius serinus</i>)	20	20	20	20

*Dogs used for propaedeutic training at VTH.

Table 5.1.3. Number of patients seen intra-mural.

Species	2016/17	2015/16	2014/15	Mean
Cattle	-	-	-	-
Small Ruminants*	92	90	93	91.6
Swine*	340	306	221	289
Companion Animals**	6,699	5,594	4,952	5,748.3
Equine**	549	690	431	556.6
Poultry & Rabbits	-	-	-	-
Exotics pets	4	2	7	4.3
Total number of visits	11,895	9,801	8,283	9,993

* Numbers referred to reproductive management practices in VTF

**Estimated numbers. Our data system does not differentiate if a visit is due to the same or to a different condition.

Table 5.1.4. Number of patients seen extra-mural.

Species	2016/17	2015/16	2014/15	Mean
Cattle	287	210	226	241
Small Ruminants	135	230	392	252,33
Pigs**	5,164	2,684	2,884	3,577.33
Companion Animals*	925	710	414	683
Equine*	11	9	5	25
Exotics pets*	123	101	58	94
Poultry & Rabbits**	7,200	82,800	5,600	31,866.66
Total number of visits	13,845	86,744	9,579	5,248.47

*Estimated numbers obtained from the EPT practicum reports.

** Data corresponding to the total census of the farms visited by the students. Due to the intensive production system for these species in our area, work only includes sporadic care of individual animals.

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

Species	2016/17	2015/16	2014/15	Mean
Cattle	100 %	100 %	100 %	100 %
Small Ruminants	100 %	100 %	100 %	100 %
Swine	100 %	100 %	100 %	100 %
Companion Animals	30 %	30 %	30 %	30 %
Equine	70 %	70 %	70 %	70 %
Poultry & Rabbits	100 %	100 %	100 %	100 %
Exotics pets	100 %	100 %	100 %	100 %

Table 5.1.6. Cadavers used in necropsy.

Species	2016/17	2015/16	2014/15	Mean
Cattle	6	3	15	8.00
Small Ruminants	41	58	97	65.33
Swine	39	63	67	56.33
Companion Animals	98	122	92	104
Equine	1	2	2	1.67
Poultry & Rabbits	113	229	97	146.33
Exotics pets	52	4	22	26
Others	-	1	-	0.33

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

Species	2016/17	2015/16	2014/15	Mean
VTF *				
• Cattle	47	42	31	40
• Small ruminants	104	95	92	97
• Pigs	59	60	70	63
• Poultry	31	25	26	27
• Rabbits	29	35	31	32
• Equine	31	41	43	38
Extramural**				
• Cattle	81	68	48	66
• Small ruminants	8	10	12	10
• Pigs	2	1	2	2
• Poultry	0	3	3	2
• Rabbits	2	0	0	1
• Wild animals and cinegetic farms	8	3	2	4

* One academic staff and 5-10 students for each visit

** One academic staff and 3-8 students for each visit

Table 5.1.8. Number of visits in abattoirs and related premises for training in FSQ.

Species	2016/17	2015/16	2014/15	Mean
Ungulates' Abattoirs (Ruminants, pigs and equine)	79	108	103	96.7
Poultry Abattoirs	-	4	4	2.7
Rabbit's Abattoirs	7	8	3	6
Related Premises:				
Fish Central Market	10	10	10	10
Catering Industries	10	10	10	10
Others (Bakery, Brewery, Wine products, Candy products...)	9	9	11	9.7

5.2. Comments.

- Since the last visitation of the EAEVE the **FVETUM** has increase the animal origin resources for practical training, both, for pre-clinical and clinical material. It is remarkable in pre-clinical the number and quality of specimens for anatomical training and the know-how acquire in practical anatomical training. Also, the number of cadavers used for necropsy training provide a proper skill acquisition, but the equine, due to the fact of the shortage of cases for cadavers from the clinical cases and the expenses of the elimination (incineration) of the large animal, that the owners are not able to cover. [See section 5.3. for improvement measurements.](#)
- Regarding number of visits in herds/flocks/units for training in AP&HHM and visits in abattoirs and related premises for training in FSQ, both have the support of the **FVT** in one case, and the network of abattoirs under the OVS Regional Services (agreed by a Memorandum of Understanding) that provide an adequate environment for practical training. **VTH** animal resource plays also a key role at pre-clinical training is subjects related to animal health.
- For clinical training **VTH** plays the core of the training, and as a policy is to encourage an increase of case referrals. In order to do that, appropriate measures are put in place to ensure that the system works adequately based on a trust relationship with the referring practitioners, and trying to avoid competition. In this way, the owners of referred animals are encouraged not to come to the **VTH** for diagnosis or treatment of other diseases without the knowledge of their veterinarian. Nevertheless, a balance is needed because keeping a significant number of first-opinion cases provides valuable material for teaching, considering that those are the cases that our students will face most frequently after graduation.
- The number and variety of small animal cases is sufficient for a proper skill acquisition, ensuring a 24-7 service practice intra-mural for all students along the 5 years Degree. Regarding extra-mural training, the above-mentioned policy of agreement with the practitioners to be referral teaching hospital do not allow to carry out extra-mural clinical services by **VTH**. However, in rotation and EPT students are exposed and trained to small and large animals since they take this

training with practitioners that receive the students under practical training agreement and also in rotation with practitioners that are under contract with **FVETUM**.

5.1. Suggestions of improvement.

- Our teaching procedures have been revised over the last years in order to minimise the use of live animals and all protocols have been approved by the Ethical Committee for Animal Experimentation in non-clinical intervention. For that reason and un cooperation with the clinical subjects and Departments we are working to put in place a clinical skill laboratory using animal models or dummies. The request made to the Vice-Chancellor of Economy of UM is to acquire 3 dogs, 1 horse and 1 cow. Other small replicas or model are already in use in some clinical subjects. The **FVETUM** policy is to open it this academic year as an innovative tool and to be improved by year.
- Regarding necropsies, the number of necropsies may look scarce for large animals (mainly horses). As mention, there are several reasons adding also that farmers or owners use this service only when there is a serious health outbreak. This lack of material is compensated with pathological organs from abattoirs. Additionally, we have requests that all animal incineration will be covered by the Vice-Rectorate of Finances as well as cover all chemical waste in a centralize service. Still under evaluation when this SER was finished. Calculation on the number of large animals needed to reach the standards have been made by the academic teaching staff to fulfil the requirements.
- In anticipation of a new animal protection regulation that probably will limit the current cadaver donation program, alternative donation programs are being managed for educational purposes with clinics and private veterinary hospitals to ensure the training of the students.
- Practical clinical training at **VTH** can also be improved in services that where open in the past, but due to different scenarios, where closed. This is the case of exotic animals that was a service shut down 3 years ago due to the difficulties to hire a new specialist and the shortage of cases due, probably to the economic crisis.
- To ensure a better practical training on horses, the rotation in large animals has been enclose as mandatory rotation and the service has been reinforced with the request of an associate professor. All investments in infrastructure mentioned in Standard 4 are also mainly devoted to improve the quality of the facilities to provide better service in equines.
- Budgetary cutbacks have limited investments in equipment and facilities during the last years, making reinvestment necessary, especially in more competitive equipment to provide better consultation and case referral of practitioners.

